City of Louisville
COLORADO • SINCE 1878

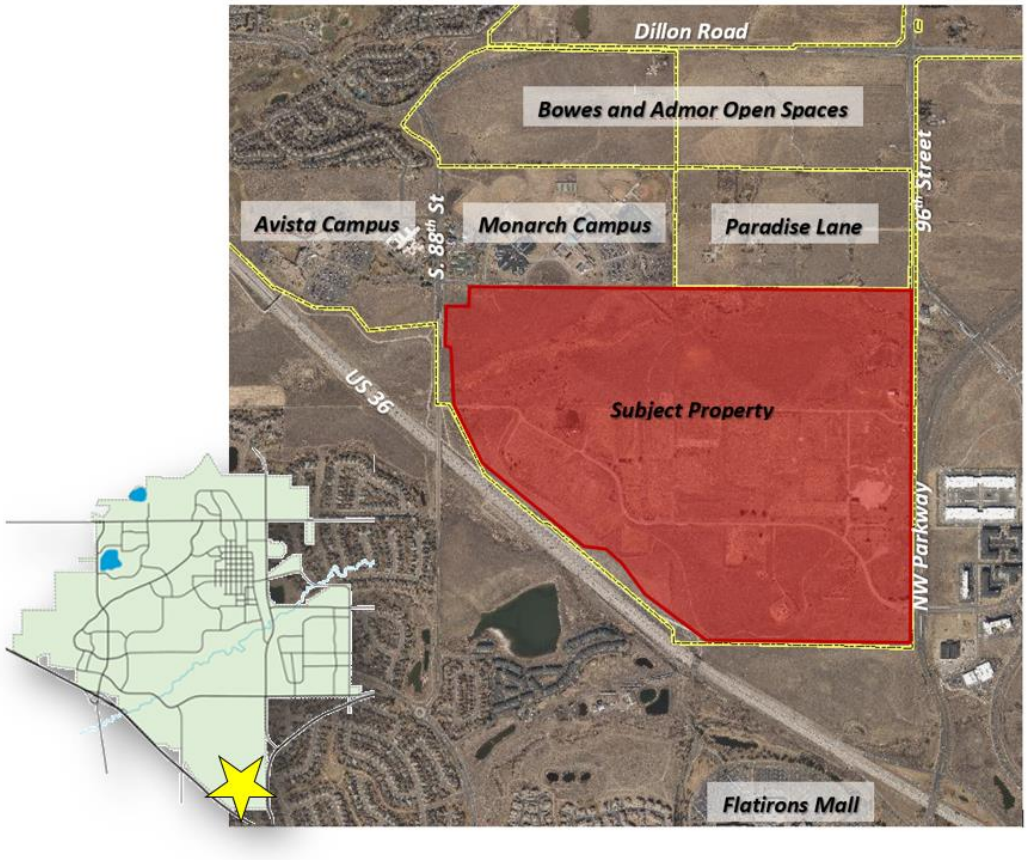
CITY COUNCIL COMMUNICATION
AGENDA ITEM 8C

SUBJECT: **RESOLUTION NO. 80, SERIES 2023 – A RESOLUTION APPROVING THE REDTAIL RIDGE FILING NO. 1 PRELIMINARY SUBDIVISION PLAT**

DATE: **FEBRUARY 6, 2024**

PRESENTED BY: **ROB ZUCCARO, AICP, COMMUNITY DEVELOPMENT DIRECTOR**

VICINITY MAP:



SUMMARY:
The applicant requests approval of a preliminary subdivision plat for development of the 389-acre Redtail Ridge property. The proposal is to develop the property with the land uses and standards established with the ConocoPhillips Campus General Development Plan (GDP), which the City approved in 2010. The City Council approved a GDP in 2021 for a different development concept, which was overturned by a citizen referendum. This resulted in the 2010 ConcoPhillps Campus GDP remaining as the governing development plan for the property.
The final subdivision plat creates lots, tracts, rights of ways, and easements to enable development of the property. If City Council approves the preliminary plat, the

subsequent final plat application review will include a Subdivision Improvement Agreement (SIA) for developer installation of public infrastructure such as new roads, off-site road expansions, trails, water lines, sewer lines, a sewer lift station, and an expansion to the City's sewer processing plant. The City would also review the Final Plat application concurrently with a request for an amendment to the Redtail Ridge Metro District service plan.

The proposal includes public dedication of several tracts of land to the City for a park, open spaces, trails and a public safety facility. The public dedication area totals 139.1 acres (91.7 acres within the project boundaries, and 47.4 acres north of the project in unincorporated Boulder County surrounding Paradise Lane). Additionally, the applicant proposes designated 15.76 acres of private open space within the development that would be maintained by the Redtail Ridge Metro District.

Application materials are combined as Attachment Nos. 2a-2o. The applicant has also provided a video footage of the property at the following link.
https://www.youtube.com/watch?v=A2fZza0zqa4

Minimum standards for the content of the application are in LMC Sec. 16.12.050. Staff finds that all relevant information for the preliminary plat review has been provided.

Public Notice
Public notice is required a minimum of 15 days ahead of the hearing. These notice requirements were met for the December 5, 2023 hearing date, at which the public hearing was continued to February 6, 2024. All public notice requirements have been met, including the following.

- Mailed notice to all property owners within 750' of the property. The property borders Superior, Broomfield, and unincorporated Boulder County. Thus, property owners in these jurisdictions also received mailed notice.
- Publication in the Daily Camera.
- Posting of notice at City facilities.
- Posting of notice signs on the property facing adjoining public streets. Signs were posted facing 96th Street, Campus Drive, 88th Street and US 36

BACKGROUND:
Property History
The subject property is the former location of StorageTek Corporation. StorageTek established the original campus on 310 acres when in Unincorporated Boulder County. The City subsequently annexed the 310-acre campus in 1978. The StorageTek campus included approximately 1.6 million sq. ft. of building area at full build out.

ConocoPhillps acquired the property in 2008 and completed demolition of the StorageTek campus in 2009 to facilitate a new research campus. In 2009, ConocoPhillips petitioned the City to annex 80 acres of land adjacent to the 310-acre

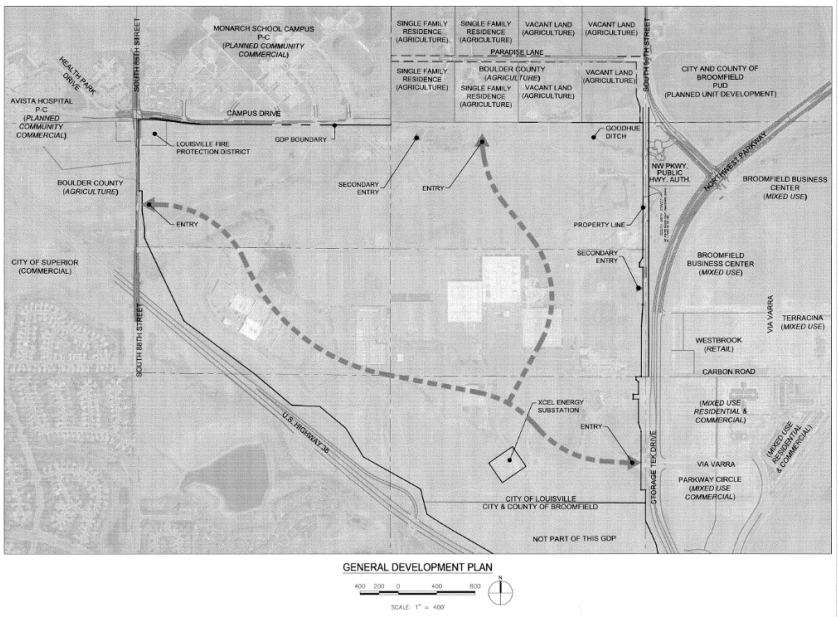
campus and requested rezoning of the entire property to Planned Community Zone District – Commercial (PCZD-C).

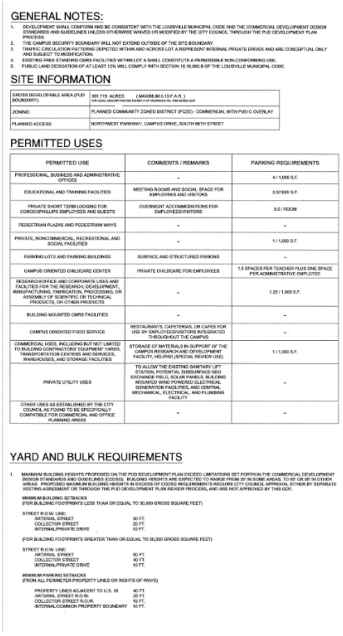
In 2010, the City approved a General Development Plan (GDP), Zoning Agreement, Preliminary Subdivision Plat, and Preliminary Planned Unit Development (PUD) for the ConocoPhillips development (see Attachment Nos. 3-6). The GDP included an approximately 2.5 million sq. ft. development cap, set allowed land uses, setbacks, parking standards, and required a minimum public land dedication of 12%, matching the minimum code requirement.

The preliminary PUD outlined a more specific public land dedication proposal that included 38.92 acres of public land dedication within the development and a commitment for dedication of an additional 20 acres of preserved land in Boulder County north of the site around Paradise Lane. The plans also included clustering the development parcels towards the center of the property, leaving 222 acres of private open space. The preliminary PUD allowed development up to 5 stories and 65 feet in height, with one subarea allowing a four story, 95-foot tall building. The development was intended to be a research campus for ConocoPhillips. ConocoPhillips later abandoned its development plans due to a corporate restructuring.

While the preliminary PUD and Subdivision Plat have expired, the 2010 ConocoPhillips Campus GDP and the Zoning AgrSeement do not expire and currently govern development of the property.

Figure 1: ConocoPhillips Campus GDP




GENERAL NOTES:

1. DEVELOPMENT SHALL CONFORM AND BE CONSISTENT WITH THE LOUISVILLE MUNICIPAL CODE AND THE DOWNTOWN DEVELOPMENT DESIGN STANDARDS AND GUIDELINES UNLESS OTHERWISE WAIVED OR MODIFIED BY THE CITY COUNCIL THROUGH THE PUD DEVELOPMENT PLAN PROCESS.
2. THE CAMPUS SECURITY BOUNDARY WILL NOT EXTEND OUTSIDE OF THE SITE BOUNDARY.
3. ALL UTILITIES SHALL BE UNDERGROUND DEPICTED WITHIN AND ACROSS LOT A REPRESENT INTERNAL PRIVATE DRIVES AND ARE CONCEPTUAL ONLY AND SUBJECT TO MODIFICATION.
4. EXISTING FREE STANDING CMRS FACILITIES WITHIN LOT A SHALL CONSTITUTE A PRI-PASSIBLE NON-CONFORMING USE.
5. PUBLIC LAND DEDICATION (AT A LEAST 10% WILL COMPLY WITH SECTION 15.16.060 B OF THE LOUISVILLE MUNICIPAL CODE.

SITE INFORMATION

GROSS DEVELOPABLE AREA (PUD BOUNDARY)	331.115 ACRES (MINUS 88.00 ± 0.137 A.R.)
ZONING	PLANNED COMMUNITY ZONED DISTRICT (PCZD) - COMMERCIAL WITH PUD C OVERLAY
PLANNED ACCESS	NORTHWEST PARKWAY, CAMPUS DRIVE, SOUTH 88TH STREET

PERMITTED USES

PERMITTED USE	COMMENTS / REMARKS	PARKING REQUIREMENTS
PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES	-	4 / 1,000 S.F.
EDUCATIONAL AND TRAINING FACILITIES	MEETING ROOMS AND SOCIAL SPACE FOR EMPLOYEES AND VISITORS	0.5/1000 S.F.
PRIVATE SHORT TERM LODGING FOR CONOCOPHILLIPS EMPLOYEES AND GUESTS	OVERNIGHT ACCOMMODATIONS FOR EMPLOYEES/VISITORS	0.5 / ROOM
PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS	-	-
PRIVATE, NONCOMMERCIAL, RECREATIONAL AND SOCIAL FACILITIES	-	1 / 1,000 S.F.
PARKING LOTS AND PARKING BUILDINGS	SURFACE AND STRUCTURED PARKING	-
CAMPUS ORIENTED CHILDCARE CENTER	PRIVATE CHILDCARE FOR EMPLOYEES	1.0 SPACES PER TEACHER PLUS ONE SPACE PER ADMINISTRATIVE EMPLOYEE
RESEARCH OFFICE AND COMPONENTS USES AND FACILITIES FOR RESEARCH, DEVELOPMENT, MANUFACTURING, FABRICATION, PROCESSING, OR ASSEMBLY OF SCIENTIFIC OR TECHNICAL PRODUCTS, OR OTHER PRODUCTS	-	1.25 / 1,000 S.F.
BUILDING MOUNTED CMRS FACILITIES	-	-
CAMPUS ORIENTED FOOD SERVICE	RESTAURANTS, CAFETERIAS, OR CAFES FOR USE BY EMPLOYEES/VISITORS INTEGRATED THROUGHOUT THE CAMPUS	-
COMMERCIAL USES, INCLUDING BUT NOT LIMITED TO BUILDING CONTRACTORS' EQUIPMENT YARDS, TRANSPORTATION CENTERS AND SERVICES, WAREHOUSES, AND STORAGE FACILITIES	STORAGE OF MATERIALS IN SUPPORT OF THE CAMPUS RESEARCH AND DEVELOPMENT FACILITY, HELIPAD (SPECIAL REVIEW USE)	1 / 1,000 S.F.
PRIVATE UTILITY USES	TO ALLOW THE EXISTING SANITARY LIFT STATION, WATER TANK, WATER WELL, EXCHANGE FIELD, SOLAR PANELS, BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES, AND CENTRAL MECHANICAL, ELECTRICAL, AND PLUMBING FACILITY	-
OTHER USES AS ESTABLISHED BY THE CITY COUNCIL AS FOUND TO BE SPECIFICALLY COMPATIBLE FOR COMMERCIAL AND OFFICE PLANNING AREAS	-	-

YARD AND BULK REQUIREMENTS

1. MAXIMUM BUILDING HEIGHTS PROPOSED ON THE PUD DEVELOPMENT PLAN EXCEED LIMITATIONS SET FORTH IN THE COMMERCIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES (CDDSG). BUILDING HEIGHTS ARE EXPECTED TO RANGE FROM 35' IN SOME AREAS, TO 65' OR 95' IN OTHER AREAS. ALL BUILDING HEIGHTS SHALL BE SUBJECT TO CITY COUNCIL APPROVAL EITHER IN INCLUSION OF COUNCIL APPROVAL WITHIN THE DEVELOPMENT AGREEMENT OR THROUGH THE PUD DEVELOPMENT PLAN REVIEW PROCESS, AND ARE NOT APPROVED BY THIS GDP.

MINIMUM BUILDING SETBACKS
(FOR BUILDING FOOTPRINTS LESS THAN OR EQUAL TO 30,000 GROSS SQUARE FEET)

STREET R.O.W. LINE:
ARTERIAL STREET 80 FT.
COLLECTOR STREET 60 FT.
INTERNAL/PRIVATE DRIVE 10 FT.

(FOR BUILDING FOOTPRINTS GREATER THAN OR EQUAL TO 30,000 GROSS SQUARE FEET)

STREET R.O.W. LINE:
ARTERIAL STREET 80 FT.
COLLECTOR STREET 60 FT.
INTERNAL/PRIVATE DRIVE 10 FT.

MINIMUM PARKING SETBACKS
(FROM ALL PERIMETER PROPERTY LINES OR RIGHTS-OF-WAYS)

PROPERTY LINES ADJACENT TO U.S. 36 40 FT.
ARTERIAL STREET R.O.W. 30 FT.
COLLECTOR STREET R.O.W. 10 FT.
INTERNAL/COMMON PROPERTY BOUNDARY 10 FT.

The applicant proposed a revised GDP (Redtail Ridge) for the property that received City Council approval on September 21, 2021. The Redtail Ridge GDP included a mix of

commercial and industrial development with a total development cap of 3 million square feet, 93 acres of public land dedication, adoption of a transportation demand management (TDM) plan, and adoption of a Sustainability Commitment Plan with requirements for building to Leadership in Energy and Environmental Design (LEED) standards, building all-electric for certain types of development, and a minimum of 3 megawatts of on-site photovoltaic capacity.

A petition was filed for a referendum on the City Council's approval of the Redtail Ridge GDP. An election was held on April 19, 2022, in which the voters overturned Council's approval of the ordinance, resulting in the 2010 ConocoPhillips Campus GDP remaining as the governing development plan for the property.

Metropolitan District Approval

In February of 2021, the City Council conditionally approved service plans for the Redtail Ridge Metropolitan (Metro) District Nos. 1-4. The four districts are meant to finance public infrastructure for the Redtail Ridge development and provide ongoing services within the development boundaries, including landscaping maintenance within public rights of way and transportation demand management programming. The Metro Districts could asses a property tax levy up to 60 mills, with the debt mill levy capped at 50 mills. The additional 10 mills are reserved for operations and maintenance, which would include landscaping maintenance within street rights of way and programs such as the proposed transportation demand management plan.

The City's service plan approval included a provision that the Districts may not impose any mills, issue debt or collect fees until the project is consistent with the Comprehensive Plan and that the applicant seek an amendment to the service plan at the time of final plat and that the final plat and service plan infrastructure cost estimates match. If Council approves this request for preliminary plat approval, then final plat application would need to be accompanied by an SIA with final infrastructure cost estimates and the required amendment to the service plan.

PROPOSAL:

The proposed subdivision creates a series of lots and blocks for development, road rights of way, utility easements, and private road access easements. The development is intended to include a mix of hospital, medial office, light industrial, commercial, and office uses. It is important to note that the subdivision plat process does not establish the allowed uses or development standards. Such standards are established by the 2010 GDP. Avista Hospital recently announced an interest in moving their 88th Street hospital campus (100 Health Park Drive) to this location.

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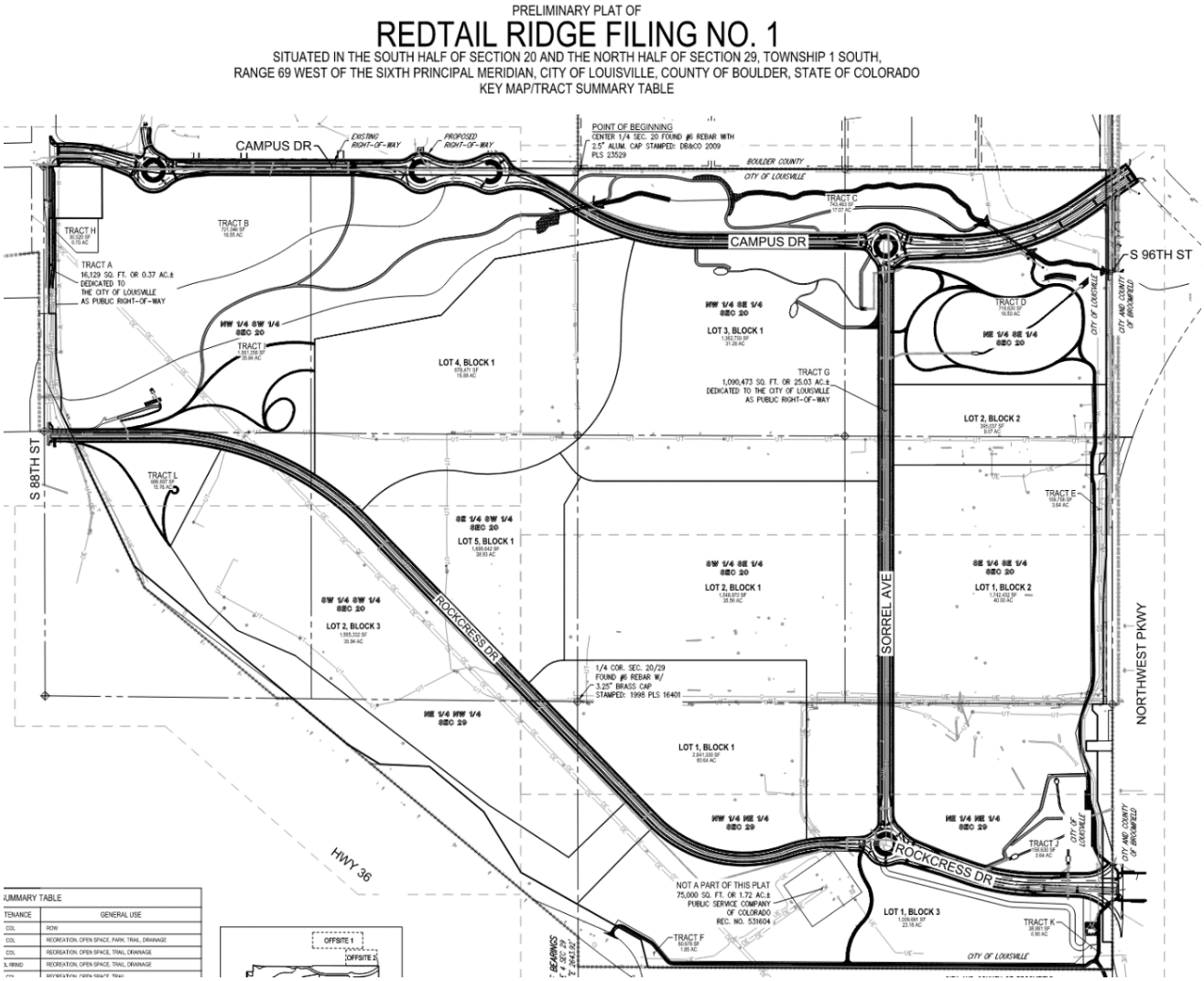
Figure 2: Redtail Ridge Filing No. 1 Preliminary Plat



Public Land Dedications and Other Open Space Dedications

The City requires a public land dedication, or equivalent value through cash-in-lieu, at the time of final subdivision plat to meet a public purpose, such as parks, open space, schools, or any other public purpose determined by the City (LMC Sec. 16.16.060). The minimum requirement for public land dedication for commercial development is 12% of the gross project area. The dedication must be "designed and intended to reasonably relate to the needs created or contributed to by the subdivision development within the City."

Based on a previous annexation agreement, an approximately 81-acre portion of the property is exempt from the public land dedication requirement (see Attachment No. 7, Section 14 of Annexation Agreement). The minimum public land dedication requirement for the remaining 309 acres is 37.1 acres of public use lands.

The public land dedication proposal totals 139.01 acres, or 45% of the 309 acres subject to the public land dedication requirement, far exceeding the minimum amount required under the City code. In addition, the 47.4 acres of public land dedication around Paradise Lane in Unincorporated Boulder County provides contiguous open space between the Admor Open Space to the north and Tract C of the Redtail plat that is designated for open space (see Figure 5 below). Staff anticipates this land would be owned by the County with the City holding a conservation easement on the property.

Figure 3: Public Land Dedication Summary

	Purpose	Acres
Tract B	Park	16.55
Tract C	Open Space	17.07
Tract D	Open Space	16.5
Tract E	Trail	3.64
Tract F	Trail	1.85
Tract H	Public Safety	0.7
Tract I	Open Space	35.84
Paradise Ln	Open Space	46.86
Total		139.01

The Open Space dedication on Tract C also meets the requirements for a buffer between development on the subject property and development on Paradise Lane in Boulder County under the Intergovernmental Agreement, Southeast Boulder County, South 96th Street, Dillon Road, and US 287 Area Comprehensive Development Plan (see Attachment No. 8, Exhibit A to Agreement, Section 4.17).

The applicant also proposes a 15.76-acre tract of land within the subdivision as privately maintained common open space, which is located on the southwest side of the subdivision (Tact L). This tract would ensure maintenance of the large berm that parallels US 36, providing a visual buffer between the development and the highway.

A 40.1-acre conservation easement is planned south of the project in the City and County of Broomfield. The conservation easement would include trail connections between the Retail Ridge development and Broomfield.

The grand total of public land dedication area, common open space, and the City and Council of Broomfield conservation easement is 194.7 acres.

Figure 4: Public Land Dedication Map

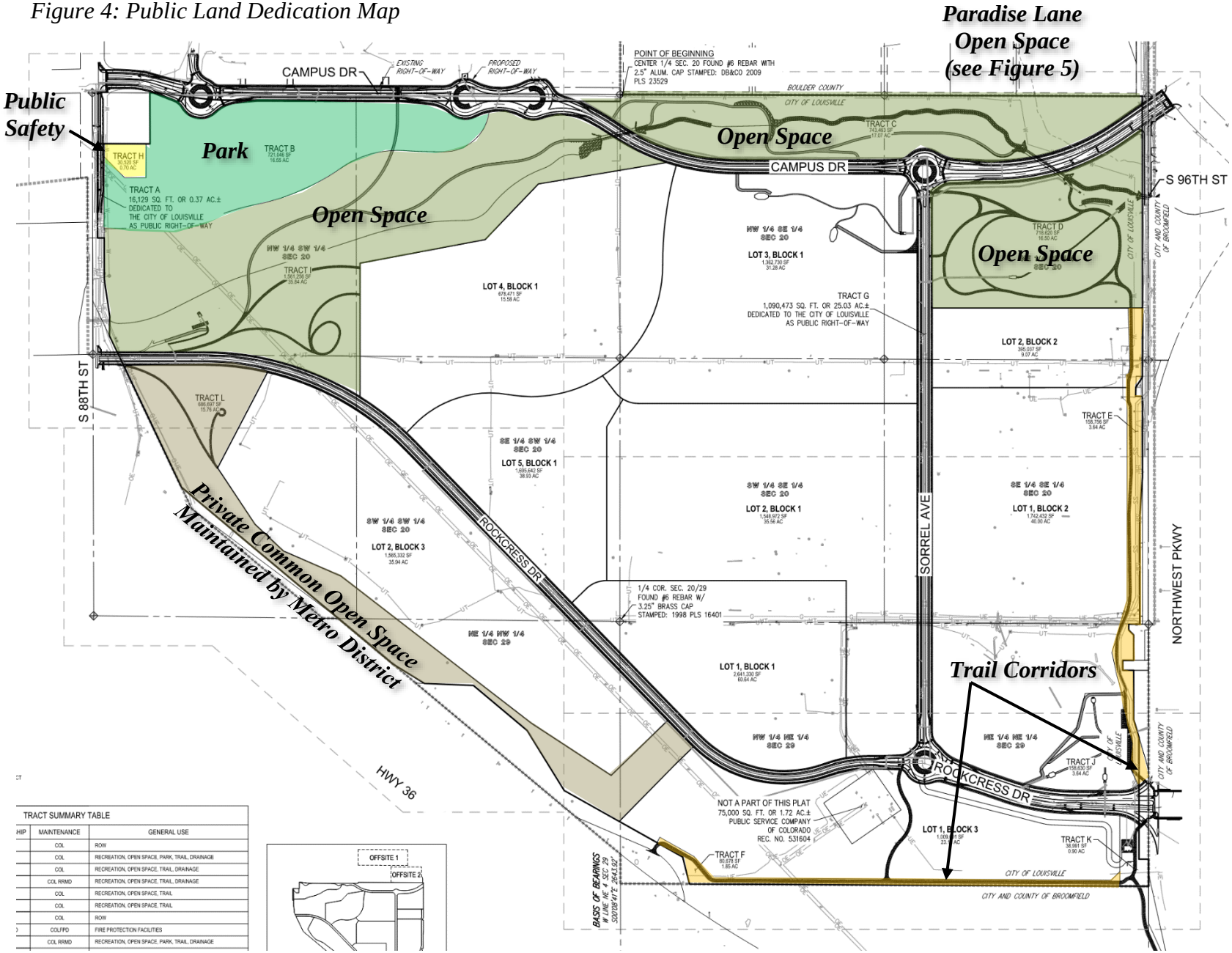


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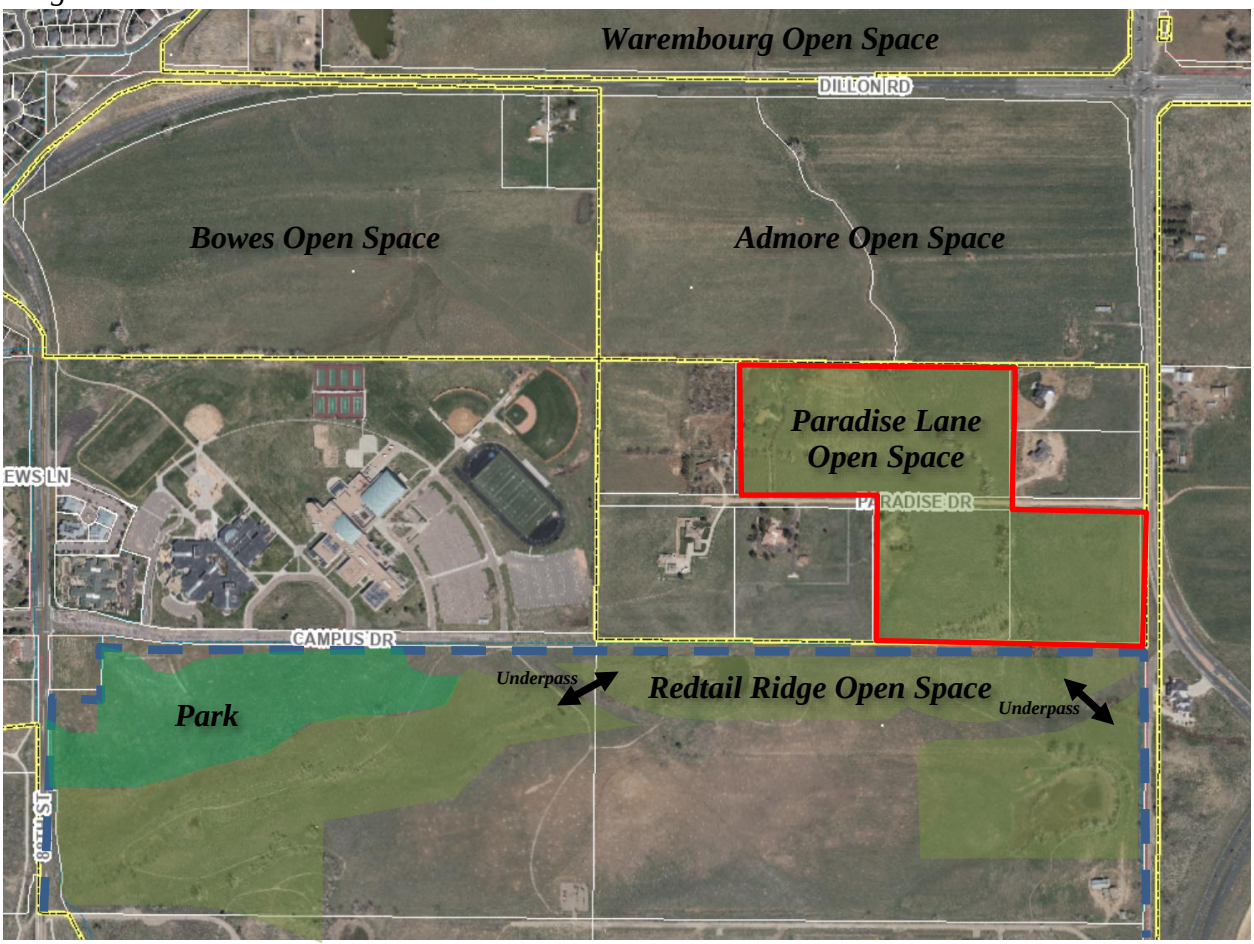
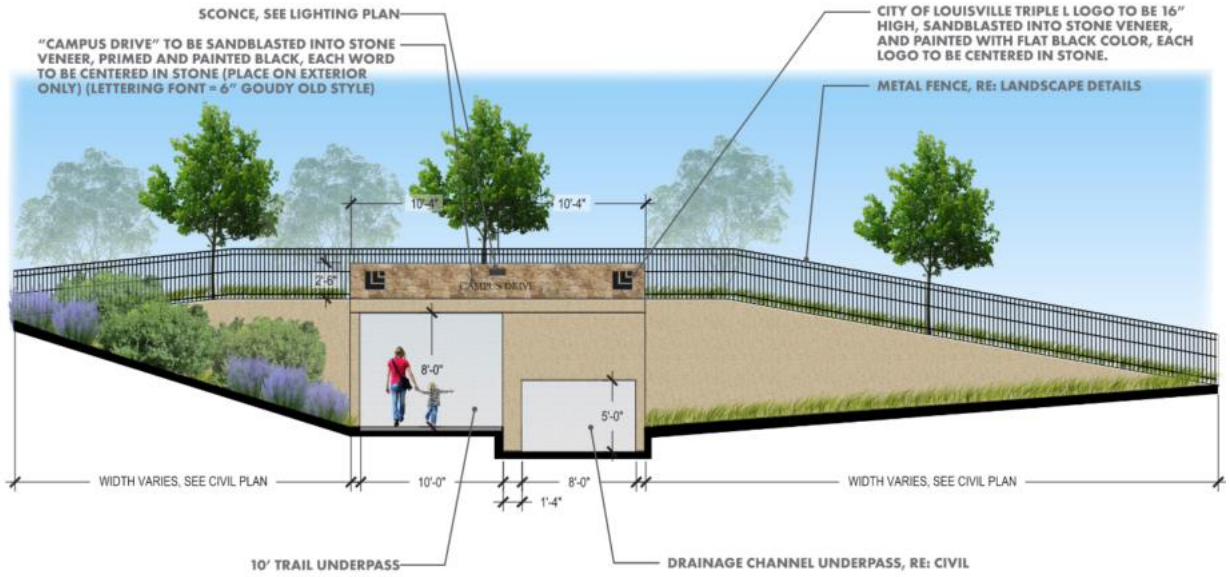
Figure 5: Paradise Lane Public Land Dedication



Road and Trail Network

The proposal includes an extension of Campus drive from its current terminus to 96th Street, a new public east-west road connecting 88th Street to Northwest Parkway (Rockcress Drive), a north-south road connecting Campus Drive to Rockcress Drive (Sorrel Avenue), and other private streets within the subdivision that would be matined by the Metro District. The Campus Drive design has four lanes east of Sorrell Avenue and two lanes west of Sorrell Avenue, and includes on-street bike lanes and separated multi-use paths. The Rockcress Drive design has four lanes east of Sorrell Avenue and two lanes west of Sorrell Avenue. The Sorrel Avenue design has two lanes and includes on-street bike lanes and off street multi-use paths. In the two locations where the off-street trail network crosses Campus Drive, pedestrian underpasses are proposed (see Figure 6 below).

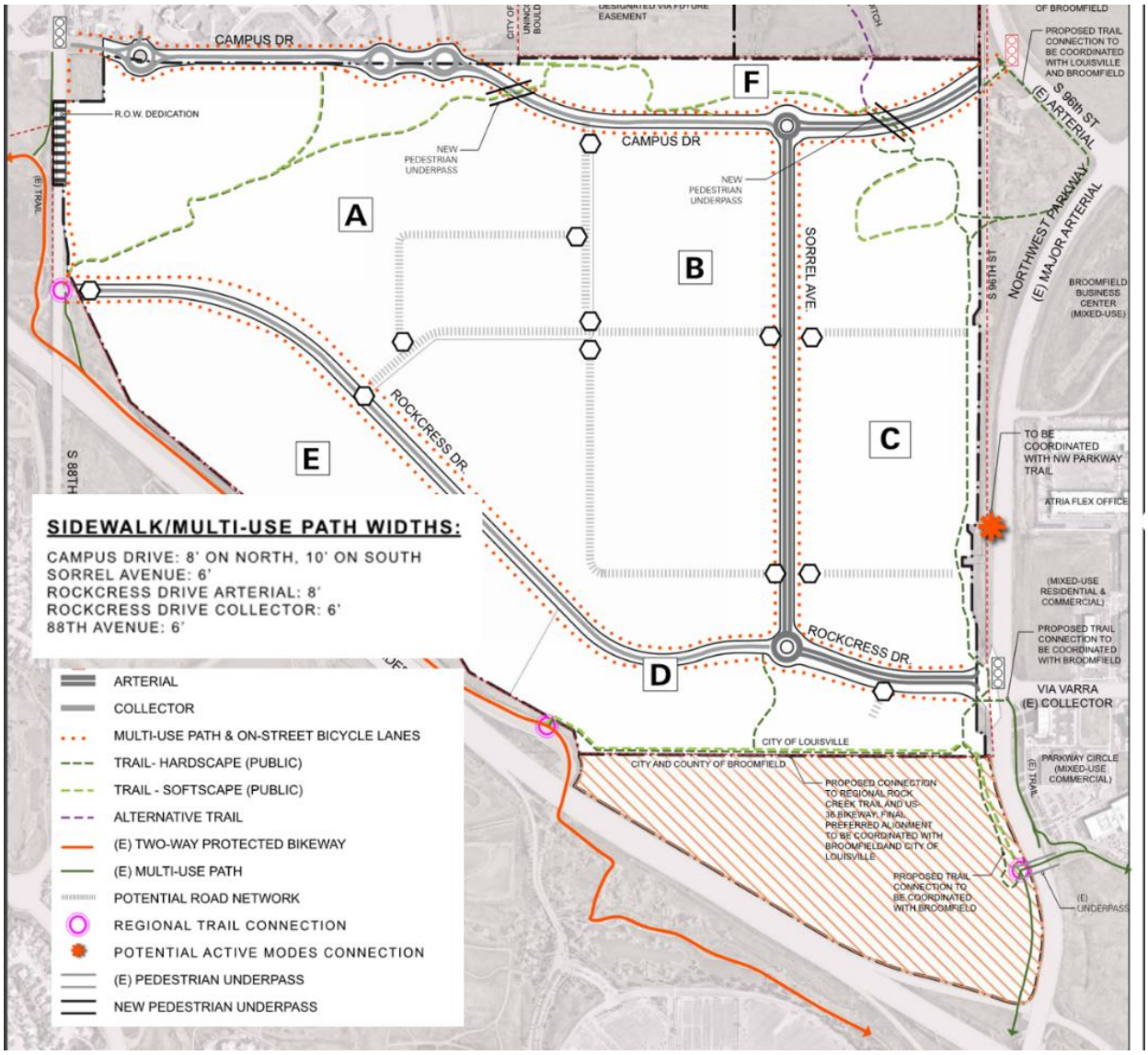
Figure 6: Conceptual Underpass Design



The Campus Drive road extension runs through a section of NW Parkway Authority right of way as it connects to 96th Street. The NW Parkway Authority has continued to work with the applicant on the details of the proposal. If Council is to approve this preliminary plat application, staff recommends that it be conditioned on the applicant receiving final approval from the NW Parkway Authority to connect Campus Drive to 96th Street prior to the City Council hearing on the final plat. Alternative alignments to the north connecting to Paradise Lane were previously considered, but found to be undesirable due to the proximity of the road to existing homes around Paradise Lane and due to the buffer requirement in the Intergovernmental Agreement, Southeast Boulder County, South 96th Street, Dillon Road, and US 287 Area Comprehensive Development Plan (see Attachment No. 8, Exhibit A to Agreement, Section 4.17).

The following map shows the road, trail and sidewalk network, including sidewalk and trail widths and surface types. Regional trail connections would be made between the US 36 regional trail to the project, connections to the Rock Creek trail system through an existing underpass located south of the project in Broomfield, and potential regional connections to the north of the project and the Coal Creek trail system.

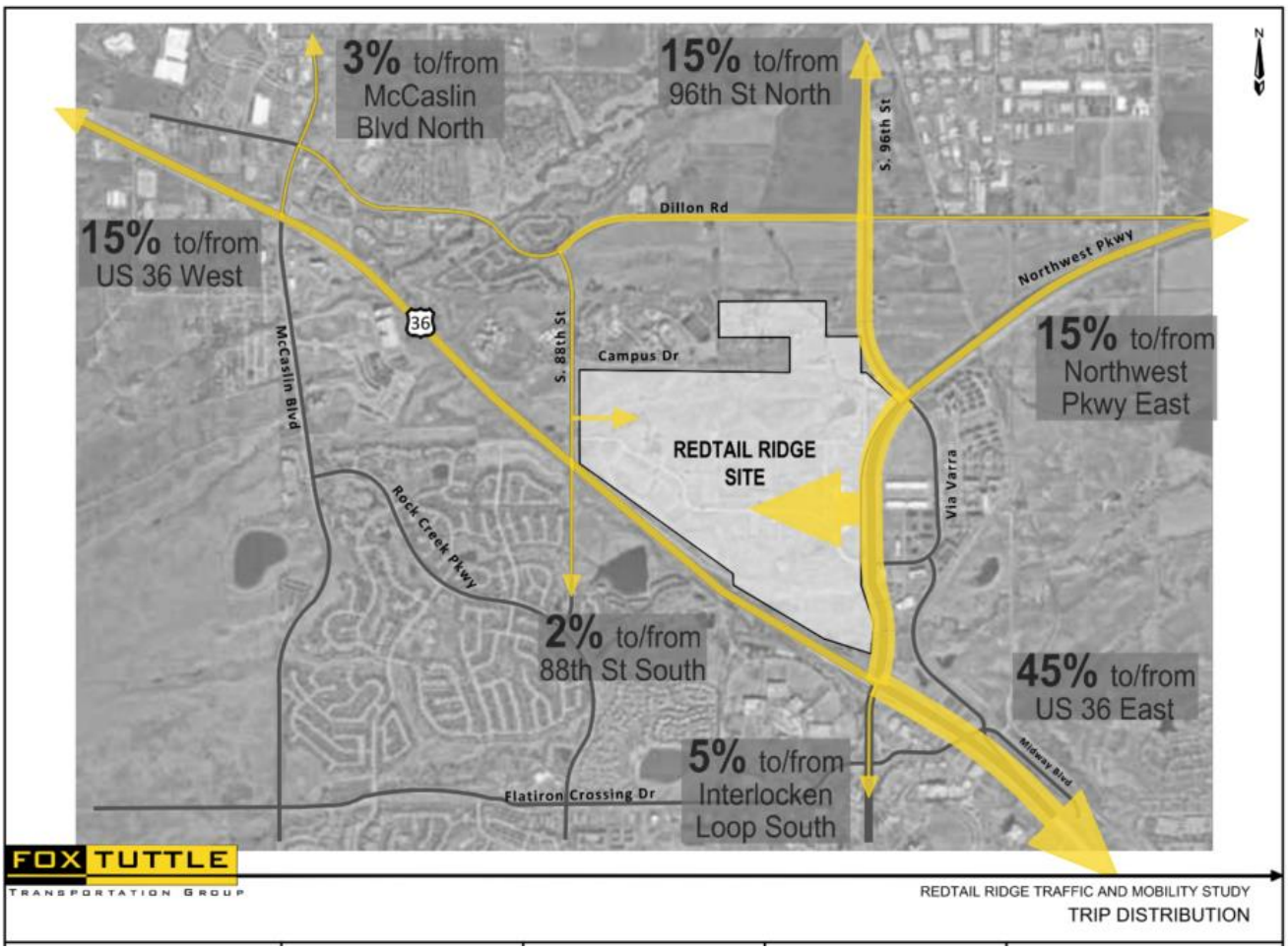
Figure 7: Street and Trail Network



Traffic Analysis

The applicant has provided the attached Traffic and Mobility Study that evaluates level of service on the internal and regional road network at different phase of the project build out (see Attachment No. 2e). At full build out, the Study estimates a total of 21,285 additional daily vehicle trips. The Study anticipates that around 75% of the trips would be to/from US 36 or NW Parkway. 15% of the traffic would be to/from 96th Street, 5% to/from Interlocken Loop, 3% to/from McCaslin Boulevard, and 2% to/from 88th Street.

Figure 8: Anticipated Vehicular Trip Distribution



The study also provides recommendations on road capacity improvements need to maintain adequate level of service (LOS). LOS is used to evaluate how an intersection operates based on delay at the intersection. LOS is assigned a “grade” from A to F based on delays at the intersections. Based on this analysis, the study recommends specific roadway and intersection capacity improvement that are needed to ensure adequate LOS above an F for each phase of development.

Figure 9: Estimated Vehicular Trip Generation

Table 11. Trip Generation Summary

	Land Use	Size	Unit	Non-SOV	Internal Capture	Net Reduction Factor	Average Weekday Trips Rate	Average Weekday Trips Total	Weekday AM Peak Hour Trips Rate	Weekday AM Peak Hour Trips Total	Weekday AM Peak Hour Trips In	Weekday AM Peak Hour Trips Out	Weekday PM Peak Hour Trips Rate	Weekday PM Peak Hour Trips Total	Weekday PM Peak Hour Trips In	Weekday PM Peak Hour Trips Out
Phase 1 (2025)	#130 Industrial Park	509.26	KSF	12%	3%	85%	*	1,868	0.4	174	141	33	0.4	174	37	137
	#760 Research and Development Center (Life Science + Amenity)	300.0	KSF	12%	3%	85%	**	2,695	1.03	264	216	48	0.98	251	40	211
	#140 Manufacturing (GMP)	598.94	KSF	12%	3%	85%	*****	2,100	******	320	243	77	0.74	378	117	261
		######	KSF			Subtotal		6,663		758	600	158		803	194	609
Phase 2 (2030)	#820 Shopping Center	14.0	KSF	12%	75%	22%	37.75	116	0.94	3	2	1	3.81	12	6	6
	#130 Industrial Park	118.8	KSF	12%	3%	85%	*	877	0.4	41	33	8	0.40	41	9	32
	#710 General Office Building	90	KSF	12%	3%	85%	**	818	***	95	82	13	****	88	14	74
	#760 Research and Development Center	264.00	KSF	12%	3%	85%	**	2,397	1.03	232	190	42	0.98	221	35	186
	#610 Hospital	160.0	BEDS	12%	3%	85%	22.32	3,048	1.79	244	176	68	1.69	231	76	155
	#720 Medical-Dental Office Bldg	150.0	KSF	12%	3%	85%	36.00	4,609	***	296	234	62	3.93	503	151	352
		921.80	KSF			Subtotal		12,037		911	717	194		1,096	291	805
Ph 3 (2040)	#710 General Office Building	270.0	KSF	12%	3%	85%	**	2,374	***	239	206	33	****	250	40	210
		270.00	KSF			Subtotal		2,585		239	206	33		250	40	210
						Full Buildout Total		21,285		1,908	1,523	385		2,149	525	1,624

Prior to reaching full build out, expansions would be needed at the NW Parkway and US 36 interchange to maintain adequate level of service. The study notes that the interchange would fail in 2040 with background traffic alone. The study does not commit to specific improvements at these intersections due to a lack of clarity on future expansion plans for NW Parkway.

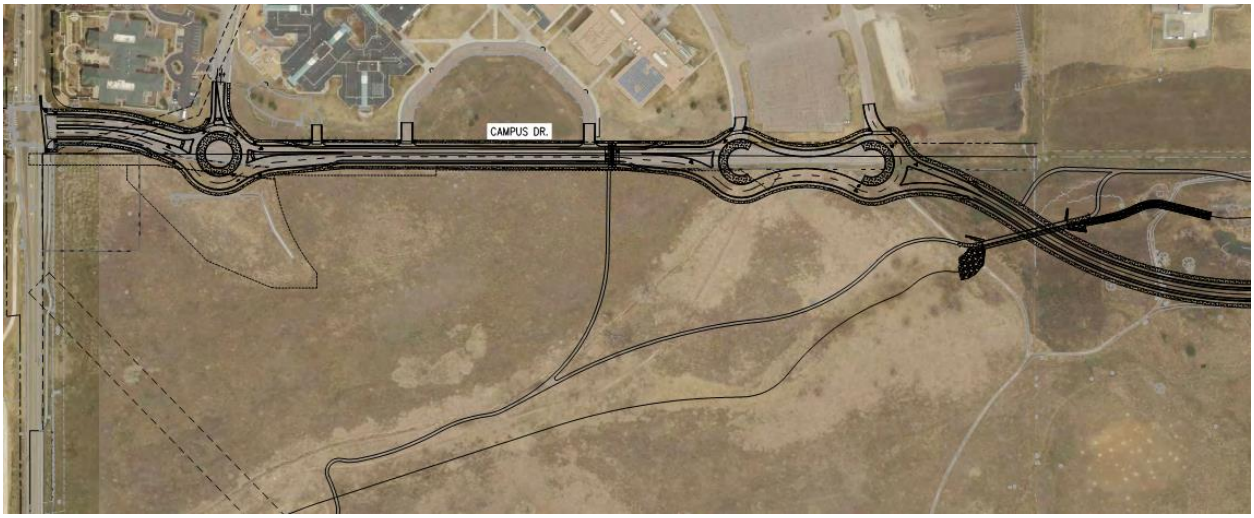
Public Works and a third-party transportation engineer hired by the City have reviewed the study and supports the findings and recommended transportation improvements outlined in the study. Staff recommends conditional approval pending technical corrections and comments on the Traffic and Mobility Study made by Public Works staff.

Implementation of the transportation improvements noted in the Study requires acquisition of right of way from Boulder Valley School District for the expansion of Campus Drive, and from Northwest Parkway Authority and North Metro Fire District for part of the Campus Drive and 96th Street intersection improvements.

The applicant has provided a resolution from the Boulder Valley School District in support of the right of way acquisition and a support letter from North Metro Fire District (see Attachment Nos. 9 and 10). As previously mentioned, the applicant has yet to receive approval from NW Parkway authority for the Campus Drive connection to 96th

Street, and has not received approval for the right of way acquisition. Staff recommends a condition of approval that the applicant receive this approval from the NW Parkway Authority prior to the City Council hearing on the final plat application.

Figure 10: Campus Drive Alignment South of Monarch Campus

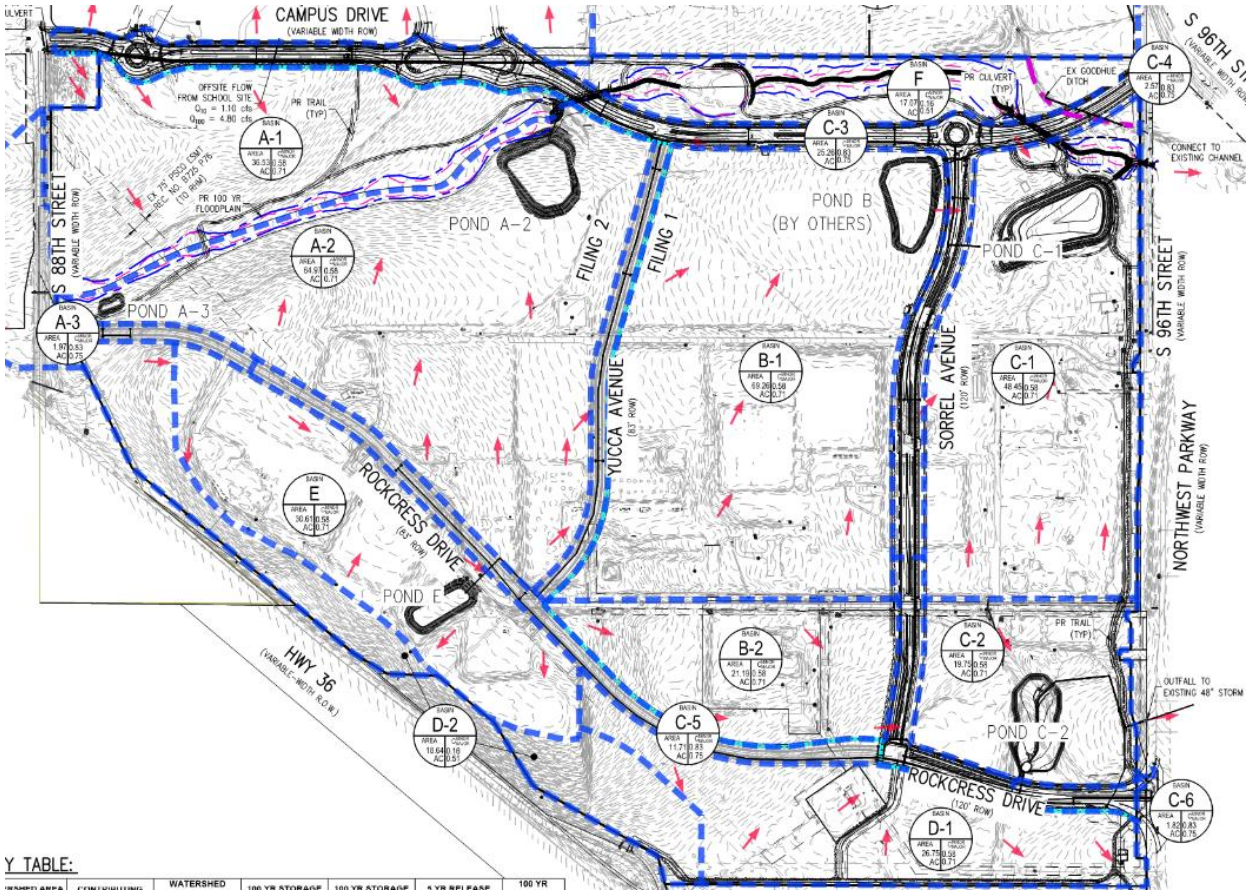


At final plat application, the proposal will include plans for landsaping within the rights of way. The proposal is for the roads to be publically owned, but the Metro Ditrict would be responsible for irrigation and mainenance of the right of way landscapign and the City would be responsible for maintenance of roads, sidewalks and trails in the rights of way.

Drainage

The proposal requires drainage improvements to route stormwater flows to the appropriate drainageway. Approximately 3.5 miles of new storm sewer will be required to discharge the storm flow to drainageway I near the northeast corner of the site. Drainageway I will require updates along its length in the form of channel armoring and culverts to convey the estimated storm flows. In addition, each property is required to install storm water best management practices to meet the requirements of Mile High Flood District and the City's municipal storm permit when they develop. There are currently six regional detention ponds identified in the master drainage report that will serve the stormwater management demands of the development. Additional detention ponds or best management practices may be required as future PUD level development is considered if the current design does not provide adequate capacity.

Figure 11: Master Drainage Plan



Water and Wastewater Utility

To service potable water to development, approximately three miles of new potable water distribution pipeline is required. This pipeline will be added to the mid-zone which is served from both the Sid Copeland Water Treatment Plant (WTP) and Howard Berry WTP. In addition, a new pressure reducing valve will be required to connect with the low pressure zone.

To collect wastewater from the new development, an additional three miles of gravity mains will be required to convey wastewater to a sewer lift station that would be located on Tract K of the plat and dedicated to the City. This lift station will boost the wastewater through a three mile force main to discharge to an existing sanitary sewer upstream of the Wastewater Treatment Facility. In addition, the wastewater treatment facility will require an expansion as the facility cannot treat the additional wastewater volume from the development. The SIA will address funding and at what stage of development the expansion is required for any additional development can take place.

Transportation Demand Management

Section 3.4 of the 2010 Zoning Agreement requires submittal of a Transportation Demand Management (TDM) Plan as part of the final plat, and that such TDM Plan cover the entire property and all phases of development. The applicant submitted a Transportation Demand Management (TDM) Plan as Attachment No. 2m. The plan identifies strategies to reduce vehicle trips and promote other transportation modes, such as transit and biking. The plan identifies the possibility of shuttle services, transit passes for employees and a TDM coordinator hired by the Metro District as potential strategies.

Sustainability Plan and Commitments

The applicant is proposing a series of sustainability commitments as part of the development (see Attachment 2l). There are 30 total commitments, including Leadership in Energy and Environmental Design (LEED) Certification for all buildings in the development and a minimum of 2.6MW of solar electric generation for the project. Each of these commitments would need to be memorialized in the SIA and implemented either as part of the subdivision improvements or through the subsequent PUD reviews.

Figure 12: Summary of Sustainability Commitments

Sustainability Commitments

SECTION	#	COMMITMENT	VALIDATION
Community	1	Wayfinding	Fitwel
	2	Crop Share Drop Off	Fitwel
	3	Building Operational Guidelines	Fitwel
	4	Comprehensive Composting	LEED
	5	Emergency Preparedness Plan	Fitwel
	6	Public Art	Fitwel
Energy & Carbon	7	LEED Certification for all buildings	LEED
	8	Idle Reduction	Fitwel
	9	Optimize Energy Performance	LEED
	10	Renewable Energy Production Min. 2.6 MW Solar Garden	LEED
	11	Heat Island Reduction	Fitwel
	12	Advanced Energy Metering	LEED
Site Development & Water	13	Open Space	LEED
	14	Walking Trail	Fitwel
	15	Light Pollution Mitigation	Fitwel
	16	Restorative Garden	Fitwel
	17	Indoor Water Use	LEED
	18	Outdoor Water Use	LEED
Transportation & Mobility	19	Pedestrian Network	Fitwel
	20	Green Vehicles	Fitwel
	21	Safe Street Infrastructure	Fitwel
	22	Transit Access	Fitwel
	23	Bicycle Parking	Fitwel
	24	Universal Accessibility	Fitwel
Health	25	Outdoor Fitness Area	Fitwel
	26	Bike Lanes	Fitwel
	27	Minimum IAQ Performance	LEED
	28	Outdoor Space Amenities	Fitwel
	29	Air Quality Testing	Fitwel
	30	Tobacco and Smoke-Free Outdoor Spaces	Fitwel

ANALYSIS:

Municipal Code Section 16.12.075 outlines three standards for approval of preliminary and plats. Each standard is listed below followed by a staff discussion and recommendations. In addition, this code section notes that the City Council may consider implementation of use, height, area or bulk requirements or restrictions if such restrictions do not violate the zoning code.

Sec. 16.12.075. Action on preliminary and final plats.

A. In deciding whether to approve, approve with modifications, or deny a preliminary plat or a final plat, the planning commission and city council shall be guided by the following standards:

1. Whether the plat conforms to all of the requirements of this title;

2. Whether approval of the plat will be consistent with the city's comprehensive plan, applicable zoning requirements, and other applicable federal, state and city laws;

3. Whether the proposed subdivision will promote the purposes set forth in section 16.04.020 of this Code and comply with the standards set forth in chapter 16.16 of this Code and this title.

B. Nothing in this title is intended to limit the authority of the planning commission granted pursuant to C.R.S. § 31-23-215(2) to impose use, height, area, or bulk requirements or restrictions governing buildings and premises within a subdivision, so long as such requirements and restrictions do not authorize violation of the city zoning ordinance, and the city council shall have the same authority.

Sec. 16.12.075.A.1. Whether the plat conforms to all of the requirements of Title 16, Subdivisions

Staff has coordinated review of the application with City departments, including Public Works, Parks, Recreation and Open Space, Police, and the Louisville Fire District, as well as utilities and referral agencies. Staff conditionally finds the application to be in conformance with the requirements of Title 16. The full list of conditions is summarized in the staff recommendation section below.

Sec. 16.12.075.A.2. Whether approval of the plat will be consistent with the city's comprehensive plan, applicable zoning requirements, and other applicable federal, state and city laws

The Redtail Ridge development is designated as a Rural Special District under the Comprehensive Plan. The plan includes the following statement about the property:

The Phillips 66 Rural Special District is located in the southern portion of the City and is currently vacant. The land in this location is a unique subarea of the City which contains vital community facilities that provide critical services to the City and also presents a unique regional development opportunity. Due to the isolated nature of this special district, it is somewhat

self-contained. However, the district will remain connected to the region through US 36 and to the rest of Louisville through pedestrian and bicycle trails.

The Comprehensive Plan notes each district should have a unique mix of land uses, and calls out the following as specifically allowed in the districts: retail, office, industrial and institutional uses.

The policy on density for Rural Districts includes a Floor Area Ratio maximum of .25 and notes building heights are limited to three stories, but additional height may be permitted if structures are clustered and located out of public view shed and buffered by surrounding topography and open space.

Staff finds the application is in compliance with applicable Comprehensive Plan policies related to density, height and land uses and the purpose and intent of the Comprehensive Plan. The overall project density under the 2010 ConocoPhillips GDP limits density to approximately 2.5 million sq. ft., which is below the .25 FAR density standard in the Comprehensive Plan. The Comprehensive Plan FAR policy would support approximately 2.9 million sq. ft. of development based on the net land area after deducting out public land dedication and road rights of way areas.

The final plat does not address allowed building heights, which would be determined through the Planned Unit Development review process. Under the City's Commercial Development Design Standards and Guidelines (CDDSG), building height is limited to 35', and 42' to the top of any rooftop mechanical screening.

Staff finds that the following Special District policies are also relevant to the proposal.

Special District Policies

1. *Articulate and define Special Districts' specific character expectations in customized general development plans adopted by City Council.*

2. *Create walkable special districts that are connected to the rest of the City through sidewalks and pedestrian and bicycle paths.*

3. *Encourage internal services which meet the daily needs of the people working in the district.*

Development within final plat boundaries is subject to the 2010 ConocoPhillips Campus GDP. The purpose of a GDP is to establish the character of development within the district and it sets certain underlying zoning standards for development of the property. The GDP requires development in the district to be in compliance with the CDDSG unless specific provisions are waived through the PUD process. The GDP also specifies building setbacks and includes a note about anticipated building heights

ranging up to 65' or 95', recognizing these heights are subject to approval of waivers through a PUD process. Those heights were consistent with the 2010 ConocoPhillips Campus Preliminary PUD, which is now expired.

The 2010 GDP designates the property as Commercial and includes a Permitted Uses Table and parking standards by permitted use. Although this use table was originally intended to accommodate the ConocoPhillips campus as a single-user development, the GDP does not restrict development to a single user and the permitted uses can be applied to multiple users within the platted development lots. One of the listed permitted uses is broadly stated as Commercial Uses, which allows any use noted in LMC Sec. 17.72.090. With the broad allowance of allowed uses under the GDP, development can be facilitated to provide internal services to those working or visiting the development.

The application also includes implementation of a complete-street network consistent with the City's Transportation Master Plan that includes on-street bike lanes, multi-use paths and furthers completion of regional trail connections.

Sec. 16.12.075.A.3. Whether the proposed subdivision will promote the purposes set forth in Section 16.04.020 of this Code and comply with the standards set forth in Chapter 16.16 of this Code and Title 16, Subdivisions

Subdivision Purpose
The following are the 19 specific purpose statements in the LMC for subdivisions followed by staff discussion.

Sec. 16.04.020 Purpose

A. To promote the health, safety, convenience, order, prosperity and welfare of the present and future inhabitants of the city;

The proposal is consistent with the Comprehensive Plan policies and zoning for the development, ensuring development meets this purpose.

B. To provide for the proper arrangement of streets in relation to existing or planned streets and to the comprehensive plan;

The proposal would complete the Campus Drive extension to 96th Street, would significantly reduce congestion at Dillion and 88th Street and 88th Street and Campus during school days and improve emergency safety and access to the school. Rockcress Drive will connect to both 88th Street and 96th Street and Sorrel Avenue connects Rockcress Drive to Campus Drive, providing the backbone street network for the development.

C. To provide for adequate and convenient open spaces for motor vehicle, pedestrian and bicycle traffic, utilities, access of firefighting apparatus, civil defense, recreation, and sites for schools, educational facilities, and related structures;

The proposed internal road network, trails, and off-site road improvements insure adequate vehicular and multi-modal circulation throughout the development and regionally, and is consistent with the Transportation Master Plan. The Fire District has reviewed the proposal for access, and the public land dedication includes a parcel for a future fire station if needed.

D. To promote orderly growth and to provide for the harmonious development of the city in accordance with its comprehensive plan;

The proposal is consistent with Comprehensive Plan policies for this district, as previously discussed.

E. To provide for adequate light, air and privacy and to secure safety from fire, flood and other danger;

The proposal does not include any development in a regulated floodplain and will implement minimum setbacks and the development standards of the 2010 ConocoPhillips Campus GDP and the City's CDDSG.

F. To avoid congestion of population and to provide for the proper distribution of population and supportive land uses;

The proposal is to create a major employment center with a mix of commercial uses. There is no residential development allowed under the approved GDP, thus the development will need to accommodate a significant amount of in commuting of workers and visitors.

G. To ensure that public facilities and services are available and will have sufficient capacity to serve the development;

The development will include a requirement for a Subdivision Improvement Agreement at final plat that outlines requirements for the developer to install and upgrade public infrastructure, including road capacity improvements, water and sewer main line infrastructure, and sewer facility expansion.

H. To protect the character and the social and economic stability of all parts of the city;

Character of the development will be defined by the GDP and CDDSG standards and reviewed through the City's PUD process, ensuring development meets the city's expectations for the character of the development. The project will also provide a major employment center for the City and region and is anticipated to increase tax revenue for the City, lending the economic stability of the City.

I. To conserve and enhance the value of land throughout the city and the value of buildings and improvements upon the land;

The proposed development will include a high-quality and multi-modal streetscape consistent with City policy, along with design and use standards consistent with City policies.

J. To minimize the conflicts among the uses of land and buildings placed on the land;

The public land dedications create a buffer of open space and parks between the Monarch School Campus and residential development north and northwest of the property.

K. To provide for the safe and efficient circulation of traffic throughout the city, the avoidance of congestion in the streets and highways and along pedestrian and bikeways;

The proposed development includes a multi-modal road and trail system within the development, improves regional trail connectivity, and makes regional vehicular capacity improvements outside the subdivision. These improvements also include direct off-street trial connects to the Monarch School Campus, lending to safer and more convenient non-vehicular school routes.

L. To provide reasonable standards in order to further the orderly layout of land and to ensure proper legal descriptions and monumenting of subdivided land;

The subdivision plat includes an orderly and logical layout of blocks, lots and streets and will create property legal descriptions and boundary monuments for each lot.

M. To mitigate the pollution of air, streams and ponds, assure the adequacy of drainage facilities, safeguard the water table, and encourage the wise use and management of the natural environment;

The proposal includes a drainage report and plan and stormwater management plan for the development. The transportation network meets the City's Transportation Master Plan policies to support multi-modal development that will help reduce traffic

congestion and pollution. Further, the development is required to implement and Transportation Demand Management Plan that will also help reduce vehicular congestion and air pollution.

N. To preserve and enhance to the extent reasonably possible the natural beauty and topography of the city and areas of historical or archeological importance and to ensure appropriate development with regard to such natural, historical and archaeological sites and features;

The location of the park and open space public land dedications are intended to cover previously undeveloped areas of the property and natural drainage ways that include the most valuate habitat on the property. The open space and public land dedication land areas also significantly exceed the minimum public land dedication areas required under municipal code, the 2010 ConocoPhillps Campus GDP, or the 2010 ConocoPhillips Campus PUD.

O. To regulate the use of land within the city on the basis of the impact thereof on the community or surrounding areas;

The proposed preliminary plat is consistent with allowed land uses and design standards in the approved GDP and Comprehensive Plan policy for the district. The project will be buffered from residential and school developments to the north by parks and open space and will be below development densities allowed on property to the east of the project located in the City and County of Broomfield.

P. To regulate the location of activities and developments which may result in significant changes in population density;

The development will be a regional employment center but not include any new residential development.

Q. To provide for phased development of services and facilities;

The project provides land dedications for a future park and public safety facility, which could include a fire station and police annex. The City would develop these facilities at a future date. Without residential development, demand on other city services, such as recreation and library services, would be limited. The City would maintain a trail system within the development that could be used for transportation and recreation for the employees and visitors of the development as well as city residents. Utility upgrades, including a sewer lift station, and sewer plant expansion would be needed and paid for the development.

R. To help assure that growth bears a reasonable share of the costs thereof; and

A subdivision improvement agreement (SIA) will be required as part of the final plat. The SIA will require that the developer install all required public infrastructure for the project, including roads, right of way landscaping, trails, water and sewer main lines, and sewer plant infrastructure. The City will also collect water tap fees for future developments, and currently has a commercial development impact fee for transportation improvements. The metro district has committed to maintaining all landscaping within public rights of way and the City would maintain hardscapes and all trails, including the two proposed underpasses. The city would collect water and sewer fees, property tax, use tax, and potentially sales tax revenue over time that would offset the City's increased costs to maintain the new infrastructure.

S. To otherwise plan for and regulate the use of land so as to provide planned and orderly use of land and protection of the environment in a manner consistent with constitutional rights*.*

The preliminary and final plat provides for a planned and orderly layout of the development that enable development of the land consistent with allowed zoning regulations.

Subdivision Design Standards.
LMC Chapter 16.16 includes several sections of design standards for subdivisions. The following includes a staff discussion of compliance with each section.

Section 16.16.010 – General Design and Construction Standards

This section of the design standards requires conformance with the Comprehensive Plan, addresses travel modes, preservation of natural features, establishment of community facilities, and orderly phasing of development.

As discussed in previous sections of this memo, the proposed development is designated as the Phillips 66 Rural Special District and staff finds the proposal is consistent with Comprehensive Plan policy for this district. Staff also finds that the proposal is consistent with Transportation Master Plan policy and provides a complete-street concept with on-street bike lanes, multi-use paths and furthers completion of regional trail connections. The plans includes land dedications for parks and open space lands over previously undeveloped areas of the property and on portions of the property with drainage and vegetation and lend the areas to wildlife habitat.

Section 16.16.020 – Site Considerations

This section speaks to not developing certain lands that may endanger health, life or property, leaving drainage areas in a natural state. The proposed preliminary and final

plat includes development on appropriate areas of the property that can safely and efficiently accommodate the development. The public land dedication for park and open space uses covers larger parts of the planned surface drainage infrastructure and would be kept in a natural state.

Section 16.16.030 – Streets, Alleys, Easements

This section provides specific design standards that must be met unless modified through the subdivision approval process. Staff finds that the streets and easements are laid out according to these design standards and other city codes and policies.

Section 16.16.040 – Blocks

This section requires block length and widths to match the intended use and be at least 400 feet in length and not more than 1,320 feet in length. With the private road network, block lengths meet this standard.

Section 16.16.050 – Lots

This section addresses dimensional lot standards and road frontage requirements. The proposed lot layout meets the standards.

Section 16.16.060 – Public Sites and Dedications

This section requires a minimum of 12% of the gross land area in the subdivision to be dedicated for public purposes. As previously noted, an approximate 81-acre portion of the property is exempt from pubic land dedication through a previous annexation agreement, leaving a remaining 309 acres subject to the public land dedication requirement. The minimum public land dedication requirement is 37.1 acres and is to be used for “parks, school, or other public purpose determined by the city council.”

This code sections provides the following guidance for determining the public land dedication:

> *…the size of the development and its adequacy for accommodating a suitable public use site;*
>
> *the community facility aspects of the comprehensive development plan and the school district's master plan;*
>
> *existing parks and other public uses in the area;*
>
> *the topography, geology and location of land in the subdivision available for dedication;*

the needs of the people in the area; and

any other appropriate factors.

Additionally, the code provides the following standard on the size and amount of public land dedication appropriate for a development:

The size of dedication set forth in this section is designed and intended to reasonably relate to the needs created or contributed to by subdivision development within the city.

The proposal for public land dedication is 139.01 acres, exceeding the minimum standards. The mix of public land dedications cover needs for parks, open space, trails, and public safety that were identified during the application review process. The open space dedications also cover portions of the property that have the most natural landscapes that is intact and more natural vegetation. The types of public land will service both the needs created by the subdivision and provide amenities to residents as a whole, including new active recreation opportunities, new regional trail connections, and open spaces. The Fire District and Police Department will also be provided land to expand facilities to serve the development. Staff finds that the size and types of dedications meet the standard that the proposal relates to the needs contributed to by the subdivision.

The Parks and Public Landscaping Advisory Board (PPLAB) and the Open Space Advisory Board (OSAB) both reviewed the public land dedication proposal and voted in support. These recommendations are discussed in more detail below. The OSAB recommendation includes several conditions, but these conditions do not impact the acreage or layout of the dedication.

The proposal also includes Tract L, which would establish a 15.76-acre “private common open space.” Under the City’s definition, this is open space land has little or no improvements, and is typically maintained by an owners association or other entity. In this case, the Redtail Ridge Metro District would maintain Tract L. Preservation of Tract L also ensures the current berm along US 36 would be maintained, providing a visual buffer to the proposed development. The following is the zoning definition of Common Open Space.

Sec. 17.08.085. - Common open space.

Common open space means a tract, parcel or area of land, an area of water, or a combination of both land and water which does not include streets, alleys, driveways, parks, off-street parking and loading areas, or public open space and other facilities dedicated to the city for public use. Common open space shall be substantially free of structures, but may contain such improvements that are

approved as part of a planned unit development and are appropriate for the recreation of residents of a planned unit development

PARKS AND PUBLIC LANDSCAPE ADVIORY BOARD REVIEW:
The Parks and Public Landscaping Advisory Board (PPLAB) reviewed the proposal on May 5, 2022 (see Attachment No. 9 for minutes). PPLAB voted unanimously to approve the proposal.

OPEN SPACE ADVISORY BOARD:
The Open Space Advisory Board (OSAB) reviewed the proposal on May 11, 2022 and continued the review to June 8. 2022 (see Attachment Nos 10 and 11 for minutes). OSAB voted unanimously to approve the proposal with the following conditions:

1. A legal commitment by the developer to rehabilitate and dedicate the 47.4 acres in Boulder County (paradise lane properties) for jointly managed Louisville and Boulder County Open Space.

2. The developers follow the current city standards for underpasses consistent with the McCaslin Underpass at Harper Lake.

3. OSAB participation in the PUD review process.

4. The developers and city continue to work on creating safe trails and the possible addition of a 3rd underpass.

Staff has begun work on the structure and management agreement with Boulder County on the acquisition of the Paradise Lane Properties. While final decisions on rehabilitation (e.g. removal of structures) and arrangement of the ownership and conservation easement structure have not been made yet, staff intends to develop provisions in the SIA and have a condition prior to recording the final plat that the property be deeded to the City or County.

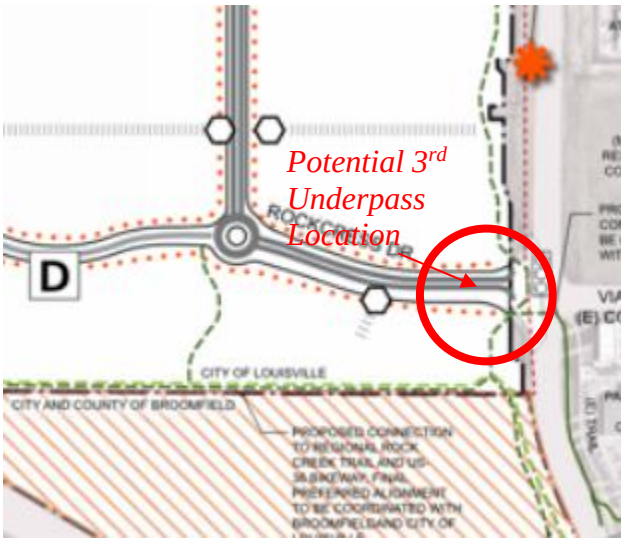
For design standards related to the underpass, staff intends to add language to the SIA that at a minimum the underpasses be designed with corten steel fencing, LED lighting, and stone veneer headwall treatment with street name and City logo.

Under LMC Sec. 4.02040, OSAB is tasked with reviewing and providing comments to the Planning Commission on any development proposals immediately adjacent to or materially impacting open space lands.

The recommendation for the third underpass was at the location where the proposed off-street trail crosses Rockcress Drive at the Rockcress Drive and Northwest Parkway

intersection. The applicant has notified staff that they do not intend to modify their application to add this third underpass.

Figure 13: OSAB Recommendation for 3rd Underpass Location



PLANNING COMMISSION:
The Planning Commission held a public hearing starting on August 11, 2022 that was continued to future meetings multiple times prior to a final vote on December 8, 2022. The minutes from each meeting are attached (see Attachment Nos. 12 – 17). The links to each meeting video are provided below. The Commission voted 3-2 to adopt a resolution recommending denial of the Redtail Ridge Filing No. 1 subdivision. The resolution is included as Attachment No. 18 and adopted findings are copied below.

Planning Commission Adopted Findings for Denial:

1. *The Planning Commission finds that the application from Sterling Bay (the "Applicant") for approval of the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat (the "Application") does not comply with LMC Sec. 16.16.010.D. and E., which states that natural features and vegetation must be preserved to the extent possible and a need for additional open space may be based on vegetation and the type and density of the propose development. The Applicant has not demonstrated that the proposed subdivision adequately preserves natural features, wildlife habitat and vegetation of the property. Previously undeveloped areas on the northern portion of the property include natural vegetation that could be further preserved as public or private open space with clustering of the development lots to the south.*

2. *The Planning Commission finds that the Application does not comply with LMC Sec. 16.04.020.K, which states the purpose of a subdivision is to avoid traffic congestion, based on the following:*

    1. *According to the traffic study submitted with the Application, the US 36 and Northwest Parkway interchange reaches a Level of Service F and would need modified by the year 2027-2028 to provide additional vehicular capacity to accommodate the proposed subdivision. The Application does not include proposals for mitigation, road capacity work, or contribution to future road capacity work for the interchange, nor are future improvements planned at this time.*

    2. *The Application does not include a commitment from Northwest Parkway Authority for the acquisition of right of way needed to construct road capacity improvements included in the traffic study as needed to mitigate traffic congestion.*

3. *The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.040 concerning block length, as some blocks proposed in the Application exceed the maximum length of 1,320 feet. Although the Applicant requested a modification pursuant to LMC Chapter 16.24 to allow longer block lengths, the Commission does not find that there are unique physical or topographical circumstances or conditions to justify the modification. Maintaining prescribed block lengths is necessary to ensure an adequate and convenient transportation system to serve the proposed subdivision.*

4. *The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.020.B., which states that drainage areas should be left in a natural state to the greatest extent possible. The Applicant has not demonstrated that grading of drainage areas within public opens spaces has been limited to the greatest extent possible.*

5. *The Planning Commission finds that the Application does not comply with the 2010 ConocPhillips Campus General Development Plan (GDP). The type and character of the development proposed with the Application is not consistent with the GDP and the street network does not comply with the street network shown on the GDP because it is proposed as publically dedicated roads rather than private roads*.

The applicant has provided a response to the Commission's findings, which is included as Attachment No. 2o.

- August 11, 2022 Planning Commission Hearing
  - Starting at 41:51 www.youtube.com/watch?v=-YDgTXfTZbs&t=2516s
- September 8, 2022 Planning Commission Hearing
  - Starting at 10:38 www.youtube.com/watch?v=DLElDnB9Qf4&t=639s
- September 22, 2022 Planning Commission Hearing
  - Starting 6:52 www.youtube.com/watch?v=nlIpL8KBJI8&t=412s
- October 13, 2022 Planning Commission Hearing
  - Starting at 8:55 www.youtube.com/watch?v=EbnB1R-3PD4&t=535s
- November 10, 2022 Planning Commission Hearing
  - Starting at 11:50 www.youtube.com/watch?v=r5egq6uEqkM&t=710s
- December 8, 2022, Planning Commission Hearing
  - Starting at 3:03 www.youtube.com/watch?v=wU8y5csUZLc&t=183s

The Planning Commission reviewed a combined preliminary and final plat application, which was at the request of the applicant. The applicant has since agreed to separate the preliminary and final applications, and proceed to this hearing with only the preliminary plat request.

PUBLIC COMMENTS:
Public comments received by staff are included as Attachment No. 19.

STAFF RECOMMENDATION:
Staff recommends approval of Resolution No. 80, Series 2023, approving the Redtail Ridge Filing No. 1 Preliminary Plat with the following conditions:

1. Prior to the City Council hearing on the final plat, the applicant shall provide approval from the NW Parkway Authority for the Campus Drive alignment, or provide an alternative alignment with any necessary approvals for such alignment.
2. Prior to the City Council hearing on the final plat, the applicant shall address all outstanding Public Works comments on the Traffic and Mobility Study.

ATTACHMENTS:

1. Resolution No. 80, Series 2023
2. Application Materials
   a) Application Form
   b) Cover Letter
   c) Preliminary Plat (Topo)
   d) Preliminary Plat (No Topo)
   e) Traffic and Mobility Study
   f) BVSD Resolution
   g) Fire District Letter
   h) ROW Acquisition Exhibit

i) Xcel Approval Letter
j) Boulder County Confirmation on Paradise Lane Property Dedications
k) Underpass Exhibit
l) Sustainability Plan
m) TDM Plan
n) SIA Outline Summary
o) Planning Commission Findings Response

3. ConocoPhillips Campus GDP
4. ConocoPhillips Colorado Campus GDP Planned Community Zone District Zoning Agreement
5. ConocoPhillips Campus Preliminary Plat
6. ConocoPhillips Campus Preliminary PUD
7. 1981 Storage Tech Corp Annexation Agreement
8. Intergovernmental Agreement, Southeast Boulder County, South 96th Street, Dillon Road, and US 287 Area Comprehensive Development Plan
9. May 5, 2022 PPLAB Minutes
10. May 11, 2022 OSAB Minutes
11. June 8, 2022 OSAB Minutes
12. August 11, 2022 Planning Commission Minutes
13. September 8, 2022 Planning Commission Minutes
14. September 22, 2022 Planning Commission Minutes
15. October 13, 2022 Planning Commission Minutes
16. November 10, 2022 Planning Commission Minutes
17. December 8, 2022 Planning Commission Minutes
18. Planning Commission Resolution Recommending Denial
19. Public Comments
20. Staff Presentation

STRATEGIC PLAN IMPACT:

☐	**Financial Stewardship & Asset Management**	☐	**Reliable Core Services**
☒	**Vibrant Economic Climate**	☐	**Quality Programs & Amenities**
☐	**Engaged Community**	☐	**Healthy Workforce**
☐	**Supportive Technology**	☐	**Collaborative Regional Partner**

RESOLUTION NO. 80
SERIES 2023

A RESOLUTION APPROVING THE REDTAIL RIDGE FILING NO. 1 PRELIMINARY SUBDIVISION PLAT

WHEREAS, on April 6, 2010, by Ordinance 1569, Series 2010 (Reception No. 03284515), the City rezoned the property known as the ConocoPhillips Campus property to Planned Community Zone District – Commercial (PCZD-C), approved the ConocoPhillips Campus General Development Plan (Reception No. 3088779), and on April 20, 2010 executed the ConocoPhillips Colorado Campus General Development Plan Planned Community Zone District Zoning Agreement (Reception No. 03284516; and

WHEREAS, the applicant, Sterling Bay, has submitted to the City a proposal for a preliminary plat titled Redtail Ridge Filing No. 1 to develop the ConocoPhillips Campus property as a commercial development consistent with the ConocoPhillips Campus General Development Plan; and

WHEREAS, City staff has reviewed the application and found that, with staff's recommending conditions, and based on the findings in staff's December 5, 2023 staff report, that the application for a preliminary subdivision plat meets the requirements of Louisville Municipal Code Title 16 – Subdivisions, including the standards of approval listed in Louisville Municipal Code Sec. 16.12.075, and meets the policies and standards of the Comprehensive Plan; and

WHEREAS, the Planning Commission has considered the application at duly noticed public hearings on August 11, 2022, September 8, 2022, September 22, 2022, October 13, 2022, November 10, 2022, and December 8, 2022, where evidence and testimony where entered into the record, and where the Commission adopted Resolution 13, 2022 recommending to the City Council denial of the application.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Louisville, Colorado does hereby approve the Redtail Ridge Filing No. 1 Preliminary Subdivision Plat, with the following conditions:

1. Prior to the City Council hearing on the final plat, the applicant shall provide approval from the NW Parkway Authority for the Campus Drive alignment.
2. Prior to the City Council hearing on the final plat, the applicant shall address all outstanding Public Works comments on the Traffic and Mobility Study.

PASSED AND ADOPTED this 6th day of February, 2024.

By: _____
Christopher M Leh, Mayor

Attest: _____
Meredyth Muth, City Clerk

DocuSign Envelope ID: FB4AED7B-82A4-474A-9B88-C3811AD8113F

Attachment #2a

City of Louisville
COLORADO • SINCE 1878

Community Development

749 Main Street • Louisville CO 80027 • 303.335.4592 • www.louisvilleco.gov

ELECTRONIC LAND USE HEARING REQUEST

CASE NO. _____

APPLICANT INFORMATION

Firm: Sterling Bay
Contact: Rodney Richerson
Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Mailing Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Telephone: 949-422-0005
Fax: N/A
Email: rricherson@sterlingbay.com

OWNER INFORMATION

Firm: Redtail Ridge Portfolio, LLC
Contact: Rodney Richerson
Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Mailing Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Telephone: 949-422-0005
Fax: N/A
Email: rricherson@sterlingbay.com

REPRESENTATIVE INFORMATION

Firm: Sterling Bay
Contact: Rodney Richerson / Evan Pesonen
Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Mailing Address: 100 Bayview, Suite 355
Newport Beach, CA 92660
Telephone: 949-422-0005
Fax: N/A
Email: rricherson@steringbay.com / epesonen@sterlingbay.com

PROPERTY INFORMATION

Common Address: Redtail Ridge
Legal Description: Lot _____ Blk _____
Subdivision _____
Area: 20,691,000 Sq. Ft.

TYPE (S) OF APPLICATION

- ☐ Annexation
- ☐ Zoning
- ■ Preliminary Subdivision Plat
- ☐ Final Subdivision Plat
- ☐ Minor Subdivision Plat
- ☐ Preliminary Planned Unit Development (PUD)
- ☐ Final PUD
- ☐ Amended PUD
- ☐ Administrative PUD Amendment
- ☐ Special Review Use (SRU)
- ☐ SRU Amendment
- ☐ SRU Administrative Review
- ☐ Temporary Use Permit: _____
- ☐ CMRS Facility: _____
- ☐ Other: (easement / right-of-way; floodplain; variance; vested right; 1041 permit; oil / gas production permit)

I hereby request the public hearing(s) on this application be scheduled to be conducted by Electronic Participation in accordance with the attached Resolution No. 30, Series 2020, as adopted by the City Council on April 7, 2020, and in accordance with Resolution No. 38, Series 2020, as adopted by City Council on June 2, 2020 if such hearing(s) can be scheduled during a time period when in-person meetings are not being held due to a health epidemic or pandemic. I acknowledge that holding a quasi-judicial hearing by Electronic Participation may present certain legal risks and involves an area of legal uncertainty, and that having this application heard at a meeting held by Electronic Participation is optional and undertaken at my own risk. I also understand that in-person meetings are preferred for quasi-judicial hearings, and that even if electronic hearing(s) are scheduled, this application will be heard at an in-person meeting if in person meetings have resumed by the scheduled hearing date(s). I further agree to defend and indemnify the City of Louisville in any action that may arise out of, or in connection with, conducting the hearing by Electronic Participation.

SIGNATURES & DATE

DocuSigned by:
Applicant: _____
7F761989B0224A5...
Print: Rodney Richerson
Owner: Redtail Ridge Portfolio, LLC
Print: _____
Representative: _____
Print: _____

CITY STAFF USE ONLY

- ☐ Electronic Hearing Approved: _____
- ☐ Date(s) of Hearing(s): _____

Attachment #2b

Sterling Bay | West, LLC
100 Bayview, Suite 355
Newport Beach, California,
92660

November 28, 2023

Mr. Rob Zuccaro
Planning and Building Safety Director
City of Louisville
749 Main St
Louisville, CO 80027
Sent via email to: RZuccaro@LouisvilleCo.gov

RE: Redtail Ridge Preliminary Master Plat and Subdivision Filing No. 1

Dear Mr. Zuccaro,

On behalf of Sterling Bay ("Developer" or "Applicant"), thank you for the opportunity to present our preliminary master plat application for Redtail Ridge. As requested by City staff, we are providing all documents required for a preliminary master plat, as well as certain other relevant documents. This letter also references several prior exchanges with the City on these submittals, including requested comments from the Developer. This letter, the documents that have been submitted, and those prior exchanges are all intended to collectively serve as our written request for preliminary master plat approval in accordance with the Louisville Municipal Code.

Master Preliminary Plat – Intent of Development

The Redtail Ridge master-planned project is intended to be a diverse, unique and innovative environment that will attract new companies that will, in turn, provide many additional jobs for the community. This project is also designed to implement a sustainable and resilient campus that will honor and enhance the natural landscape and habitats currently on this site, including opportunities for long-term community access and enjoyment. In addition to the above community benefits, the proposed master plat is designed to address critical community needs such as secondary and safer access for the Monarch school campus, better local and regional accessibility, a large enough site to accommodate a new and expanded Avista Hospital, and much needed access to roadway, bike and pedestrian path connections to adjacent communities.

Consistent with all submittals provided to date, the proposed preliminary plat divides the entire property into multiple unique development areas to include: (1) the expanded Avista Hospital,

Sterling Bay | West, LLC
100 Bayview, Suite 355
Newport Beach, California,
92660

(2) R&D Life Sciences labs & cGMP facilities, (3) flex industrial, (4) Office, (5) Retail and multiple outdoor amenities to benefit the tenants and community, and (6) the multiple open space dedications constituting the largest non-golf course dedication of open space in Louisville's history.

Description of Submittal Documents

At the request of City staff, in connection with this proposed preliminary plat we have made numerous previous submittals to the City, including submissions on March 24, August 18, and November 15, 2023 to address staff's questions and comments regarding previously submitted documents. In addition to those prior submittals, we are now including the following updated documents:

1. Plat Application;
2. Proposed Redtail Ridge Preliminary Plat;
3. Traffic and Mobility Study;
4. Resolutions and letters of support;
5. Sustainability Plan;
6. Transportation Demand Management Plan;
7. Redtail Ridge Subdivision Improvement Agreement Summary; and
8. Planning Commission Responses.

Redtail Ridge thanks City staff and City officials for your continued efforts towards processing and finalizing the Preliminary Plat for Redtail Ridge. We are confident and excited about the many future benefits Redtail Ridge promises to bring to Louisville and its citizens, and we look forward to presenting to City Council and answering any questions.

Respectfully,
STERLING BAY

Evan Pesonen
Vice President – Asset Management and Acquisitions

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

COVER

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

LEGAL DESCRIPTION AND DEDICATION:

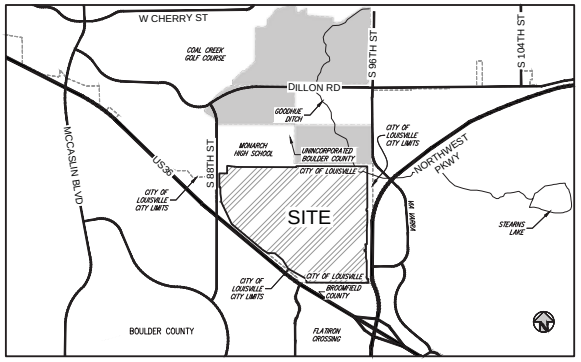
KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED BEING THE OWNERS OF A TRACT OF LAND SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE CENTER QUARTER CORNER OF SAID SECTION 20;
THENCE SOUTH 89°48'50" EAST ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 2,625.59 FEET;
THENCE SOUTH 00°02'13" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 1,326.76 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHEAST QUARTER;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 85.45 FEET TO THE NORTH CORNER OF PARCEL TK-71-2 DESCRIBED AT RECEPTION NO. 2386686 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) SOUTH 33°27'26" WEST, A DISTANCE OF 60.64 FEET;
2) SOUTH 01°40'28" WEST, A DISTANCE OF 45.12 FEET;
3) SOUTH 88°19'32" EAST, A DISTANCE OF 34.84 FEET TO A POINT 30 FEET WEST OF SAID EAST LINE;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF SAID EAST LINE, A DISTANCE OF 404.28 FEET TO A POINT OF NON-TANGENT CURVATURE AT THE NORTH CORNER OF PARCEL TK-71 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 86.28 FEET, SAID CURVE HAVING A RADIUS OF 2,441.83 FEET, A CENTRAL ANGLE OF 02°01'28", AND A CHORD WHICH BEARS SOUTH 04°26'27" WEST A CHORD DISTANCE OF 86.27 FEET;
2) SOUTH 03°25'43" WEST, A DISTANCE OF 124.37 FEET;
3) SOUTH 00°02'35" EAST AND ALONG THE WEST LINE OF PARCEL TK-71-1 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY, A DISTANCE OF 529.71 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHEAST QUARTER AND A POINT ON THE NORTH LINE OF PARCEL 12 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 12 THE FOLLOWING FOUR (4) COURSES:
1) NORTH 89°42'42" WEST, A DISTANCE OF 55.73 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 30.02 FEET;
3) SOUTH 44°53'28" EAST, A DISTANCE OF 35.44 FEET;
4) SOUTH 00°00'35" WEST, A DISTANCE OF 127.21 FEET TO A POINT ON THE NORTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 520800 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) NORTH 89°59'25" WEST, A DISTANCE OF 55.00 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 50.00 FEET;
3) SOUTH 89°59'25" EAST, A DISTANCE OF 55.00 FEET TO THE NORTHWEST CORNER OF PARCEL 10 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 10 THE FOLLOWING TWO (2) COURSES:
1) SOUTH 00°00'35" WEST ALONG THE WEST LINE OF SAID PARCEL AND ALONG A LINE PARALLEL WITH AND 75 FEET WEST OF THE SAID EAST LINE, A DISTANCE OF 247.79 FEET;
2) SOUTH 16°40'03" EAST ALONG THE SOUTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 93.77 FEET TO THE NORTH CORNER OF PARCEL TK-75 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE SOUTH 00°00'35" WEST ALONG A LINE PARALLEL WITH THE EAST LINE OF SAID SECTION 29 AND ALONG THE WEST LINE OF SAID TK-75, A DISTANCE OF 611.12 FEET;
THENCE SOUTH 89°48'45" EAST ALONG THE SOUTH LINE OF SAID TK-75, A DISTANCE OF 48.09 FEET TO A POINT ON THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE SOUTH 00°00'35" WEST ALONG SAID EAST LINE, A DISTANCE OF 136.13 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE NORTH 89°42'42" WEST ALONG SAID SOUTH LINE, A DISTANCE OF 2,308.62 FEET TO A POINT ON THE NORTHEAST LINE OF THE LAND CONVEYED TO THE CITY OF BROOMFIELD BY GIFT DEED RECORDED AT RECEPTION NO. 2013403 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FIVE (5) COURSES:
1) NORTH 14°13'32" WEST, A DISTANCE OF 140.04 FEET;
2) NORTH 60°44'04" WEST, A DISTANCE OF 682.66 FEET;
3) NORTH 31°43'59" WEST, A DISTANCE OF 355.27 FEET;
4) NORTH 50°04'57" WEST, A DISTANCE OF 351.37 FEET;
5) NORTH 87°28'56" WEST, A DISTANCE OF 246.66 FEET TO THE EASTERN CORNER OF PARCEL 32B AS DESCRIBED BY SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 3411796 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 58°29'24" WEST ALONG THE NORTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 186.70 FEET TO A POINT ON THE RIGHT-OF-WAY OF HIGHWAY 36;
THENCE NORTH 50°07'12" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 356.68 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20 AND THE SOUTH CORNER OF PARCEL 32A OF SAID SPECIAL WARRANTY DEED;
THENCE CONTINUING NORTH 50°07'12" WEST ALONG THE NORTHEAST LINE OF SAID PARCEL 32A, A DISTANCE OF 1,028.45 FEET TO A POINT ON THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 880, PAGE 98 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 25°26'59" WEST ALONG SAID EAST LINE AND ALONG THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 878, PAGE 503, A DISTANCE OF 842.57 TO THE SOUTH CORNER OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1989419 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FOUR (4) COURSES:
1) NORTH 00°54'00" EAST, A DISTANCE OF 95.53 FEET;
2) NORTH 08°22'46" WEST, A DISTANCE OF 184.53 FEET;
3) NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20, A DISTANCE OF 213.70 FEET;
4) SOUTH 89°50'51" WEST, A DISTANCE OF 34.06 FEET TO A POINT 25.00 FEET EAST OF THE WEST LINE OF SAID SOUTHWEST QUARTER;
THENCE NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH AND 25 FEET FROM THE SAID WEST LINE, A DISTANCE OF 473.64 FEET TO A POINT ON THE SOUTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1819920 IN THE RECORDS OF BOULDER COUNTY EXTENDED WESTERLY;
THENCE SOUTH 89°48'38" EAST ALONG SAID SOUTH LINE AND SAID SOUTH LINE EXTENDED, A DISTANCE OF 265.23 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL;
THENCE NORTH 00°09'09" WEST ALONG THE EAST LINE OF SAID PARCEL, A DISTANCE OF 256.00 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF CAMPUS DRIVE AS DEDICATED BY LOUISVILLE CAMPUS RECORDED AT RECEPTION NO. 1669751;
THENCE ALONG SAID SOUTH LINE THE FOLLOWING FOUR (4) COURSES:
1) SOUTH 89°48'38" EAST ALONG SAID NORTH LINE, A DISTANCE OF 50.02 FEET;
2) SOUTH 82°25'28" EAST, A DISTANCE OF 202.23 FEET TO A POINT OF NON-TANGENT CURVATURE;
3) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 139.86 FEET, SAID CURVE HAVING A RADIUS OF 1,085.00 FEET, A CENTRAL ANGLE OF 07°23'09", AND A CHORD WHICH BEARS SOUTH 86°07'04" EAST A CHORD DISTANCE OF 139.77 FEET;
4) SOUTH 89°48'38" EAST, A DISTANCE OF 1,975.05 FEET TO A POINT ON THE EAST LINE SAID SOUTHWEST QUARTER;
THENCE NORTH 00°02'50" EAST ALONG SAID EAST LINE, A DISTANCE OF 35.00 FEET TO THE **POINT OF BEGINNING**;

EXCEPTING THEREFROM THAT PARCEL DESCRIBED BY DEED RECORDED AT RECEPTION NO. 531604 IN THE RECORDS OF BOULDER COUNTY;

SAID PARCEL CONTAINS 16,949,252 SQUARE FEET OR 389.10 ACRES, MORE OR LESS;

HAS LAID OUT, SUBDIVIDED AND PLATTED SAID LAND AS PER DRAWING HEREON CONTAINED UNDER THE NAME AND STYLE OF **REDTAIL RIDGE FILING NO. 1**, A SUBDIVISION OF A PART OF THE CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, AND BY THESE PRESENTS DO HEREBY DEDICATE TO THE CITY OF LOUISVILLE AND THE PUBLIC, THE ACCESS, INGRESS-EGRESS AND FIRE LANE EASEMENTS, AND DOES FURTHER DEDICATE TO THE CITY THE EXCLUSIVE CITY OF LOUISVILLE UTILITY EASEMENTS AS SHOWN ON THE ACCOMPANYING PLAT FOR THE PROVISION OF CITY UTILITY LINES AND SERVICES, AND DOES FURTHER DEDICATE TO THE CITY OF LOUISVILLE THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE SO DESIGNATED AS EASEMENTS AND RIGHT-OF-WAYS FOR THE CONSTRUCTION, INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT FOR ALL SERVICES, INCLUDING WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, TELEPHONE AND ELECTRIC LINES, WORKS, POLES AND UNDERGROUND CABLES, GAS PIPELINES, WATER PIPELINES, SANITARY SEWER LINES, STREET LIGHTS, CULVERTS, HYDRANTS, DRAINAGE DITCHES AND DRAINS AND ALL APPURTENANCES THERETO, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY THE UNDERSIGNED THAT ALL EXPENSES AND COSTS INVOLVED IN CONSTRUCTING AND INSTALLING SANITARY SEWER SYSTEM WORKS AND LINES, GAS SERVICE LINES, ELECTRICAL SERVICE WORKS AND LINES, STORM SEWERS AND DRAINS, STREET LIGHTING, GRADING AND LANDSCAPING, CURBS, GUTTERS, STREET PAVEMENT, SIDEWALKS AND OTHER SUCH UTILITIES AND SERVICES SHALL BE GUARANTEED AND PAID FOR BY THE SUBDIVIDER OR ARRANGEMENTS MADE BY THE SUBDIVIDER THEREOF WHICH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO, AND SUCH SUMS SHALL NOT BE PAID BY THE CITY OF LOUISVILLE, COLORADO, PROVIDED, HOWEVER, THE SUBDIVIDER MAY BE ENTITLED TO REIMBURSEMENT OR FEE CREDITS AS SUCH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO AND THAT ANY ITEM SO CONSTRUCTED OR INSTALLED WHEN ACCEPTED BY THE CITY OF LOUISVILLE, COLORADO, SHALL BECOME THE SOLE PROPERTY OF SAID CITY OF LOUISVILLE, COLORADO, EXCEPT PRIVATE ROADWAY CURBS, GUTTER AND PAVEMENT AND ITEMS OWNED BY MUNICIPALLY FRANCHISED UTILITIES WHICH WHEN CONSTRUCTED OR INSTALLED, SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL NOT BECOME THE PROPERTY OF THE CITY OF LOUISVILLE, COLORADO.



VICINITY MAP
SCALE: 1" = 2,000'

NOTES:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY HARRIS KOCHER SMITH TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY AND TITLE OF RECORD, HARRIS KOCHER SMITH RELIED UPON COMMITMENT FOR TITLE INSURANCE, ORDER NO. ABD70601971.1-3 ISSUED BY LAND TITLE GUARANTEE COMPANY, AND HAVING AN EFFECTIVE DATE OF DECEMBER 20, 2021 AT 5:00 P.M.
2. NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE WEST LINE OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN ASSUMED AS BEARING SOUTH 00°06'41" EAST, SAID LINE BEING MONUMENTED AT THE NORTH QUARTER CORNER OF SAID SECTION BY A #6 REBAR WITH A 3.25" BRASS CAP STAMPED "1998 PLS 16401", AND BEING MONUMENTED AT THE CENTER QUARTER CORNER BY A #6 REBAR WITH A 2.5" ALUMINUM CAP 0.1' ABOVE GROUND STAMPED "DB&CO 2000 PLS 23529".
4. SUBJECT PROPERTY FALLS WITHIN ZONE X OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, MAP NO. 08013C0584K, DATED AUGUST 15, 2019. ZONE X IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2-PERCENT ANNUAL CHANCE FLOODPLAIN.
5. UPON AND AFTER RECORDATION OF THIS PLAT, THIS PLAT SHALL SUPERSEDE AND REPLACE ALL SUBDIVISION PLATS PREVIOUSLY FILED OF RECORD WITH RESPECT TO THE PROPERTY DESCRIBED IN THIS PLAT, INCLUDING BUT NOT LIMITED TO STORAGETEK BUILDING SIX SUBDIVISION RECORDED WITH THE BOULDER COUNTY CLERK AND RECORDER AT RECEPTION NO. 717095, WITH THE LEGAL EFFECT THAT ALL SUCH PREVIOUSLY RECORDED PLATS SHALL BE CONSIDERED VOID AND OF NO FURTHER LEGAL AFFECT AS APPLIED TO THE PROPERTY DESCRIBED IN THIS PLAT, AND THAT THE PROPERTY DESCRIBED IN THIS PLAT SHALL BE CONCLUSIVELY RELEASED FROM THE ENCUMBRANCE OF ALL SUCH RECORDED PLATS UPON AND AFTER RECORDATION OF THIS PLAT.
6. THE LINEAR UNITS FOR THIS SURVEY ARE U.S. SURVEY FEET.
7. THE SURVEYED PROPERTY IS SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED IN THE RECORDED DOCUMENTS IN THE TITLE COMMITMENT AS REFERENCED IN NOTE 1.
8. EXCLUSIVE CITY UTILITY EASEMENTS ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE, AS SHOWN ON THIS PLAT, SOLELY FOR THE PURPOSE OF CONSTRUCTING, MAINTAINING, REPAIRING, REPLACING, INSPECTING AND OPERATING WATER AND SANITARY SEWER MAINS AND STORM SEWER FACILITIES, TRANSMISSION, DISTRIBUTION AND SERVICE LINES AND APPURTENANCES, TOGETHER WITH A RIGHT OF ACCESS, ON, ALONG AND IN ALL OF THE EASEMENTS, AS MAY BE NECESSARY TO ACCOMPLISH THE INTENDED PURPOSES OF THE EASEMENT. THESE EASEMENTS SHALL BE EXCLUSIVE, HOWEVER UTILITIES MAY CROSS THE EXCLUSIVE EASEMENTS AT SUBSTANTIALLY 90 DEGREES. THE CITY SHALL MAINTAIN ALL WATER AND SANITARY SEWER IMPROVEMENTS INSTALLED IN THE EASEMENT IN GOOD AND WORKING CONDITION. NOTWITHSTANDING THE FOREGOING, THE UNDERLYING PROPERTY OWNER RETAINS THE RIGHT TO USE THE SURFACE OF THE AREAS WITHIN WHICH THE WATER AND SANITARY SEWER EASEMENTS ARE DEPICTED FOR PARKING LOTS, SIDEWALKS, ROADS, DRIVEWAYS AND DRIVE AISLES, CURBS, AND OTHER SIMILAR HARDSCAPE USES PROVIDED SUCH SIMILAR USES DO NOT MATERIALLY INTERFERE WITH THE CITY'S USE OF SUCH AREAS AS WATER AND SANITARY SEWER EASEMENTS.
9. A 2' WIDE SURFACE MAINTENANCE EASEMENT RUNNING PARALLEL TO ALL PUBLIC RIGHT-OF-WAY LINES FOR SORRELL DRIVE, CAMPUS DRIVE AND ROCKCRESS DRIVE AND EXTENDING INTO ANY ADJACENT PARCEL NOT BEING CONVEYED TO THE CITY OF LOUISVILLE ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE. SAID 2' SURFACE MAINTENANCE EASEMENTS ARE INTENDED TO ALLOW THE CITY OF LOUISVILLE ADEQUATE SPACE BEHIND ANY IMPROVEMENTS LOCATED WITHIN THE RIGHT-OF-WAY FOR ROUTINE MAINTENANCE AND REPAIRS BY THE CITY OF LOUISVILLE OR THEIR AUTHORIZED DESIGNEE.
10. THE CITY OF LOUISVILLE IS GRANTED A 10' SURFACE MAINTENANCE EASEMENT WHERE ACCESS IS REASONABLY AVAILABLE BEYOND THE EXCLUSIVE UTILITY EASEMENTS GRANTED TO THE CITY BY THIS PLAT. THE 10' MAINTENANCE ACCESS EASEMENT SHALL BE ALLOWED ON EITHER SIDE OF THE EXCLUSIVE UTILITY EASEMENT, OR 5' ON EACH SIDE OF THE EXCLUSIVE UTILITY EASEMENT, IN EITHER CASE THIS EASEMENT IS NOT MEANT TO RESTRICT BUILDING OR IMPROVEMENTS ALLOWED WITHIN THE PUD, BUT INSTEAD ALLOW ACCESS WHERE REASONABLY AVAILABLE ON SITE. MINIMUM SURFACE DISTURBANCE IS ALLOWED BY THE CITY'S USE WITHIN THIS EASEMENT.
11. THE FIELD WORK FOR THIS SURVEY WAS CONDUCTED ON FEBRUARY 28, 2019.

LEGEND

△	SET #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	**LOT X, BLOCK X** XXXX SF XX.XX AC	LOT NUMBER, BLOCK & AREA
⊙	FOUND MONUMENT AS DESCRIBED	**D.E.** =	DRAINAGE EASEMENT HEREBY GRANTED
◇	FOUND BARE #5 REBAR	E.C.U.E. =	EXCLUSIVE CITY UTILITY EASEMENT
△	FOUND #5 REBAR W/ ALUM. CAP PUNCHED THROUGH TOP	G.D.R.O.W. =	GOODHUE DITCH & RESERVOIR COMPANY R.O.W.
		D.U.E. =	DRY UTILITY EASEMENT HEREBY GRANTED
⊙	FOUND ILLEGIBLE 1.5" ALUM. CAP ON #5 REBAR	S.M.E. =	SURFACE MAINTENANCE EASEMENT HEREBY GRANTED
◈	FOUND 2.5" ALUM. CAP PLS 28657 ON #5 REBAR	R.O.W. =	RIGHT-OF-WAY
		CoL =	CITY OF LOUISVILLE
▲	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24961	CCOB =	CITY AND COUNTY OF BROOMFIELD
▲	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24942	CDOT =	COLORADO DEPARTMENT OF TRANSPORTATION
		NPPHA =	NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY
●	FOUND #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	PSCO =	PUBLIC SERVICE COMPANY OF COLORADO
◆	FOUND MAG NAIL W/ 1" BRASS TAG PLS 38162		PORTION OF EASEMENT TO BE VACATED BY SEPARATE INSTRUMENT
⊕	SECTION CORNER		LOUISVILLE CITY LIMITS

SHEET INDEX

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SHEET 2	KEY MAP/TRACT SUMMARY TABLE
SHEET 3	PLAT SHEET
SHEET 4	PLAT SHEET
SHEET 5	PLAT SHEET/EASEMENT DETAILS 'A' & 'B'
SHEET 6	PLAT SHEET
SHEET 7	PLAT SHEET/EASEMENT DETAIL 'C'
SHEET 8	EASEMENT DETAILS 'D' & 'E', LINE & CURVE TABLES

ISSUE DATE: 04-05-2021 | PROJECT #: 190108

DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

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PRELIMINARY PLAT OF

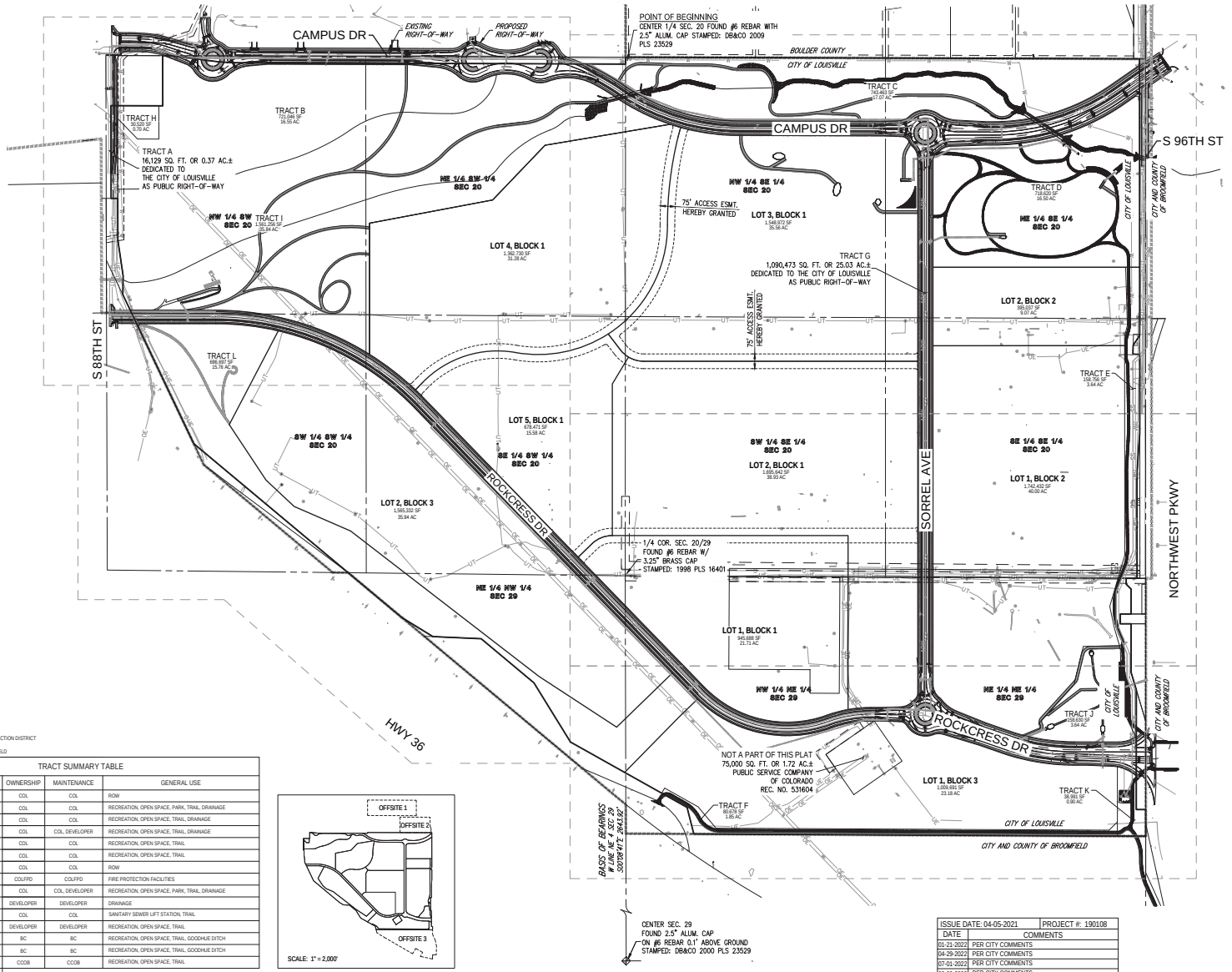
REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
KEY MAP/TRACT SUMMARY TABLE

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

LEGEND

- SECTION CORNER (DESCRIBED ON FOLLOWING SHEETS)
- LOT X, BLOCK X — XXXX SF, XX.XX AC — LOT NUMBER & AREA
- LOUISVILLE CITY LIMITS



ABBREVIATION LEGEND

COL	CITY OF LOUISVILLE
COLFPD	CITY OF LOUISVILLE FIRE PROTECTION DISTRICT
BC	BOULDER COUNTY
CCOB	CITY AND COUNTY OF BROOMFIELD

TRACT SUMMARY TABLE

TRACT	AREA (AC)	OWNERSHIP	MAINTENANCE	GENERAL USE
TRACT A	0.37	COL	COL	ROW
TRACT B	16.55	COL	COL	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT C	17.07	COL	COL	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT D	16.50	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT E	3.64	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT F	1.85	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT G	25.03	COL	COL	ROW
TRACT H	0.70	COLFPD	COLFPD	FIRE PROTECTION FACILITIES
TRACT I	35.84	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT J	3.64	DEVELOPER	DEVELOPER	DRAINAGE
TRACT K	0.90	COL	COL	SANITARY SEWER LIFT STATION, TRAIL
TRACT L	15.76	DEVELOPER	DEVELOPER	RECREATION, OPEN SPACE, TRAIL
OFFSITE 1	28.86	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 2	18.00	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 3	40.10	CCOB	CCOB	RECREATION, OPEN SPACE, TRAIL
TOTAL	224.82			

NOTE: OFFSITE 1 AND 2 OPEN SPACES TO BE DEEDED TO BOULDER COUNTY WITH CONSERVATION EASEMENTS DEDICATED TO COL. AND OFFSITE 3 TO BE DEEDED TO CCOB. SEE DETAIL TO RIGHT FOR OFFSITE LOCATIONS.

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

250 0 250 500
SCALE: 1" = 250'

PROJECT NUMBER: 190108

KEY MAP/TRACT SUMMARY TABLE - SHEET 2 OF 8

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

FILEPATH: P:\190108\ENGINEERING\CIVIL\MAP PLAT CIVIL LAYOUT SHT 2 OF 8.DWG | PLOTTED: 12/1/2023 2:44:27 PM | PLOTTED BY: MATTHEW.GRAY

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

PLAT SHEET

ISSUE DATE: 04-05-2021	PROJECT #: 190108
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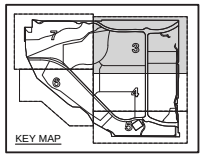
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS



PREPARED BY:
HARRIS KOCHER SMITH
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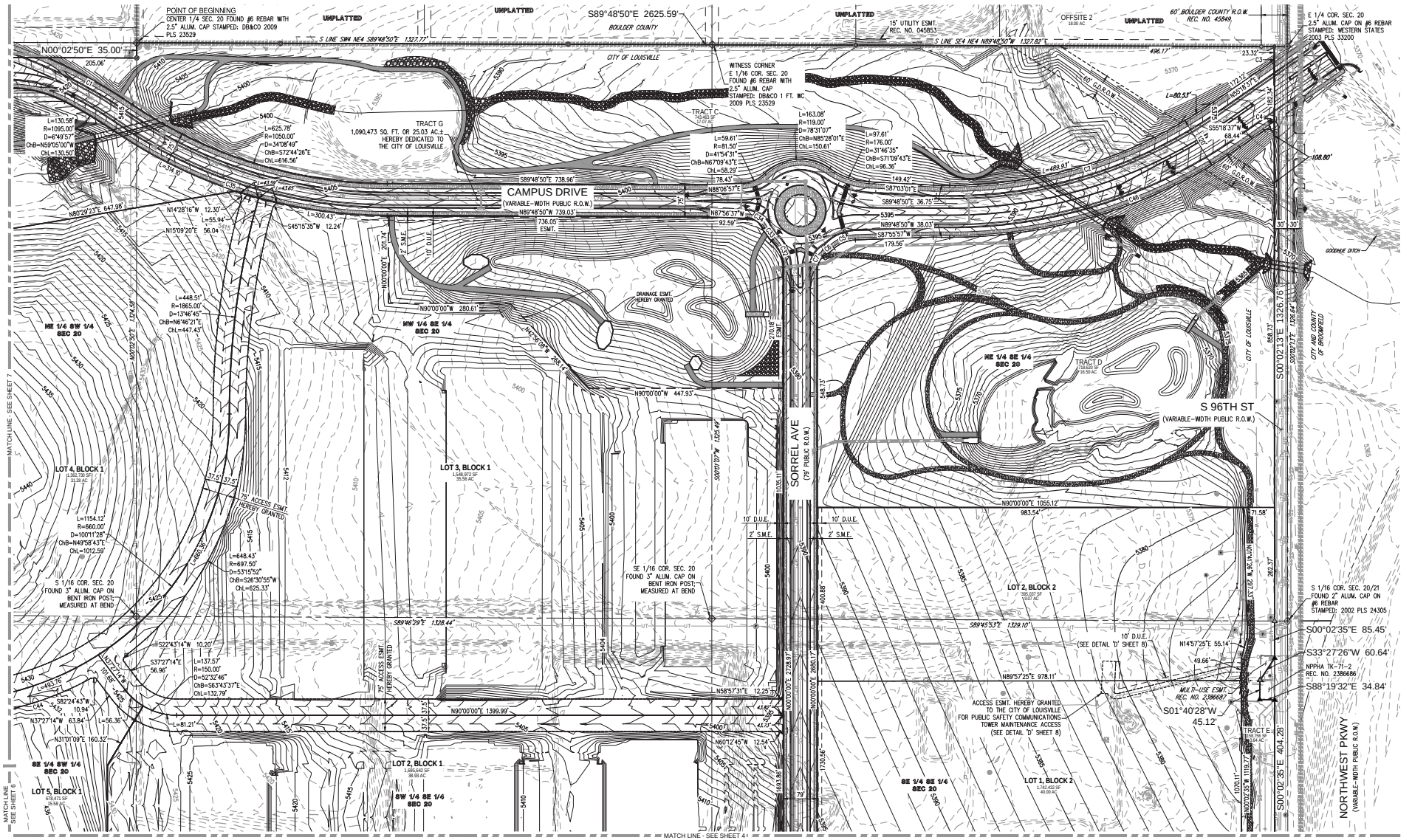
HarrisKocherSmith.com



NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

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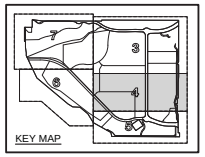
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



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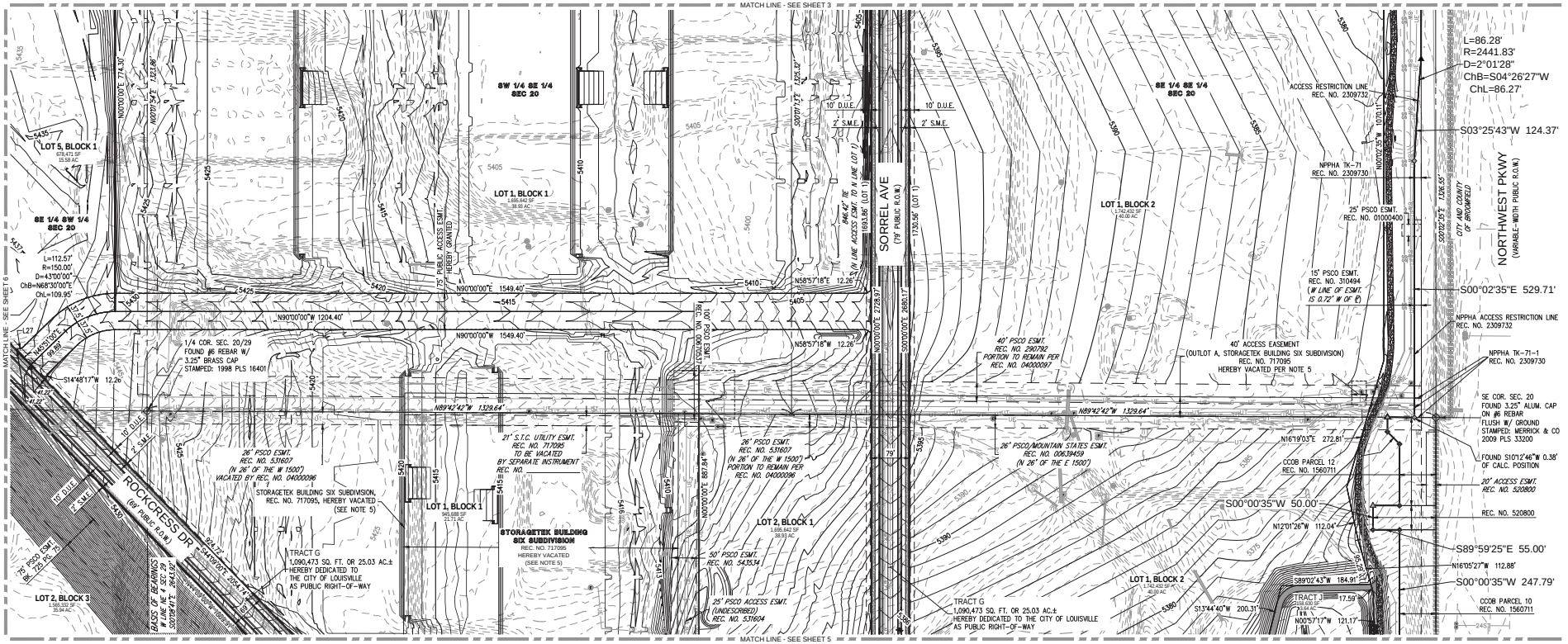

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07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

100 0 100 200
SCALE: 1" = 100'

PROJECT NUMBER: 190108

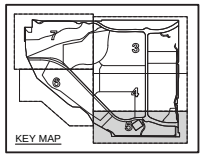
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

FILEPATH: R:\190108\ENGINEERING\CIVIL\MAP PLAT CIVIL LAYOUT SHT 4 OF 8.DWG | XrefsBound: 0 | Xrefs: 0 | Images: 0 | Plotted: 12/1/2023 8:44:58 AM | By: Nicholas Lindahl

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET/EASEMENT DETAILS 'A' & 'B'



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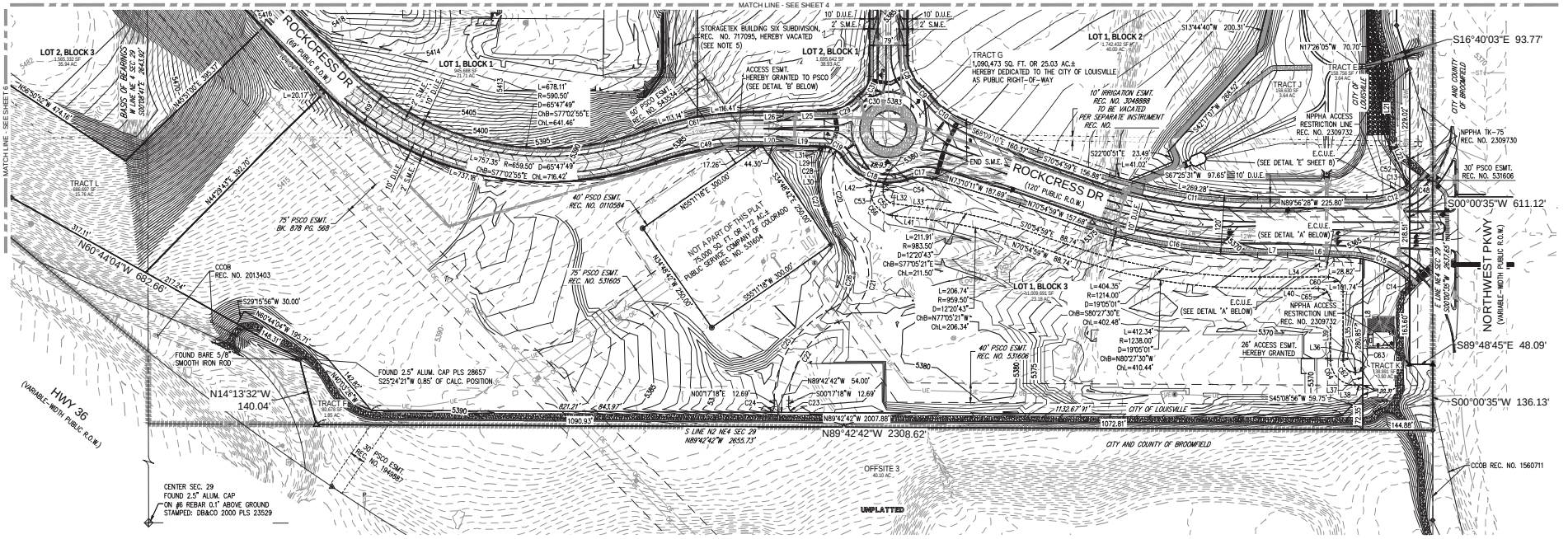
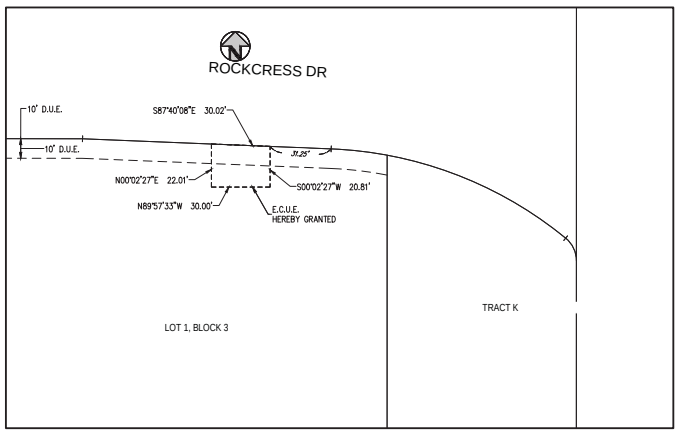
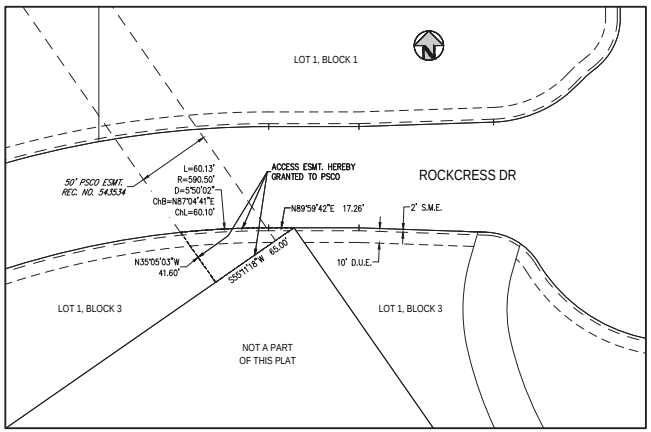




DETAIL 'A'
SCALE: 1" = 30'



DETAIL 'B'
SCALE: 1" = 40'

ISSUE DATE: 04-05-2021	PROJECT #: 190108
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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

100 0 100 200
SCALE: 1" = 100'

PROJECT NUMBER: 190108

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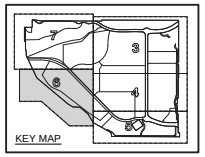
DATE: 12/01/2023 LAST SAVE BY: Xname6 PLOTTED: 12/01/2023

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



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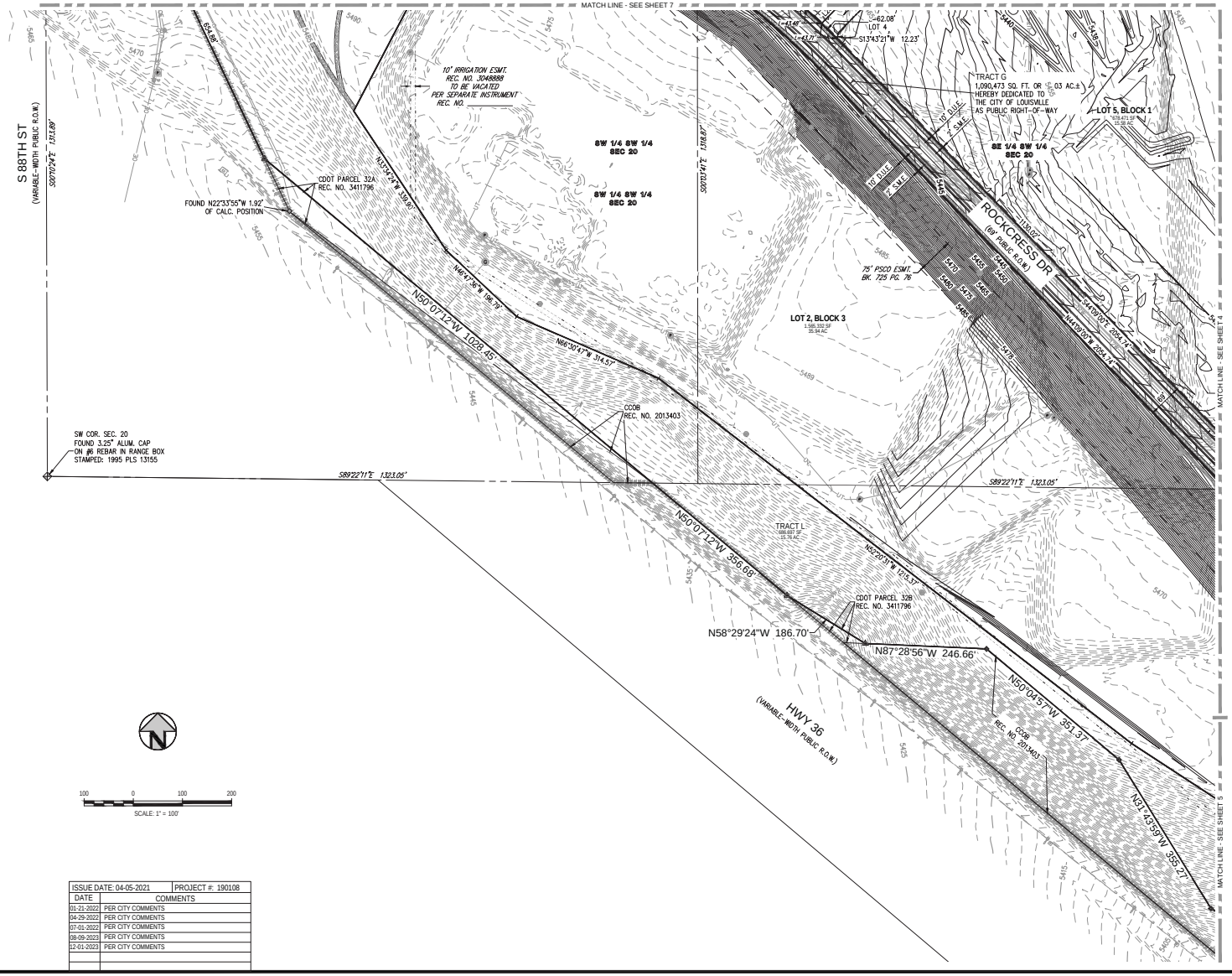
HarrisKocherSmith.com



ISSUE DATE: 04-05-2021	PROJECT #: 190108
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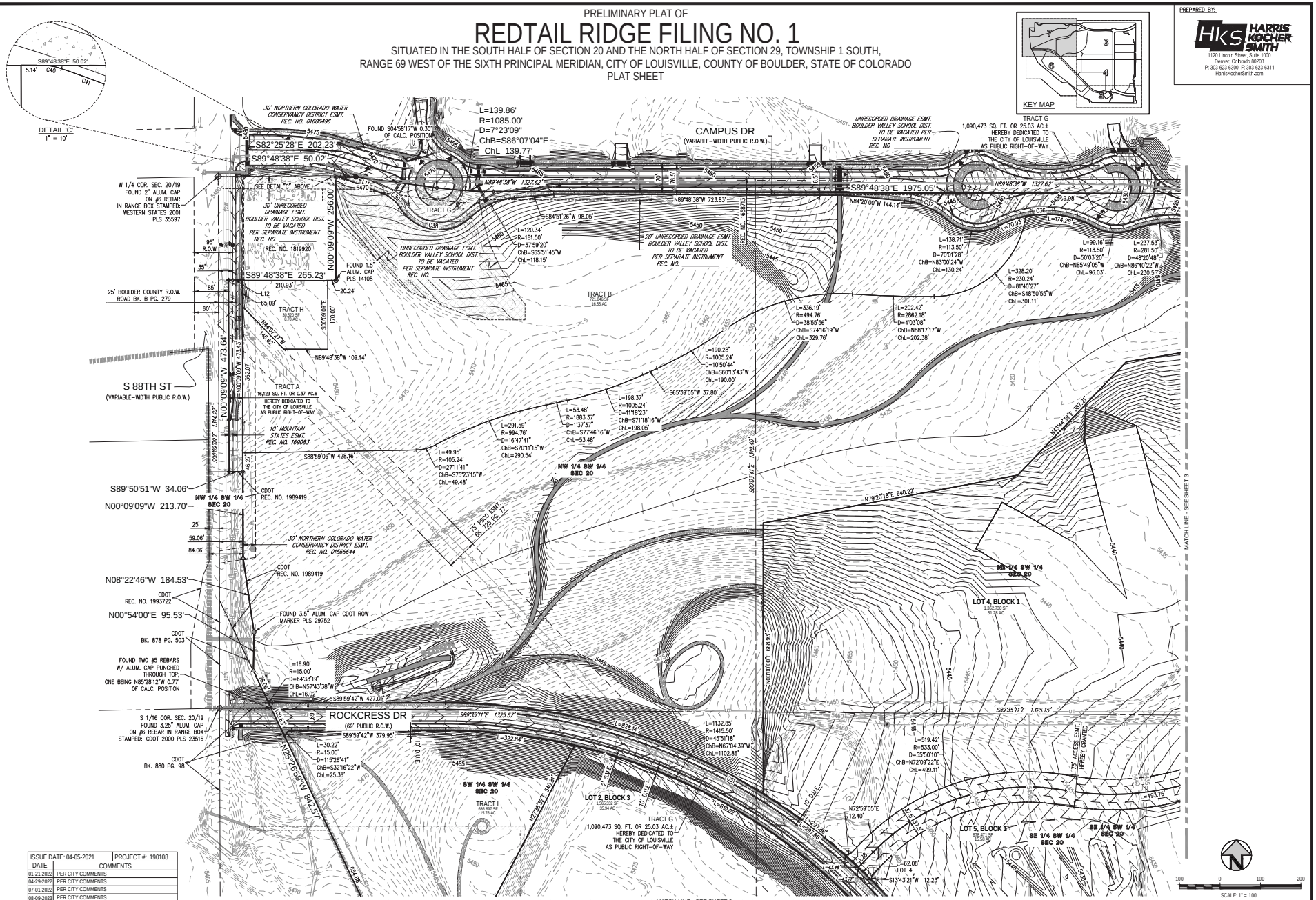
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



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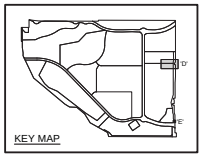
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

LINE & CURVE TABLES



PREPARED BY:
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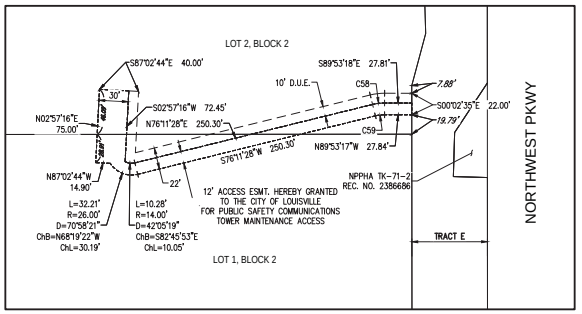
HarrisKocherSmith.com

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C1	1170.00'	10°53'44"	222.49'	S61°06'53"E	222.15'
C2	1050.00'	34°52'33"	639.13'	N72°44'53"E	629.31'
C3	15.00'	55°20'51"	14.49'	N27°38'12"E	13.93'
C4	15.00'	124°39'10"	32.63'	N62°21'48"W	26.57'
C5	78.00'	39°42'30"	54.06'	S68°04'42"W	52.98'
C6	117.00'	10°56'24"	22.34'	S53°41'39"W	22.31'
C7	42.00'	59°09'51"	43.37'	S29°34'56"W	41.47'
C8	83.50'	50°53'35"	74.17'	S25°26'48"E	71.75'
C9	111.50'	11°36'40"	22.60'	S45°05'15"E	22.56'
C10	184.50'	28°52'15"	92.97'	S53°43'03"E	91.99'
C11	1050.00'	16°55'55"	310.29'	S81°28'31"E	309.16'
C12	152.00'	32°23'48"	85.95'	N73°51'38"E	84.80'
C13	15.00'	18°12'58"	4.77'	N48°33'15"E	4.75'
C14	15.00'	50°38'48"	13.26'	N25°18'48"W	12.83'
C15	202.00'	37°01'56"	130.56'	N69°09'09"W	128.30'
C16	1170.00'	17°02'32"	348.01'	N81°25'12"W	346.72'
C17	83.50'	37°05'08"	54.05'	S88°17'15"W	53.11'
C18	111.50'	78°59'15"	153.71'	N70°45'42"W	141.83'
C19	43.50'	56°44'14"	43.08'	N59°38'11"W	41.34'
C20	192.00'	57°23'04"	192.30'	S12°30'46"E	184.36'
C21	110.00'	105°27'20"	202.46'	S11°31'22"W	175.07'
C22	182.00'	63°57'44"	203.18'	S32°16'10"W	192.79'
C23	12.00'	90°00'00"	18.85'	S44°42'42"E	16.97'
C24	12.00'	90°00'00"	18.85'	N45°17'18"E	16.97'
C25	212.00'	63°57'44"	236.67'	N32°16'10"E	224.57'
C26	80.00'	105°27'20"	147.24'	N11°31'22"E	127.32'
C27	222.00'	57°23'04"	222.34'	N12°30'46"W	213.17'
C28	43.50'	32°57'30"	25.02'	S71°31'33"E	24.68'
C29	83.50'	44°43'21"	65.18'	N65°43'56"E	63.53'
C30	93.50'	9°20'23"	15.24'	N48°02'27"E	15.22'
C31	43.50'	52°42'39"	40.02'	N26°21'19"E	38.62'
C32	83.50'	46°35'42"	67.91'	N23°17'51"W	66.05'
C33	95.50'	21°02'24"	35.07'	N36°04'30"W	34.87'
C34	41.50'	62°23'18"	45.19'	N56°44'58"W	42.99'
C35	1125.00'	34°08'49"	670.47'	N72°44'26"W	660.60'
C36	245.50'	57°13'43"	245.21'	N89°24'17"W	235.15'
C37	181.50'	36°20'19"	115.11'	N66°09'50"W	113.19'
C38	113.50'	101°55'25"	201.91'	N82°10'12"W	176.32'
C39	81.50'	37°38'17"	53.54'	N50°01'38"W	52.58'
C40	15.00'	18°48'26"	4.92'	N80°24'26"W	4.90'
C41	361.50'	2°09'26"	13.61'	N69°55'30"W	13.61'
C44	697.50'	39°13'50"	477.58'	S80°27'32"W	468.31'
C46	1170.00'	34°52'33"	712.18'	S72°44'53"W	701.23'
C48	15.00'	57°39'09"	15.09'	N28°50'10"E	14.46'
C49	590.50'	19°56'31"	205.53'	S80°01'26"W	204.49'
C51	1484.50'	45°51'18"	1188.07'	N67°04'39"W	1156.62'
C52	15.00'	39°26'11"	10.32'	N19°43'41"E	10.12'
C53	111.50'	14°21'58"	27.96'	S77°55'52"E	27.88'
C54	25.00'	18°32'04"	8.09'	S09°33'20"W	8.05'
C55	25.00'	83°33'00"	36.46'	S41°29'13"E	33.31'
C56	1170.00'	3°15'57"	66.69'	N58°21'14"E	66.68'
C57	1050.00'	3°44'50"	68.67'	S61°34'41"W	68.66'
C58	51.00'	13°55'15"	12.39'	N83°09'06"E	12.36'
C59	39.00'	13°55'15"	9.48'	S83°09'06"W	9.45'
C60	30.00'	90°00'00"	47.12'	S45°00'00"E	42.43'
C61	659.50'	19°56'31"	229.54'	S80°01'26"W	228.38'
C62	25.00'	90°00'00"	39.27'	S45°00'00"E	35.36'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C63	25.00'	36°22'20"	15.87'	N71°48'50"E	15.61'
C64	51.00'	90°00'00"	80.11'	N45°00'00"W	72.12'
C65	25.00'	90°00'00"	39.27'	N45°00'00"W	35.36'
C66	51.00'	83°33'00"	74.37'	N41°29'13"W	67.95'

LINE TABLE		
LINE	BEARING	LENGTH
L1	N89°42'42"W	55.73'
L2	S00°00'35"W	30.02'
L3	S44°51'26"E	35.44'
L4	S00°00'35"W	127.21'
L5	N89°59'25"W	55.00'
L6	N87°40'08"W	127.24'
L7	N89°56'28"W	61.81'
L8	N00°00'35"E	353.20'
L11	N68°50'46"W	102.75'
L12	S89°48'38"E	34.06'
L19	N88°00'18"W	86.72'
L20	S89°59'42"W	61.55'
L21	N00°00'35"E	144.24'
L22	N25°35'16"W	126.34'
L23	S57°30'42"E	123.02'
L24	N57°30'42"W	190.37'
L25	N88°05'36"E	91.79'
L26	N89°59'42"E	61.57'
L27	N76°54'28"E	12.25'
L28	N44°14'17"E	51.99'
L29	S88°00'18"E	5.51'
L30	S16°10'45"W	2.39'
L31	N16°10'45"E	2.03'
L32	S00°17'18"W	10.94'
L33	S83°15'43"E	70.23'
L34	N90°00'00"E	142.06'
L35	S00°00'00"E	142.43'
L36	N90°00'00"E	0.97'
L37	S00°00'35"W	30.88'
L38	N90°00'00"W	15.79'
L39	N00°00'00"E	123.44'
L40	N90°00'00"W	121.06'
L41	N83°15'43"W	70.46'
L42	N00°17'18"E	22.57'

DETAIL 'D'
SCALE: 1" = 60'



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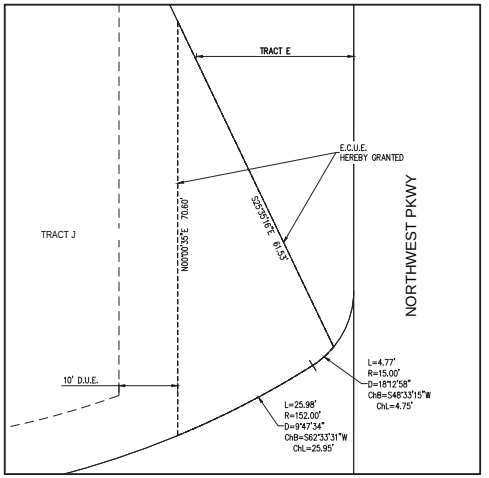
SCALE: 1" = 60'

DETAIL 'E'
SCALE: 1" = 10'



5 0 5 10
SCALE: 1" = 5'

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PROJECT NUMBER: 190108

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DATE: 12/01/2023 2:05:22 PM BY: KARL A. DUNN

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

COVER

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

LEGAL DESCRIPTION AND DEDICATION:

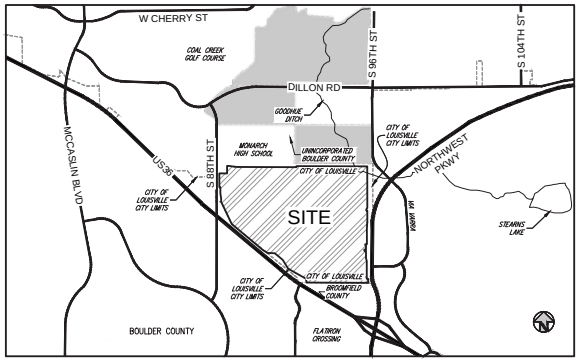
KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED BEING THE OWNERS OF A TRACT OF LAND SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE CENTER QUARTER CORNER OF SAID SECTION 20;
THENCE SOUTH 89°48'50" EAST ALONG THE NORTH LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 2,625.59 FEET;
THENCE SOUTH 00°02'13" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 1,326.76 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF SAID SOUTHEAST QUARTER;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF THE EAST LINE OF THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 20, A DISTANCE OF 85.45 FEET TO THE NORTH CORNER OF PARCEL TK-71-2 DESCRIBED AT RECEPTION NO. 2386686 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) SOUTH 33°27'26" WEST, A DISTANCE OF 60.64 FEET;
2) SOUTH 01°40'28" WEST, A DISTANCE OF 45.12 FEET;
3) SOUTH 88°19'32" EAST, A DISTANCE OF 34.84 FEET TO A POINT 30 FEET WEST OF SAID EAST LINE;
THENCE SOUTH 00°02'35" EAST ALONG A LINE PARALLEL WITH AND 30 FEET WEST OF SAID EAST LINE, A DISTANCE OF 404.28 FEET TO A POINT OF NON-TANGENT CURVATURE AT THE NORTH CORNER OF PARCEL TK-71 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 86.28 FEET, SAID CURVE HAVING A RADIUS OF 2,441.83 FEET, A CENTRAL ANGLE OF 02°01'28", AND A CHORD WHICH BEARS SOUTH 04°26'27" WEST A CHORD DISTANCE OF 86.27 FEET;
2) SOUTH 03°25'43" WEST, A DISTANCE OF 124.37 FEET;
3) SOUTH 00°02'35" EAST AND ALONG THE WEST LINE OF PARCEL TK-71-1 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY, A DISTANCE OF 529.71 FEET TO A POINT ON THE SOUTH LINE OF THE SAID SOUTHEAST QUARTER AND A POINT ON THE NORTH LINE OF PARCEL 12 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 12 THE FOLLOWING FOUR (4) COURSES:
1) NORTH 89°42'42" WEST, A DISTANCE OF 55.73 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 30.02 FEET;
3) SOUTH 44°53'28" EAST, A DISTANCE OF 35.44 FEET;
4) SOUTH 00°00'35" WEST, A DISTANCE OF 127.21 FEET TO A POINT ON THE NORTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 520800 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING THREE (3) COURSES:
1) NORTH 89°59'25" WEST, A DISTANCE OF 55.00 FEET;
2) SOUTH 00°00'35" WEST, A DISTANCE OF 50.00 FEET;
3) SOUTH 89°59'25" EAST, A DISTANCE OF 55.00 FEET TO THE NORTHWEST CORNER OF PARCEL 10 AS DESCRIBED AT RECEPTION NO. 1560711 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL 10 THE FOLLOWING TWO (2) COURSES:
1) SOUTH 00°00'35" WEST ALONG THE WEST LINE OF SAID PARCEL AND ALONG A LINE PARALLEL WITH AND 75 FEET WEST OF THE SAID EAST LINE, A DISTANCE OF 247.79 FEET;
2) SOUTH 16°40'03" EAST ALONG THE SOUTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 93.77 FEET TO THE NORTH CORNER OF PARCEL TK-75 DESCRIBED AT RECEPTION NO. 2309730 IN THE RECORDS OF BOULDER COUNTY;
THENCE SOUTH 00°00'35" WEST ALONG A LINE PARALLEL WITH THE EAST LINE OF SAID SECTION 29 AND ALONG THE WEST LINE OF SAID TK-75, A DISTANCE OF 611.12 FEET;
THENCE SOUTH 89°48'45" EAST ALONG THE SOUTH LINE OF SAID TK-75, A DISTANCE OF 48.09 FEET TO A POINT ON THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE SOUTH 00°00'35" WEST ALONG SAID EAST LINE, A DISTANCE OF 136.13 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SAID SECTION 29;
THENCE NORTH 89°42'42" WEST ALONG SAID SOUTH LINE, A DISTANCE OF 2,308.62 FEET TO A POINT ON THE NORTHEAST LINE OF THE LAND CONVEYED TO THE CITY OF BROOMFIELD BY GIFT DEED RECORDED AT RECEPTION NO. 2013403 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FIVE (5) COURSES:
1) NORTH 14°13'32" WEST, A DISTANCE OF 140.04 FEET;
2) NORTH 60°44'04" WEST, A DISTANCE OF 682.66 FEET;
3) NORTH 31°43'59" WEST, A DISTANCE OF 355.27 FEET;
4) NORTH 50°04'57" WEST, A DISTANCE OF 351.37 FEET;
5) NORTH 87°28'56" WEST, A DISTANCE OF 246.66 FEET TO THE EASTERN CORNER OF PARCEL 32B AS DESCRIBED BY SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 3411796 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 58°29'24" WEST ALONG THE NORTHEASTERLY LINE OF SAID PARCEL, A DISTANCE OF 186.70 FEET TO A POINT ON THE RIGHT-OF-WAY OF HIGHWAY 36;
THENCE NORTH 50°07'12" WEST ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 356.68 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20 AND THE SOUTH CORNER OF PARCEL 32A OF SAID SPECIAL WARRANTY DEED;
THENCE CONTINUING NORTH 50°07'12" WEST ALONG THE NORTHEAST LINE OF SAID PARCEL 32A, A DISTANCE OF 1,028.45 FEET TO A POINT ON THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 880, PAGE 98 IN THE RECORDS OF BOULDER COUNTY;
THENCE NORTH 25°26'59" WEST ALONG SAID EAST LINE AND ALONG THE EAST LINE OF THAT PARCEL DESCRIBED AT BOOK 878, PAGE 503, A DISTANCE OF 842.57 TO THE SOUTH CORNER OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1989419 IN THE RECORDS OF BOULDER COUNTY;
THENCE ALONG THE PERIMETER OF SAID PARCEL THE FOLLOWING FOUR (4) COURSES:
1) NORTH 00°54'00" EAST, A DISTANCE OF 95.53 FEET;
2) NORTH 08°22'46" WEST, A DISTANCE OF 184.53 FEET;
3) NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH THE WEST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20, A DISTANCE OF 213.70 FEET;
4) SOUTH 89°50'51" WEST, A DISTANCE OF 34.06 FEET TO A POINT 25.00 FEET EAST OF THE WEST LINE OF SAID SOUTHWEST QUARTER;
THENCE NORTH 00°09'09" WEST ALONG A LINE PARALLEL WITH AND 25 FEET FROM THE SAID WEST LINE, A DISTANCE OF 473.64 FEET TO A POINT ON THE SOUTH LINE OF THAT PARCEL DESCRIBED AT RECEPTION NO. 1819920 IN THE RECORDS OF BOULDER COUNTY EXTENDED WESTERLY;
THENCE SOUTH 89°48'38" EAST ALONG SAID SOUTH LINE AND SAID SOUTH LINE EXTENDED, A DISTANCE OF 265.23 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL;
THENCE NORTH 00°09'09" WEST ALONG THE EAST LINE OF SAID PARCEL, A DISTANCE OF 256.00 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF CAMPUS DRIVE AS DEDICATED BY LOUISVILLE CAMPUS RECORDED AT RECEPTION NO. 1669751;
THENCE ALONG SAID SOUTH LINE THE FOLLOWING FOUR (4) COURSES:
1) SOUTH 89°48'38" EAST ALONG SAID NORTH LINE, A DISTANCE OF 50.02 FEET;
2) SOUTH 82°25'28" EAST, A DISTANCE OF 202.23 FEET TO A POINT OF NON-TANGENT CURVATURE;
3) ALONG THE ARC OF SAID CURVE TO THE LEFT AN ARC LENGTH OF 139.86 FEET, SAID CURVE HAVING A RADIUS OF 1,085.00 FEET, A CENTRAL ANGLE OF 07°23'09", AND A CHORD WHICH BEARS SOUTH 86°07'04" EAST A CHORD DISTANCE OF 139.77 FEET;
4) SOUTH 89°48'38" EAST, A DISTANCE OF 1,975.05 FEET TO A POINT ON THE EAST LINE SAID SOUTHWEST QUARTER;
THENCE NORTH 00°02'50" EAST ALONG SAID EAST LINE, A DISTANCE OF 35.00 FEET TO THE **POINT OF BEGINNING**;

EXCEPTING THEREFROM THAT PARCEL DESCRIBED BY DEED RECORDED AT RECEPTION NO. 531604 IN THE RECORDS OF BOULDER COUNTY;

SAID PARCEL CONTAINS 16,949,252 SQUARE FEET OR 389.10 ACRES, MORE OR LESS;

HAS LAID OUT, SUBDIVIDED AND PLATTED SAID LAND AS PER DRAWING HEREON CONTAINED UNDER THE NAME AND STYLE OF REDTAIL RIDGE FILING NO. 1, A SUBDIVISION OF A PART OF THE CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO, AND BY THESE PRESENTS DO HEREBY DEDICATE TO THE CITY OF LOUISVILLE AND THE PUBLIC, THE ACCESS, INGRESS-EGRESS AND FIRE LANE EASEMENTS, AND DOES FURTHER DEDICATE TO THE CITY THE EXCLUSIVE CITY OF LOUISVILLE UTILITY EASEMENTS AS SHOWN ON THE ACCOMPANYING PLAT FOR THE PROVISION OF CITY UTILITY LINES AND SERVICES, AND DOES FURTHER DEDICATE TO THE CITY OF LOUISVILLE THOSE PORTIONS OF SAID REAL PROPERTY WHICH ARE SO DESIGNATED AS EASEMENTS AND RIGHT-OF-WAYS FOR THE CONSTRUCTION, INSTALLATION, OPERATION, MAINTENANCE, REPAIR AND REPLACEMENT FOR ALL SERVICES, INCLUDING WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, TELEPHONE AND ELECTRIC LINES, WORKS, POLES AND UNDERGROUND CABLES, GAS PIPELINES, WATER PIPELINES, SANITARY SEWER LINES, STREET LIGHTS, CULVERTS, HYDRANTS, DRAINAGE DITCHES AND DRAINS AND ALL APPURTENANCES THERETO, IT BEING EXPRESSLY UNDERSTOOD AND AGREED BY THE UNDERSIGNED THAT ALL EXPENSES AND COSTS INVOLVED IN CONSTRUCTING AND INSTALLING SANITARY SEWER SYSTEM WORKS AND LINES, GAS SERVICE LINES, ELECTRICAL SERVICE WORKS AND LINES, STORM SEWERS AND DRAINS, STREET LIGHTING, GRADING AND LANDSCAPING, CURBS, GUTTERS, STREET PAVEMENT, SIDEWALKS AND OTHER SUCH UTILITIES AND SERVICES SHALL BE GUARANTEED AND PAID FOR BY THE SUBDIVIDER OR ARRANGEMENTS MADE BY THE SUBDIVIDER THEREOF WHICH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO, AND SUCH SUMS SHALL NOT BE PAID BY THE CITY OF LOUISVILLE, COLORADO, PROVIDED, HOWEVER, THE SUBDIVIDER MAY BE ENTITLED TO REIMBURSEMENT OR FEE CREDITS AS SUCH ARE APPROVED BY THE CITY OF LOUISVILLE, COLORADO AND THAT ANY ITEM SO CONSTRUCTED OR INSTALLED WHEN ACCEPTED BY THE CITY OF LOUISVILLE, COLORADO, SHALL BECOME THE SOLE PROPERTY OF SAID CITY OF LOUISVILLE, COLORADO, EXCEPT PRIVATE ROADWAY CURBS, GUTTER AND PAVEMENT AND ITEMS OWNED BY MUNICIPALLY FRANCHISED UTILITIES WHICH WHEN CONSTRUCTED OR INSTALLED, SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL NOT BECOME THE PROPERTY OF THE CITY OF LOUISVILLE, COLORADO.



VICINITY MAP
SCALE: 1" = 2,000'

NOTES:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY HARRIS KOCHER SMITH TO DETERMINE OWNERSHIP OR EASEMENTS OF RECORD. FOR ALL INFORMATION REGARDING EASEMENTS, RIGHTS-OF-WAY AND TITLE OF RECORD, HARRIS KOCHER SMITH RELIED UPON COMMITMENT FOR TITLE INSURANCE, ORDER NO. ABD70601971.1-3 ISSUED BY LAND TITLE GUARANTEE COMPANY, AND HAVING AN EFFECTIVE DATE OF DECEMBER 20, 2021 AT 5:00 P.M.
2. NOTICE: ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.
3. BASIS OF BEARINGS: BEARINGS ARE BASED ON THE WEST LINE OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN ASSUMED AS BEARING SOUTH 00°06'41" EAST, SAID LINE BEING MONUMENTED AT THE NORTH QUARTER CORNER OF SAID SECTION BY A #6 REBAR WITH A 3.25" BRASS CAP STAMPED "1998 PLS 16401", AND BEING MONUMENTED AT THE CENTER QUARTER CORNER BY A #6 REBAR WITH A 2.5" ALUMINUM CAP 0.1' ABOVE GROUND STAMPED "DB&CO 2000 PLS 23529".
4. SUBJECT PROPERTY FALLS WITHIN ZONE X OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP, MAP NO. 08013C0584K, DATED AUGUST 15, 2019. ZONE X IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2-PERCENT ANNUAL CHANCE FLOODPLAIN.
5. UPON AND AFTER RECORDATION OF THIS PLAT, THIS PLAT SHALL SUPERSEDE AND REPLACE ALL SUBDIVISION PLATS PREVIOUSLY FILED OF RECORD WITH RESPECT TO THE PROPERTY DESCRIBED IN THIS PLAT, INCLUDING BUT NOT LIMITED TO STORAGETEK BUILDING SIX SUBDIVISION RECORDED WITH THE BOULDER COUNTY CLERK AND RECORDER AT RECEPTION NO. 717095, WITH THE LEGAL EFFECT THAT ALL SUCH PREVIOUSLY RECORDED PLATS SHALL BE CONSIDERED VOID AND OF NO FURTHER LEGAL AFFECT AS APPLIED TO THE PROPERTY DESCRIBED IN THIS PLAT, AND THAT THE PROPERTY DESCRIBED IN THIS PLAT SHALL BE CONCLUSIVELY RELEASED FROM THE ENCUMBRANCE OF ALL SUCH RECORDED PLATS UPON AND AFTER RECORDATION OF THIS PLAT.
6. THE LINEAR UNITS FOR THIS SURVEY ARE U.S. SURVEY FEET.
7. THE SURVEYED PROPERTY IS SUBJECT TO THE TERMS, PROVISIONS, COVENANTS, CONDITIONS, RESTRICTIONS, OBLIGATIONS AND RESERVATIONS CONTAINED IN THE RECORDED DOCUMENTS IN THE TITLE COMMITMENT AS REFERENCED IN NOTE 1.
8. EXCLUSIVE CITY UTILITY EASEMENTS ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE, AS SHOWN ON THIS PLAT, SOLELY FOR THE PURPOSE OF CONSTRUCTING, MAINTAINING, REPAIRING, REPLACING, INSPECTING AND OPERATING WATER AND SANITARY SEWER MAINS AND STORM SEWER FACILITIES, TRANSMISSION, DISTRIBUTION AND SERVICE LINES AND APPURTENANCES, TOGETHER WITH A RIGHT OF ACCESS, ON, ALONG AND IN ALL OF THE EASEMENTS, AS MAY BE NECESSARY TO ACCOMPLISH THE INTENDED PURPOSES OF THE EASEMENT. THESE EASEMENTS SHALL BE EXCLUSIVE, HOWEVER UTILITIES MAY CROSS THE EXCLUSIVE EASEMENTS AT SUBSTANTIALLY 90 DEGREES. THE CITY SHALL MAINTAIN ALL WATER AND SANITARY SEWER IMPROVEMENTS INSTALLED IN THE EASEMENT IN GOOD AND WORKING CONDITION. NOTWITHSTANDING THE FOREGOING, THE UNDERLYING PROPERTY OWNER RETAINS THE RIGHT TO USE THE SURFACE OF THE AREAS WITHIN WHICH THE WATER AND SANITARY SEWER EASEMENTS ARE DEPICTED FOR PARKING LOTS, SIDEWALKS, ROADS, DRIVEWAYS AND DRIVE AISLES, CURBS, AND OTHER SIMILAR HARDSCAPE USES PROVIDED SUCH SIMILAR USES DO NOT MATERIALLY INTERFERE WITH THE CITY'S USE OF SUCH AREAS AS WATER AND SANITARY SEWER EASEMENTS.
9. A 2' WIDE SURFACE MAINTENANCE EASEMENT RUNNING PARALLEL TO ALL PUBLIC RIGHT-OF-WAY LINES FOR SORRELL DRIVE, CAMPUS DRIVE AND ROCKCROSS DRIVE AND EXTENDING INTO ANY ADJACENT PARCEL NOT BEING CONVEYED TO THE CITY OF LOUISVILLE ARE HEREBY GRANTED TO THE CITY OF LOUISVILLE. SAID 2' SURFACE MAINTENANCE EASEMENTS ARE INTENDED TO ALLOW THE CITY OF LOUISVILLE ADEQUATE SPACE BEHIND ANY IMPROVEMENTS LOCATED WITHIN THE RIGHT-OF-WAY FOR ROUTINE MAINTENANCE AND REPAIRS BY THE CITY OF LOUISVILLE OR THEIR AUTHORIZED DESIGNEE.
10. THE CITY OF LOUISVILLE IS GRANTED A 10' SURFACE MAINTENANCE EASEMENT WHERE ACCESS IS REASONABLY AVAILABLE BEYOND THE EXCLUSIVE UTILITY EASEMENTS GRANTED TO THE CITY BY THIS PLAT. THE 10' MAINTENANCE ACCESS EASEMENT SHALL BE ALLOWED ON EITHER SIDE OF THE EXCLUSIVE UTILITY EASEMENT, OR 5' ON EACH SIDE OF THE EXCLUSIVE UTILITY EASEMENT, IN EITHER CASE THIS EASEMENT IS NOT MEANT TO RESTRICT BUILDING OR IMPROVEMENTS ALLOWED WITHIN THE PUD, BUT INSTEAD ALLOW ACCESS WHERE REASONABLY AVAILABLE ON SITE. MINIMUM SURFACE DISTURBANCE IS ALLOWED BY THE CITY'S USE WITHIN THIS EASEMENT.
11. THE FIELD WORK FOR THIS SURVEY WAS CONDUCTED ON FEBRUARY 28, 2019.

LEGEND

△	SET #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	**LOT X, BLOCK X** XXXX SF XX.XX AC	LOT NUMBER, BLOCK & AREA
⊙	FOUND MONUMENT AS DESCRIBED	**D.E.** =	DRAINAGE EASEMENT HEREBY GRANTED
◇	FOUND BARE #5 REBAR	E.C.U.E. =	EXCLUSIVE CITY UTILITY EASEMENT
△	FOUND #5 REBAR W/ ALUM. CAP PUNCHED THROUGH TOP	G.D.R.O.W. =	GOODHUE DITCH & RESERVOIR COMPANY R.O.W.
		D.U.E. =	DRY UTILITY EASEMENT HEREBY GRANTED
⊙	FOUND ILLEGIBLE 1.5" ALUM. CAP ON #5 REBAR	S.M.E. =	SURFACE MAINTENANCE EASEMENT HEREBY GRANTED
◈	FOUND 2.5" ALUM. CAP PLS 28657 ON #5 REBAR	R.O.W. =	RIGHT-OF-WAY
		CoL =	CITY OF LOUISVILLE
▲	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24961	CCOB =	CITY AND COUNTY OF BROOMFIELD
▲	FOUND 3.5" ALUM. CAP CDOT ROW MARKER ON #6 REBAR PLS 24942	CDOT =	COLORADO DEPARTMENT OF TRANSPORTATION
		NPPHA =	NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY
●	FOUND #5 REBAR W/ 1.25" BLUE PLASTIC CAP PLS 38162	PSCO =	PUBLIC SERVICE COMPANY OF COLORADO
◆	FOUND MAG NAIL W/ 1" BRASS TAG PLS 38162		PORTION OF EASEMENT TO BE VACATED BY SEPARATE INSTRUMENT
⊕	SECTION CORNER	//////////////	LOUISVILLE CITY LIMITS

SHEET INDEX

SHEET 1	COVER
SHEET 2	KEY MAP/TRACT SUMMARY TABLE
SHEET 3	PLAT SHEET
SHEET 4	PLAT SHEET
SHEET 5	PLAT SHEET/EASEMENT DETAILS 'A' & 'B'
SHEET 6	PLAT SHEET
SHEET 7	PLAT SHEET/EASEMENT DETAIL 'C'
SHEET 8	EASEMENT DETAILS 'D' & 'E', LINE & CURVE TABLES

ISSUE DATE: 04-05-2021	PROJECT #: 190108
DATE	COMMENTS
01-21-2022	PER CITY COMMENTS
04-29-2022	PER CITY COMMENTS
07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

PROJECT NUMBER: 190108

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

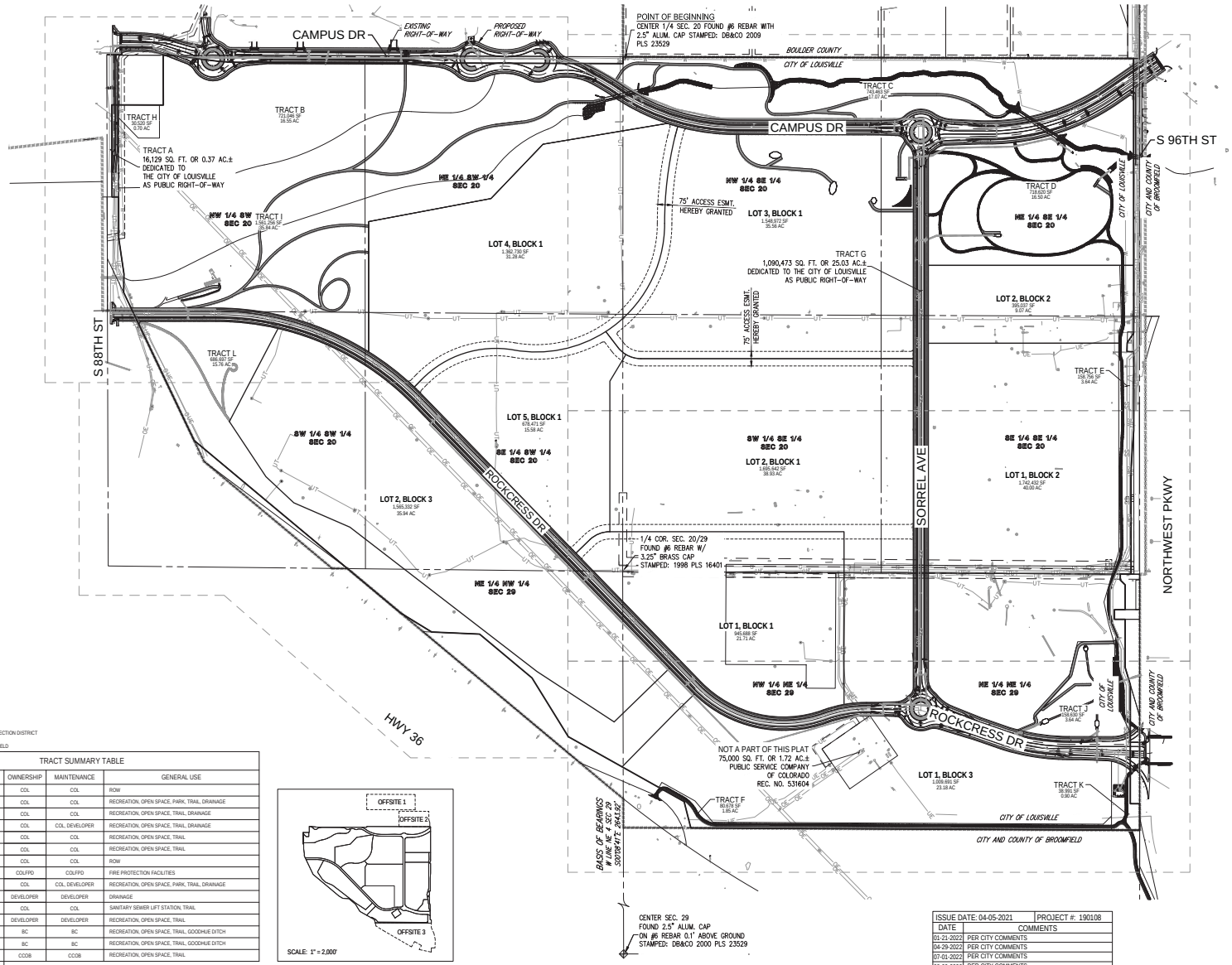
SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
KEY MAP/TRACT SUMMARY TABLE

PREPARED BY:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303-623-6300 F: 303-623-6311
HarrisKocherSmith.com

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

LEGEND

- SECTION CORNER (DESCRIBED ON FOLLOWING SHEETS)
- LOT X, BLOCK X / XXXX SF / XX.XX AC — LOT NUMBER & AREA
- LOUISVILLE CITY LIMITS



ABBREVIATION LEGEND

COL	CITY OF LOUISVILLE
COLFPD	CITY OF LOUISVILLE FIRE PROTECTION DISTRICT
BC	BOULDER COUNTY
CCOB	CITY AND COUNTY OF BROOMFIELD

TRACT SUMMARY TABLE

TRACT	AREA (AC)	OWNERSHIP	MAINTENANCE	GENERAL USE
TRACT A	0.37	COL	COL	ROW
TRACT B	16.55	COL	COL	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT C	17.07	COL	COL	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT D	16.50	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, TRAIL, DRAINAGE
TRACT E	3.64	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT F	1.85	COL	COL	RECREATION, OPEN SPACE, TRAIL
TRACT G	25.03	COL	COL	ROW
TRACT H	0.70	COLFPD	COLFPD	FIRE PROTECTION FACILITIES
TRACT I	35.84	COL	COL, DEVELOPER	RECREATION, OPEN SPACE, PARK, TRAIL, DRAINAGE
TRACT J	3.64	DEVELOPER	DEVELOPER	DRAINAGE
TRACT K	0.90	COL	COL	SANITARY SEWER LIFT STATION, TRAIL
TRACT L	15.76	DEVELOPER	DEVELOPER	RECREATION, OPEN SPACE, TRAIL
OFFSITE 1	28.86	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 2	18.00	BC	BC	RECREATION, OPEN SPACE, TRAIL, GOODHUE DITCH
OFFSITE 3	40.10	CCOB	CCOB	RECREATION, OPEN SPACE, TRAIL
TOTAL	224.82			

NOTE: OFFSITE 1 AND 2 OPEN SPACES TO BE DEEDED TO BOULDER COUNTY WITH CONSERVATION EASEMENTS DEDICATED TO COL. AND OFFSITE 3 TO BE DEEDED TO CCOB. SEE DETAIL TO RIGHT FOR OFFSITE LOCATIONS.

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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

250 0 250 500
SCALE: 1" = 250'

PROJECT NUMBER: 190108

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO

PLAT SHEET

ISSUE DATE: 04-05-2021	PROJECT #: 190108
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07-01-2022	PER CITY COMMENTS
08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

KEY MAP

PREPARED BY:
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Denver, Colorado 80203
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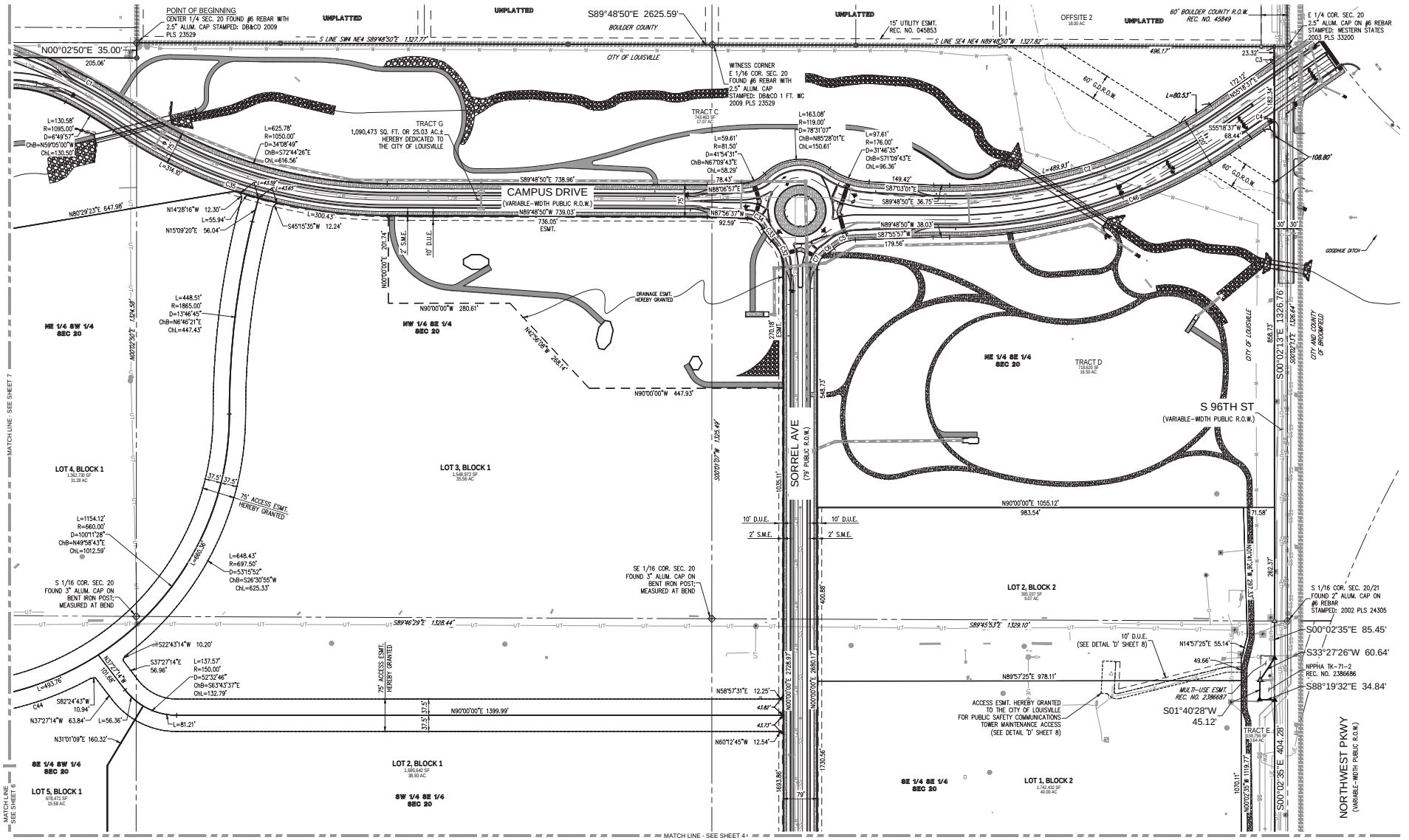

SCALE: 1" = 100'

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

PROJECT NUMBER: 190108

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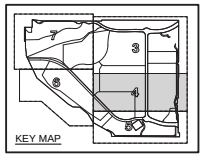
PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET



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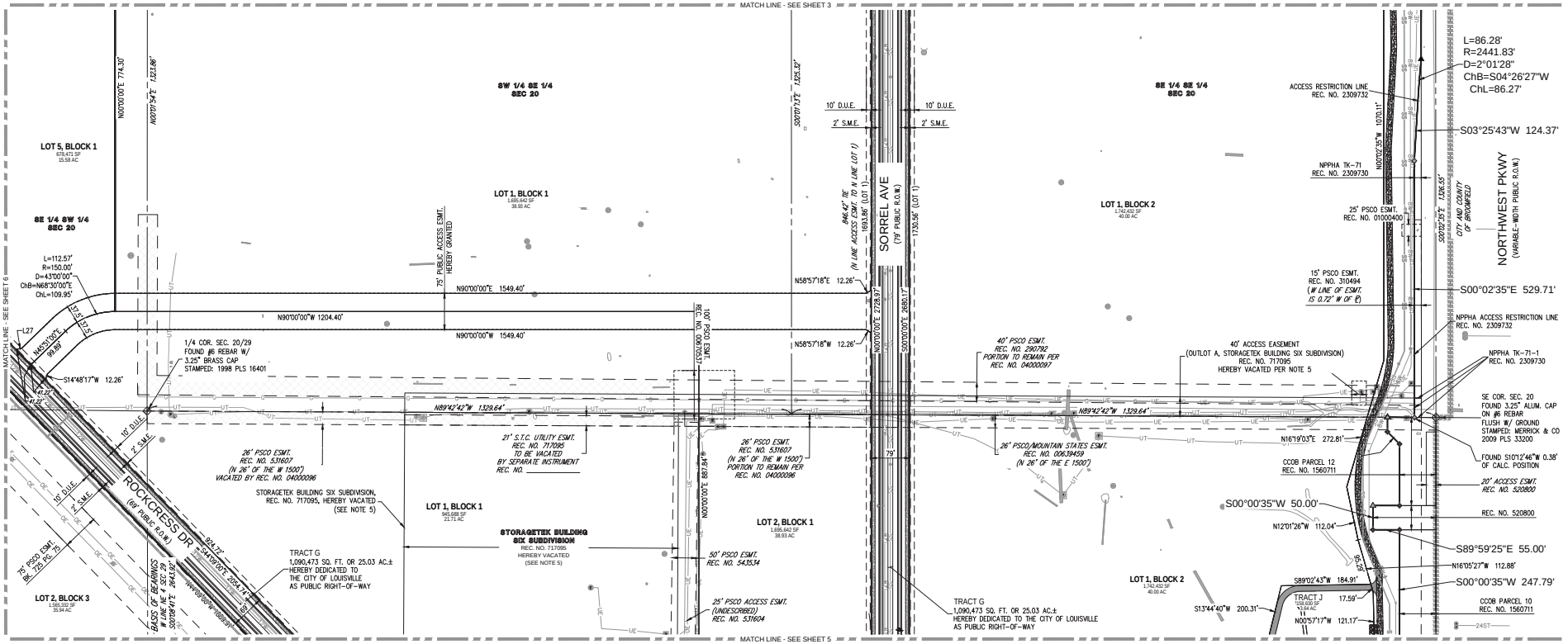

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08-09-2023	PER CITY COMMENTS
12-01-2023	PER CITY COMMENTS

SCALE: 1" = 100'

PROJECT NUMBER: 190108

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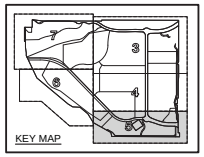
DATE: 12/1/2023 11:44:52 AM | USER: JHeidt | XREF: ..\..\..\

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
RANGE 69 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY OF LOUISVILLE, COUNTY OF BOULDER, STATE OF COLORADO
PLAT SHEET/EASEMENT DETAILS 'A' & 'B'



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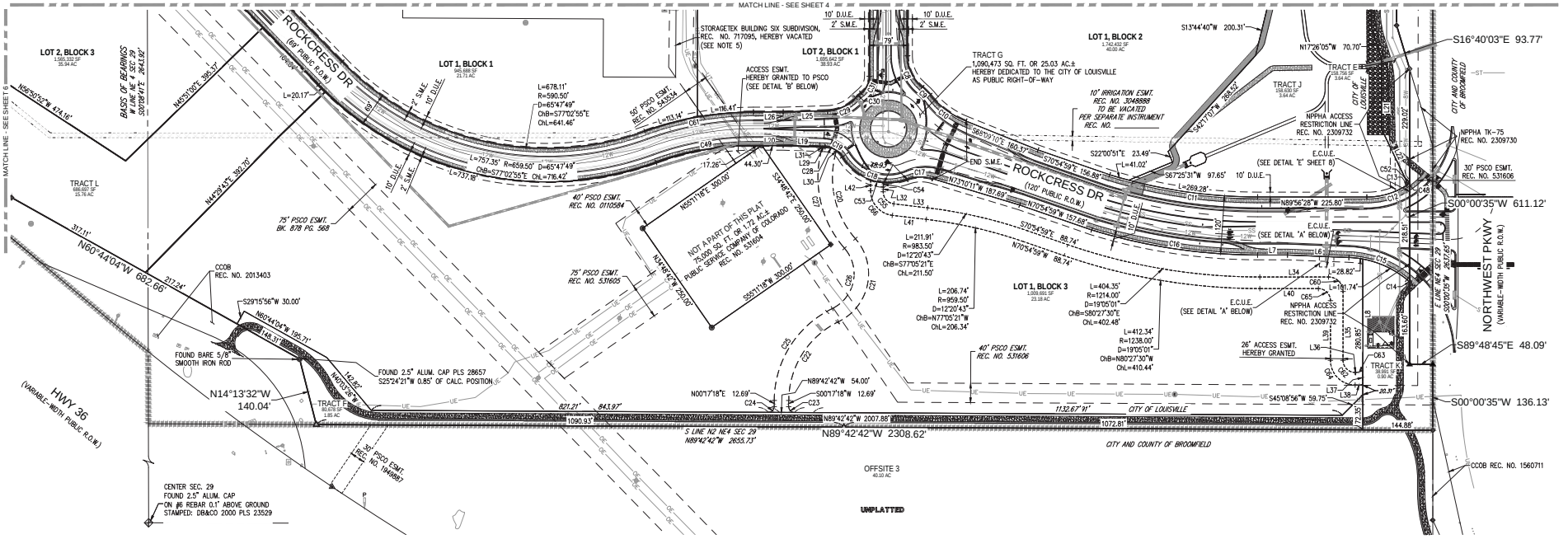

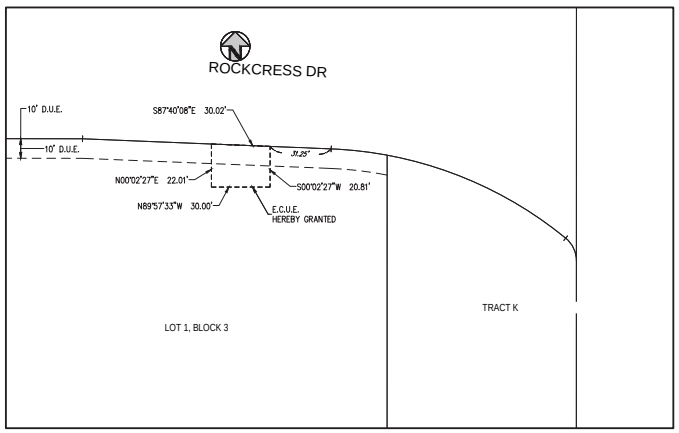

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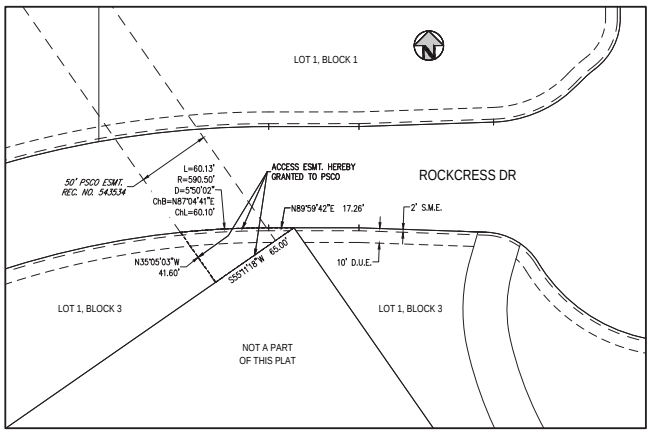

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SCALE: 1" = 100'

PROJECT NUMBER: 190108

PRELIMINARY PLAT OF

REDTAIL RIDGE FILING NO. 1

SITUATED IN THE SOUTH HALF OF SECTION 20 AND THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH,
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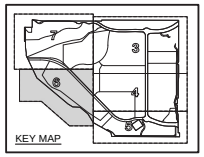
PLAT SHEET



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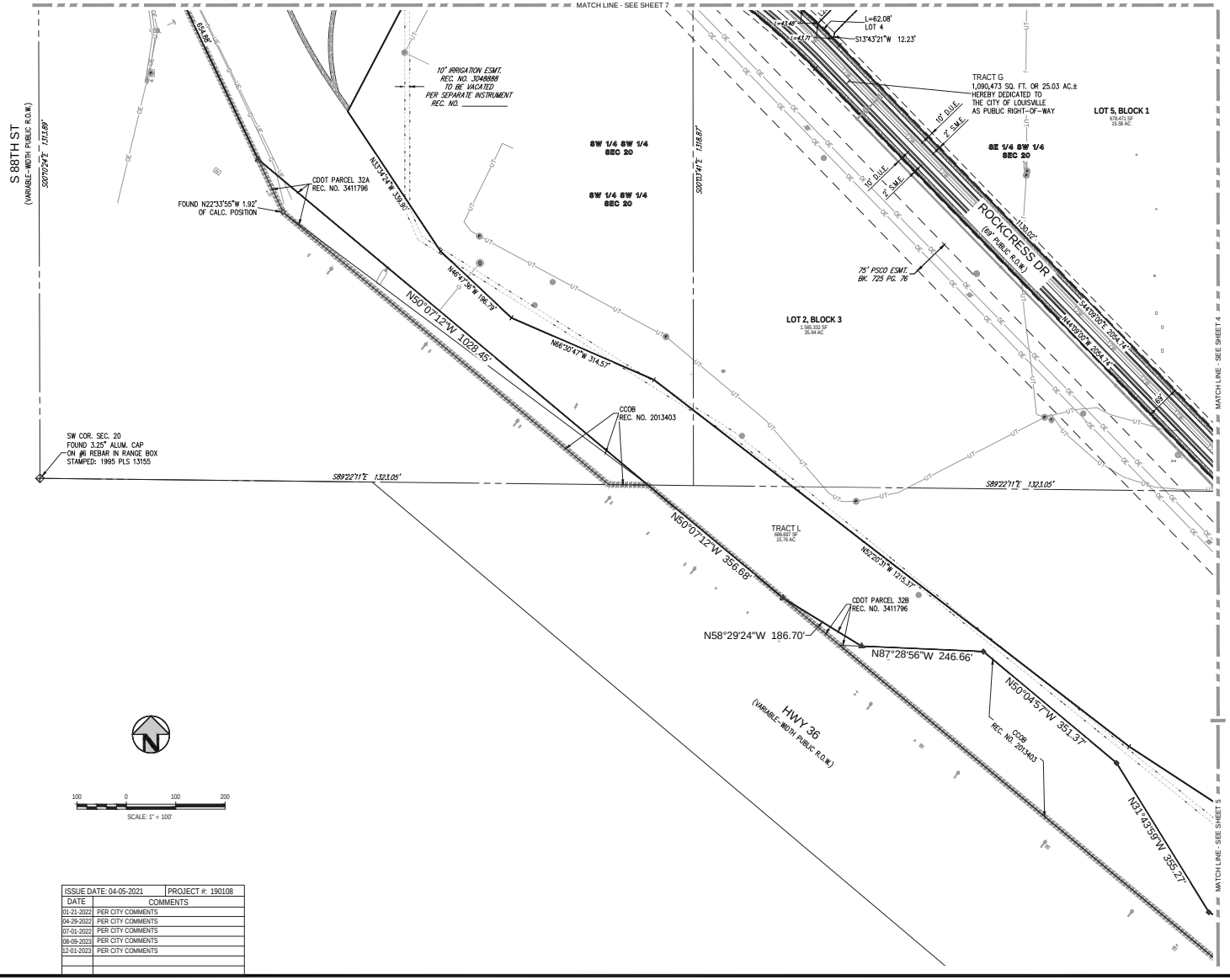

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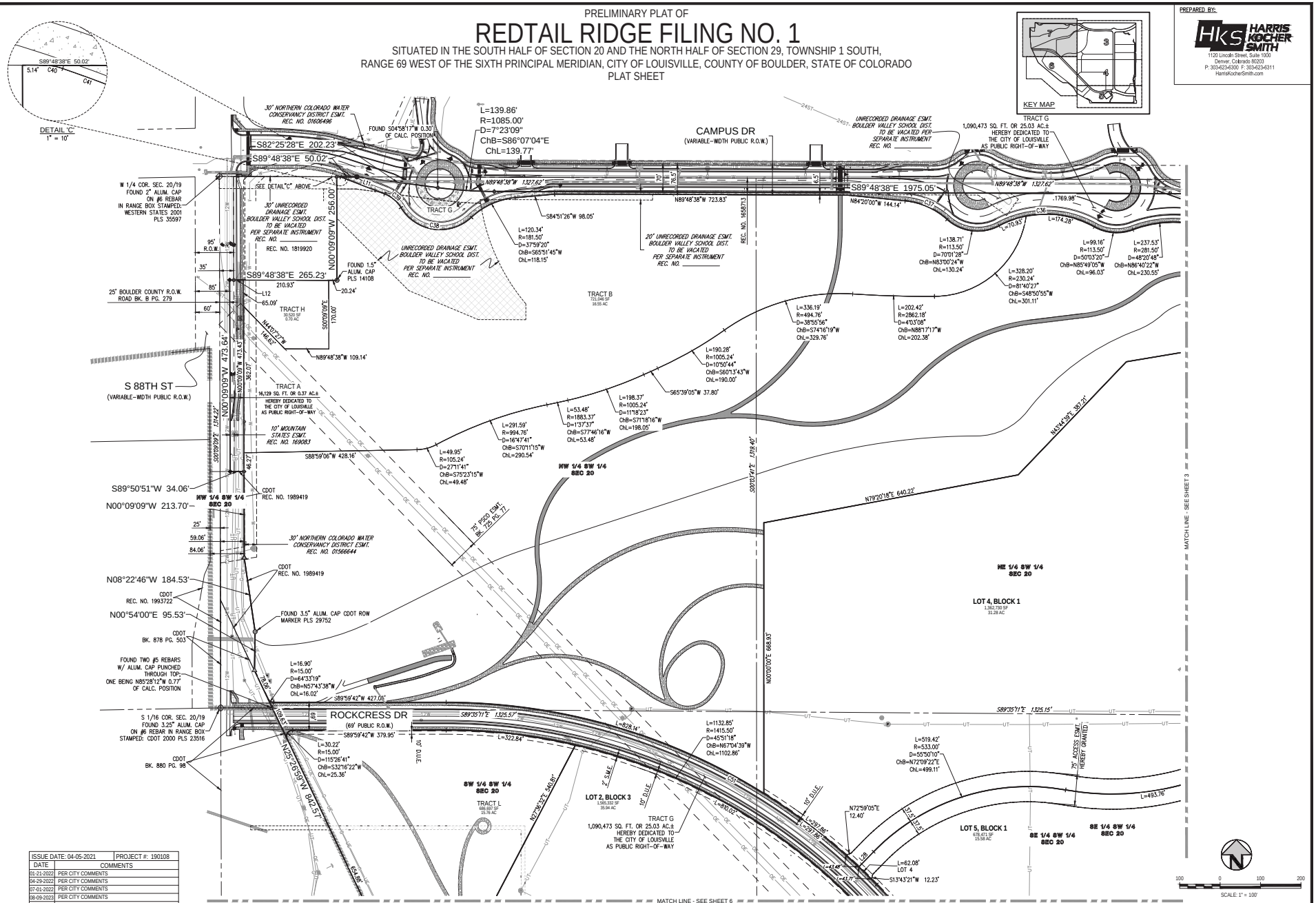

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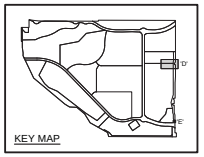
LINE & CURVE TABLES



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CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C1	1170.00'	10°53'44"	222.49'	S61°06'53"E	222.15'
C2	1050.00'	34°52'33"	639.13'	N72°44'53"E	629.31'
C3	15.00'	55°20'51"	14.49'	N27°38'12"E	13.93'
C4	15.00'	124°39'10"	32.63'	N62°21'48"W	26.57'
C5	78.00'	39°42'30"	54.06'	S68°04'42"W	52.98'
C6	117.00'	10°56'24"	22.34'	S53°41'39"W	22.31'
C7	42.00'	59°09'51"	43.37'	S29°34'56"W	41.47'
C8	83.50'	50°53'35"	74.17'	S25°26'48"E	71.75'
C9	111.50'	11°36'40"	22.60'	S45°05'15"E	22.56'
C10	184.50'	28°52'15"	92.97'	S53°43'03"E	91.99'
C11	1050.00'	16°55'55"	310.29'	S81°28'31"E	309.16'
C12	152.00'	32°23'48"	85.95'	N73°51'38"E	84.80'
C13	15.00'	18°12'58"	4.77'	N48°33'15"E	4.75'
C14	15.00'	50°38'48"	13.26'	N25°18'48"W	12.83'
C15	202.00'	37°01'56"	130.56'	N69°09'09"W	128.30'
C16	1170.00'	17°02'32"	348.01'	N81°25'12"W	346.72'
C17	83.50'	37°05'08"	54.05'	S88°17'15"W	53.11'
C18	111.50'	78°59'15"	153.71'	N70°45'42"W	141.83'
C19	43.50'	56°44'14"	43.08'	N59°38'11"W	41.34'
C20	192.00'	57°23'04"	192.30'	S12°30'46"E	184.36'
C21	110.00'	105°27'20"	202.46'	S11°31'22"W	175.07'
C22	182.00'	63°57'44"	203.18'	S32°16'10"W	192.79'
C23	12.00'	90°00'00"	18.85'	S44°42'42"E	16.97'
C24	12.00'	90°00'00"	18.85'	N45°17'18"E	16.97'
C25	212.00'	63°57'44"	236.67'	N32°16'10"E	224.57'
C26	80.00'	105°27'20"	147.24'	N11°31'22"E	127.32'
C27	222.00'	57°23'04"	222.34'	N12°30'46"W	213.17'
C28	43.50'	32°57'30"	25.02'	S71°31'33"E	24.68'
C29	83.50'	44°43'21"	65.18'	N65°43'56"E	63.53'
C30	93.50'	9°20'23"	15.24'	N48°02'27"E	15.22'
C31	43.50'	52°42'39"	40.02'	N26°21'19"E	38.62'
C32	83.50'	46°35'42"	67.91'	N23°17'51"W	66.05'
C33	95.50'	21°02'24"	35.07'	N36°04'30"W	34.87'
C34	41.50'	62°23'18"	45.19'	N56°44'58"W	42.99'
C35	1125.00'	34°08'49"	670.47'	N72°44'26"W	660.60'
C36	245.50'	57°13'43"	245.21'	N89°24'17"W	235.15'
C37	181.50'	36°20'19"	115.11'	N66°09'50"W	113.19'
C38	113.50'	101°55'25"	201.91'	N82°10'12"W	176.32'
C39	81.50'	37°38'17"	53.54'	N50°01'38"W	52.58'
C40	15.00'	18°48'26"	4.92'	N80°24'26"W	4.90'
C41	361.50'	2°09'26"	13.61'	N69°55'30"W	13.61'
C44	697.50'	39°13'50"	477.58'	S80°27'32"W	468.31'
C46	1170.00'	34°52'33"	712.18'	S72°44'53"W	701.23'
C48	15.00'	57°39'09"	15.09'	N28°50'10"E	14.46'
C49	590.50'	19°56'31"	205.53'	S80°01'26"W	204.49'
C51	1484.50'	45°51'18"	1188.07'	N67°04'39"W	1156.62'
C52	15.00'	39°26'11"	10.32'	N19°43'41"E	10.12'
C53	111.50'	14°21'58"	27.96'	S77°55'52"E	27.88'
C54	25.00'	18°32'04"	8.09'	S09°33'20"W	8.05'
C55	25.00'	83°33'00"	36.46'	S41°29'13"E	33.31'
C56	1170.00'	3°15'57"	66.69'	N58°21'14"E	66.68'
C57	1050.00'	3°44'50"	68.67'	S61°34'41"W	68.66'
C58	51.00'	13°55'15"	12.39'	N83°09'06"E	12.36'
C59	39.00'	13°55'15"	9.48'	S83°09'06"W	9.45'
C60	30.00'	90°00'00"	47.12'	S45°00'00"E	42.43'
C61	659.50'	19°56'31"	229.54'	S80°01'26"W	228.38'
C62	25.00'	90°00'00"	39.27'	S45°00'00"E	35.36'

CURVE TABLE					
CURVE	RADIUS	DELTA	LENGTH	CHORD BEARING	CHORD
C63	25.00'	36°22'20"	15.87'	N71°48'50"E	15.61'
C64	51.00'	90°00'00"	80.11'	N45°00'00"W	72.12'
C65	25.00'	90°00'00"	39.27'	N45°00'00"W	35.36'
C66	51.00'	83°33'00"	74.37'	N41°29'13"W	67.95'

LINE TABLE		
LINE	BEARING	LENGTH
L1	N89°42'42"W	55.73'
L2	S00°00'35"W	30.02'
L3	S44°51'26"E	35.44'
L4	S00°00'35"W	127.21'
L5	N89°59'25"W	55.00'
L6	N87°40'08"W	127.24'
L7	N89°56'28"W	61.81'
L8	N00°00'35"E	353.20'
L11	N68°50'46"W	102.75'
L12	S89°48'38"E	34.06'
L19	N88°00'18"W	86.72'
L20	S89°59'42"W	61.55'
L21	N00°00'35"E	144.24'
L22	N25°35'16"W	126.34'
L23	S57°30'42"E	123.02'
L24	N57°30'42"W	190.37'
L25	N88°05'36"E	91.79'
L26	N89°59'42"E	61.57'
L27	N76°54'28"E	12.25'
L28	N44°14'17"E	51.99'
L29	S88°00'18"E	5.51'
L30	S16°10'45"W	2.39'
L31	N16°10'45"E	2.03'
L32	S00°17'18"W	10.94'
L33	S83°15'43"E	70.23'
L34	N90°00'00"E	142.06'
L35	S00°00'00"E	142.43'
L36	N90°00'00"E	0.97'
L37	S00°00'35"W	30.88'
L38	N90°00'00"W	15.79'
L39	N00°00'00"E	123.44'
L40	N90°00'00"W	121.06'
L41	N83°15'43"W	70.46'
L42	N00°17'18"E	22.57'

DETAIL 'D'
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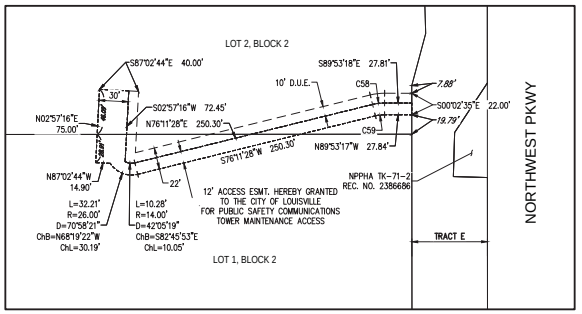

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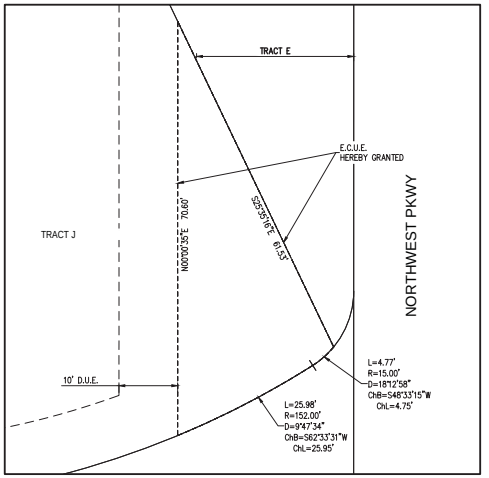

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Attachment #2e

Redtail Ridge
Traffic and Mobility Study

Date: October 16, 2023

Submitted To:
Sterling Bay
5910 Pacific Center Blvd, Suite 200
San Diego, CA 92121

Submitted By:
Fox Tuttle Transportation Group, LLC
1580 Logan Street, 6th Floor
Denver, CO 80203

FOX TUTTLE

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Executive Summary

The purpose of this study is to evaluate potential traffic and mobility projects within and around the proposed Redtail Ridge development. The project site is generally bounded by S. 88th Street to the west, Campus Drive to the north, S. 96th Street/Northwest Parkway to the east and US 36 to the south. The proposed development is anticipated to be completed by Year 2035 over multiple phases and includes industrial space, life science space, good manufacturing practice (GMP) space, general office space, research and development space, a hospital, medical office space, and retail. The total square footage of Redtail Ridge will equate to 2,600,000 square feet (sq. ft.). The project plans to extend Campus Drive from the current end point to 96th Street, just north of the existing fire station. Internally, a number of roadways will be constructed for access and circulation. Accounting for anticipated non-single occupancy vehicle (non-SOV) trips and internal capture trip reduction, the full build out of the project site is estimated to generate approximately 21,285 daily, 1,908 AM peak hour, and 2,149 PM peak hour trips. In addition to the vehicular facilities, Redtail Ridge will include several on-street and off-street pedestrian and bicyclist amenities that will circulate the entire site and connect to external sidewalks, multi-use trails, and bike lanes. The purpose of this study is to evaluate the traffic impacts to nearby intersections and roadways, as well as identify any capacity deficiencies and the recommended mitigation measures.

Current Study Area Traffic and Safety Conditions

Current conditions have been evaluated based on traffic counts collected in January 2023, while schools were in session. The analysis can be summarized as follows:

- AM Peak Hour
    - All study intersections operate acceptably overall (LOS D or better).
    - Individual movements operate at LOS E at Dillon Road/McCaslin Boulevard, Dillon Road/S. 96th Street, S. 88th Street/Campus Drive and Northwest Parkway/Rockcress Drive/Via Varra.
    - No queuing or capacity issues are present.
- PM Peak Hour
    - Only the intersection of Northwest Parkway at S. 96th Street/Via Varra operates overall at LOS E due to high delay for the northbound left-turn movement.
    - Some movements operate at LOS E at S. 88th Street/Campus Drive, Northwest Parkway/S. 96th Street/Via Varra, and Northwest Parkway/Rockcress Drive/Via Varra.
- No immediate mitigation measures are required to address current operational deficiencies in the study area.

The roadways around the project site are currently designed to optimize motor vehicle travel during peak times at speeds that present challenges for non-motorized travelers. Based on information provided in the City of Louisville *Transportation Master Plan* (TMP), four (4) existing study intersections near the Redtail Ridge project were identified as high crash locations, with three (3) of these intersections have documented bicycle crashes. The Dillon Road/S. 88th Street intersection has the highest number of bicycle crashes in the City of Louisville.

Background Improvements (without Redtail Ridge)

Previous studies recommended the extension of Campus Drive between S. 88th Street and S. 96th Street to better distribute traffic in the area. Additionally, corridor studies have identified the need to widen S. 88th Street, Dillon Road, and S. 96th Street from two-lane roadways to four-lane roadways. The City of Louisville's *TMP* recommends building more Great/Complete streets citywide, which will include the listed roadways.

Other improvements required by background traffic in the area include:

- **Dillon Road/S. 88th Street** – add 2nd westbound left-turn lane.
- **S. 88th Street/Campus Drive** – add 2nd northbound through lane and extend northbound right-turn lane storage to a minimum of 500 feet.
- **Dillon Road/S. 96th Street** – add eastbound/westbound dual left-turn lanes.
- **Northwest Parkway/S. 96th Street/Via Varra** - add 3rd northbound left-turn lane and modify southbound right-turn lane.
- Optimize signal timing as vehicular traffic increases, multi-modal traffic increases, and travel patterns change.

Long-Term Background Improvements (without Redtail Ridge)

In addition to the improvements listed above, some long-term improvements have been identified as potential needs but have not been defined specifically:

- **Northwest Parkway/US 36 interchange** – the South Ramps are expected to be at capacity with Year 2040 background traffic volumes. Additional capacity is needed to accommodate the projected traffic volumes without and with the project site trips. The additional capacity will likely require that the bridge be widened. A coordinated study among agencies should occur to begin to look at interchange concepts.

Redtail Ridge Project-Triggered Improvements

The improvements listed below are recommended to accommodate the development of Redtail Ridge. In addition to safety and improving traffic operations, these improvements are also designed to reduce crashes and improve operations for the adjacent Monarch school campus.

- **Extend Campus Drive** from where it dead ends east of S. 88th Street to S. 96th Street. Include multi-modal facilities.
- **S. 96th Street/Campus Drive (new intersection)** construct two northbound left-turn lanes, one southbound right-turn lane, two eastbound left-turn lanes, and one eastbound right-turn lane.
    - Provide three (3) northbound through lanes that extend from the Northwest Parkway/S. 96th Street/Via Varra intersection through the Campus Drive intersection. The three northbound through lanes will merge to two through lanes north of Campus Drive.
- **Northwest Parkway/Rockcress Drive/Via Varra** modify the eastbound approach to include one left-turn lane, one through lane, and one right-turn lane.
- **Rockcress Drive** construct as a four-lane roadway between Northwest Parkway and Sorrel Avenue and narrow to two-lane roadway to S. 88th Street. It is planned this roadway will be phased. Include on-street bike lanes and sidewalks.
- **Sorrel Avenue** construct as two-lane roadway with a center left-turn lane. Include on-street bike lanes and sidewalks.
- **Internal Collector Roadways** construct as two-lane roadway. Include on-street bike lanes and sidewalks.
- **Campus Drive/Sorrel Avenue** construct as a multi-lane roundabout.
- **Rockcress Drive/Sorrel Avenue** construct as a multi-lane roundabout.
- **Internal intersections on Sorrel Avenue** construct with left-turn lanes on Sorrel Avenue.
- **Internal intersections on Rockcress Drive and Collector Roadways** construct with shared lanes since auxiliary lanes are not warranted.

The Redtail Ridge project team plans to implement Great/Complete Street design treatments on internal roadways and intersection as consistent with the City's TMP policies. Such streets and intersections will be designed and operated to be safe and accessible for all users, regardless of ability, age, or mode. Most importantly, Great/Complete Streets have been shown to reduce conflicts that lead to crashes.

In addition to the improvements listed above, some long-term improvements have been identified as potential needs but have not been defined specifically:

- **Northwest Parkway between S. 96th Street/Via Varra and US 36** – continue coordination with Northwest Parkway Authority, City of Louisville, and City and County of Broomfield to study the future corridor needs and most appropriate design. The Northwest Parkway intersections at 96th Street/Via Varra and at Rockcress Drive/Via Varra are anticipated to be near/at capacity by Year 2040 with the project trips.

    - One option is to add a third southbound through lane on Northwest Parkway from northeast of the 96th Street/Via Varra intersection to the US 36 interchange. The Denver Regional Council of Governments (DRCOG) has included additional capacity on Northwest Parkway in this area between 2020 and 2029 in the 2050 Metro Vision Regional Transportation Plan, but the exact nature of capacity improvements has not been determined at this time.

    - Additional study is needed to determine the optimal design for this corridor to accommodate the future needs and if/how the corridor will tie into the future US 36 interchange design, Jefferson Parkway, grade separated interchanges, etc. As proposed, Redtail Ridge does not preclude future improvements within Northwest Parkway right-of-way.

A summary of the recommended improvements and estimated year the improvement is needed is illustrated in **Figure E1** and summarized in **Table E.1**.

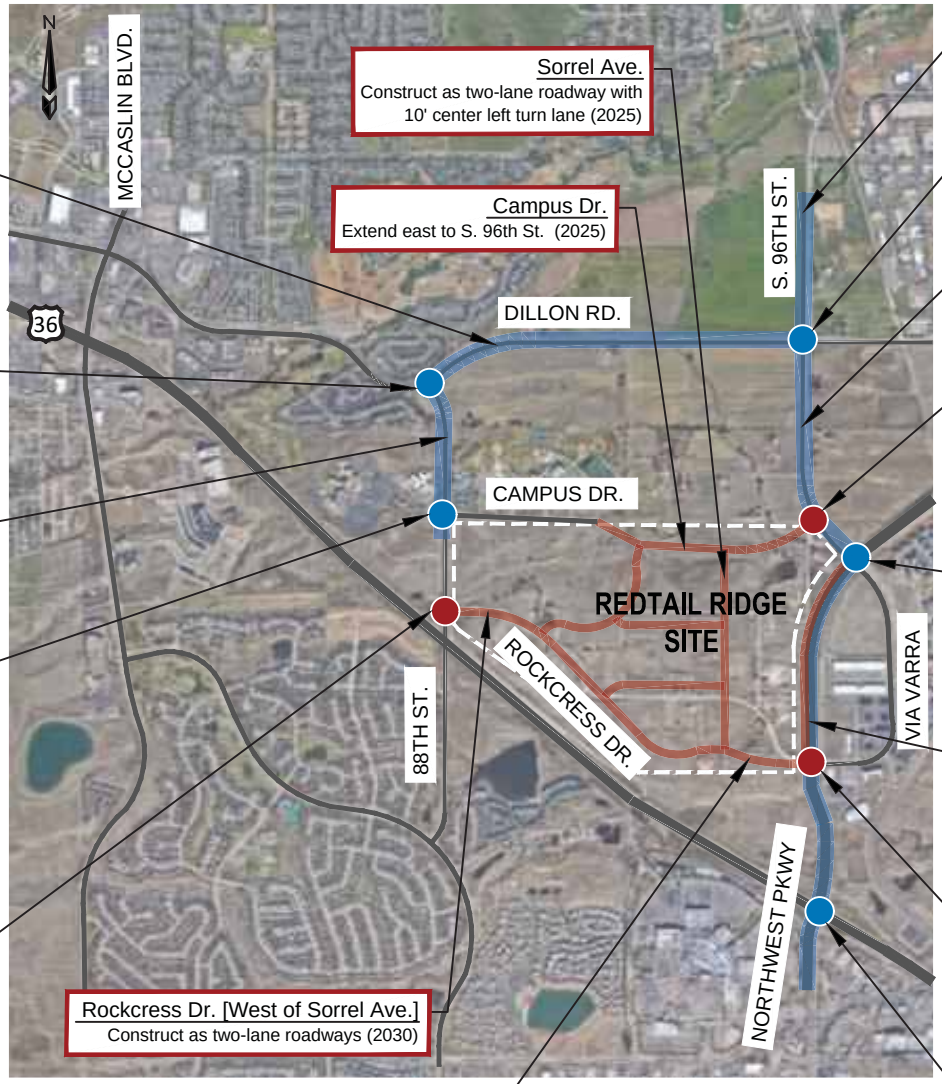
Next Steps

- Additional study and concept development are needed for the Northwest Parkway corridor and at the US 36 interchange with municipal partners.

- After the Filing 1 Plat submittal, vertical developers will be required to submit PUD documents prior to construction, including traffic conformance letters. The PUD documents will identify if/when traffic signals at the internal intersections are projected to be warranted as well as signal timing modifications/adjustments needed to the study intersections. In addition, the vertical developers will be required to submit building specific Travel Demand Management (TDM) Plans. The projected non-single occupancy vehicle (non-SOV) goals will be evaluated and adjusted as needed to reach goals. The Metro District will monitor the plan's effectiveness and make changes as needed to reach goals.

Background (without Redtail Ridge)

Project (with Redtail Ridge)



Dillon Rd. [S. 88th St. to 96th St.]
Widen to a four-lane roadway (2025)

Dillon Rd. at S. 88th St.
Restripe 2nd WB left-turn lane (2025)

S. 88th St. [Dillon Rd. to Campus Dr.]
Widen to a four-lane roadway (2025)

S. 88th St. at Campus Drive
Construct a second NB thru lane, begin approx. 500 ft. south of Campus Drive (2025)

Extend the NB right-turn lane to provide a minimum of 500 ft. of storage (2025)

S. 88th St. at Rockcress Dr.
Construct a SB Left-turn (2030)

Side-Street Stop-Control (2030)

Sorrel Ave.
Construct as two-lane roadway with 10' center left turn lane (2025)

Campus Dr.
Extend east to S. 96th St. (2025)

Rockcress Dr. [West of Sorrel Ave.]
Construct as two-lane roadways (2030)

Rockcress Dr. [West of NWP]
Construct as four-lane roadway (2025)

S. 96th St. [1/2 mile north of Dillon Rd.]
Widen to a four-lane roadway (2040)

S. 96th St. at Dillon Rd.
Construct dual EB and WB left-turn lanes (2025)

S. 96th St. [NWP to Dillon Rd.]
Widen to a four-lane roadway (2025)

S. 96th St. at Campus Dr.
Construct with dual NB left-turn lanes, SB right-turn lane, dual EB left-turn lanes, and one EB right-turn lane (2025)

Signalize (2025)

NWP at S. 96th St.
Construct 3rd NB left-turn lane and adjust SB right-turn lane and receiving lanes (2025)

Capacity improvements on NWP (2040+)

Northwest Parkway (NWP)
Capacity improvements needed (2040)

Construct 3rd SB thru lane approaching and through Rockcress Dr. (2040)

NWP at Rockcress Dr.
Modify EB with one left-turn lane, one thru lane, and one right-turn lane (2025)

Remove the split phasing on EB/WB (2025)

NWP at US 36 Interchange
Further study to determine appropriate interchange design for additional capacity (2040)

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

RECOMMENDED IMPROVEMENTS

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	E1

Table E.1 – Improvement Phasing Summary

Roadway or Intersection*	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1 - 2025	Phase 2 - 2030	Phase 3 - 2035	
S. 88th Street	Widen to 4-lanes (Dillon Rd to Campus Dr)	●						9%
S. 96th Street	Widen to 4-lanes (Dillon Rd to NW Pkwy)	●						11%
	Widen to 4-lanes (1/2 mile north of Dillon Rd)			●				14%
Dillon Road	Widen to 4-lanes (S. 88th St to S. 96th St)			●				4%
Northwest Pkwy	Add 3rd Southbound through lane (S. 96th St. to US 36 Interchange)						●	7%
Campus Drive	Extension to S. 96th Street				●			95%
Rockcress Drive	Construct as two-lane road (NWP to N-S Internal Collector)				●			100%
	Extend to S. 88th Street					●		100%
Sorrel Avenue	Construct as a two-lane road with center left-turn lane				●			100%
Internal Collectors	Construct as two-lane roads				●			100%
#10. Dillon Road at S. 88th Street	Restripe 2nd WB left-turn lane	●						0%
#15. Dillon Road at S. 96th Street	Construct dual EB left-turn lanes	●						0%
	Construct dual WB left-turn lanes	●						4%
#20. S. 88th Street at Campus Drive	Construct 2nd NB thru lane (begin xapprox. 500 feet south of Campus Drive)	●						23%
	Extend NB right-turn lane (500 feet)	●						3%
#22. S. 88th Street at Rockcress Drive	Construct as side-street stop-controlled, full movement					●		8%
	Construct one SB left-turn lane					●		100%
#23. S. 96th Street at Campus Drive	Construct dual NB left-turn lanes				●			64%
	Construct SB right-turn lane				●			39%
	Construct dual EB left-turn lanes				●			62%
	Construct one EB right-turn lane				●			100%
	Signalize				●			20%
#25. Northwest Parkway at S. 96th Street / Via Varra	Construct 3rd NB left-turn lane	●						4%
	Capacity improvements on NWP			●				8%

Roadway or Intersection*	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1 - 2025	Phase 2 - 2030	Phase 3 - 2035	
#30. Northwest Parkway at Rockcress Drive / Via Varra	Modify EB with one left-turn lane, one thru lane, and one right-turn lane				✪			100%
	Remove the split phase on EB/WB				✪			100%
#35 & #40. Northwest Parkway at US 36 Interchange	New Interchange			✪				19%
#101. Campus Drive at N-S Internal Collector	Implement Side-Street Stop-Control				✪			100%
	Construct WB left-turn lane				✪			100%
#102. Campus Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				✪			65%
#103 & #104. Rockcress Drive at Internal Collectors	Implement Side-Street Stop-Control				✪			100%
#105. Rockcress Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				✪			100%
#106 & #107. Sorrel Avenue at E-W Internal Collectors	Implement Side-Street Stop-Control				✪			100%
	Implement All-Way Stop					✪		100%
	Construct NB left-turn lane				✪			100%
	Construct SB left-turn lane					✪		100%
#108. N-S Internal Collector at E-W Internal Collector (North)	Implement Side-Street Stop-Control				✪			100%
#205. Sorrel Avenue at PUD 2 Access E	Implement Side-Street Stop-Control				✪			100%

**Note: numbering denotes intersection locations and match to the intersection numbers within the level-of-service and queue tables, as well as on the figures.*

REDTAIL RIDGE

TRAFFIC AND MOBILITY STUDY

1.0 Introduction

The Fox Tuttle Transportation Group has prepared this traffic and mobility study for the proposed development of the land bounded by S. 88th Street to the west, Campus Drive to the north, S. 96th Street/Northwest Parkway to the east and US 36 to the south (see **Figure 1:** Vicinity Map). The development is known as "Redtail Ridge" and proposes to develop a mix of general office, life science, research and development, industrial, medical facilities, and retail uses.

The project area is currently vacant, but prior to being sold to Sun Microsystems in 2005, Storage Tek headquarters and production plant was located on the project site. Storage Tek consisted of approximately 1,700,000 square feet of building area. In 2008, ConocoPhillips purchased the property and demolished the buildings in 2009. This area has since been vacant but has recently been acquired by Sterling Bay, hence the latest master plan for Redtail Ridge.

When Storage Tek was fully active in the late 1990's, approximately 4,000 employees worked on the campus and the campus generated approximately 12,400 vehicles per day (vpd), 1,600 vehicles per hour (vph) during the AM peak and 1,400 vph during the PM peak. The site was served by two (2) access points along the former privately owned/maintained Tape Drive which intersects with S. 88th Street to the west and Northwest Parkway to the east, and an access on Disc Drive from S. 96th Avenue. Currently there are barricades blocking vehicles from accessing Tape Drive on both the west and east sides of the property. The previous Tape Drive accesses are to be repurposed for a new internal roadway called Rockcress Drive.

The purpose of this study is to assist in identifying traffic and mobility improvements within the study area as a result of each phase of this project. The traffic study evaluates peak hour intersection operations and roadway conditions in the study area with and without the project generated traffic. The information contained in this study is anticipated to be used by the City staff in identifying any intersection or roadway deficiencies and potential improvements for each scenario. This study focuses on the weekday AM and PM peak hours, which represent the periods of highest trip generation for the proposed uses and of adjacent street traffic.

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Transportation Group

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

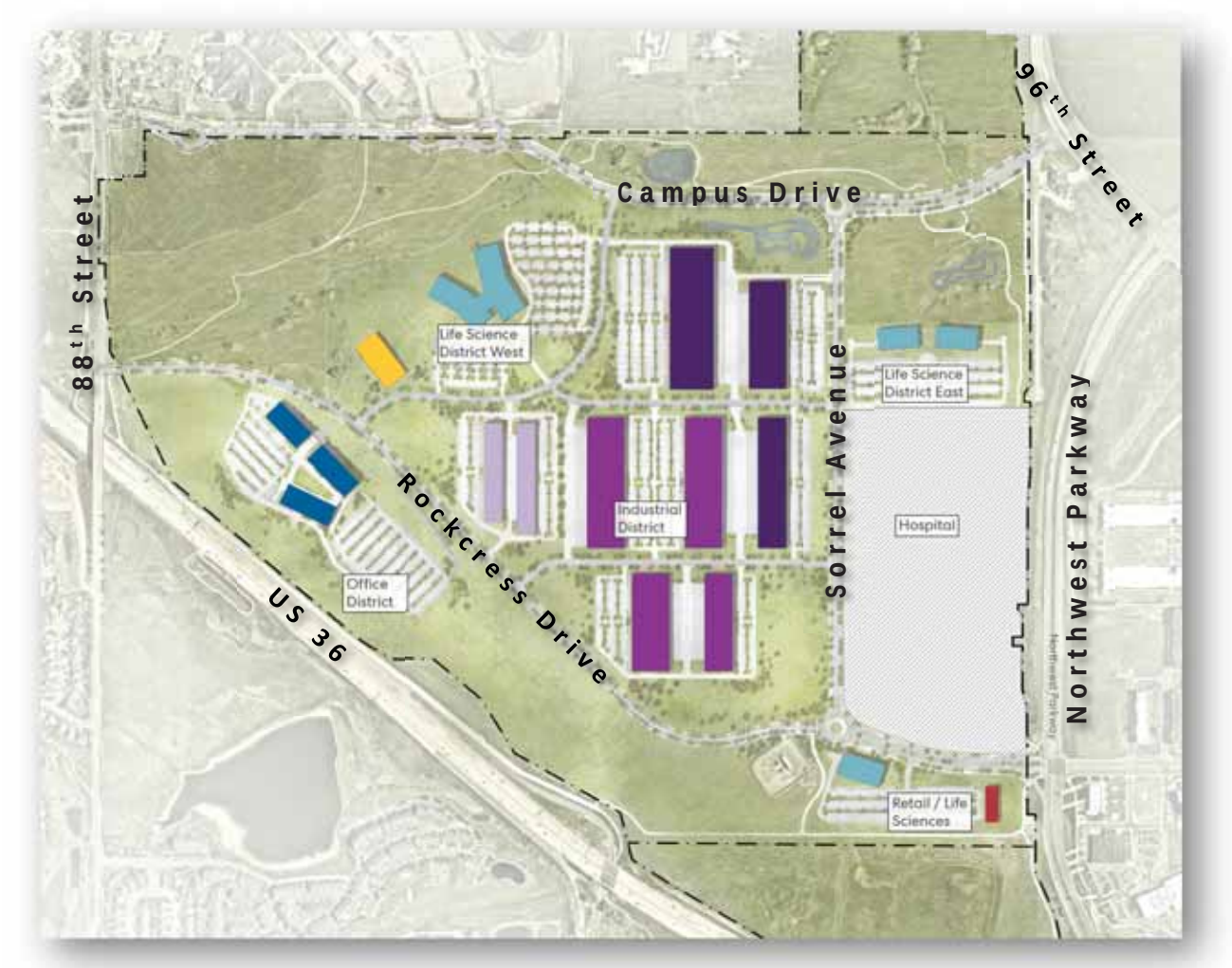
VICINITY MAP

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	1

2.0 Project Description

A concept showing the preliminary proposed internal roadway network, proposed access to the external network, and the development areas is provided in **Figure 2.**

Figure 2. Proposed Land Use and Internal Roadways



While subject to change, the proposed land use type/size and estimated timeframe for when each phase will be completed and fully occupied is summarized below in **Table 1**:

Table 1. Summary of Land Uses and Sizes by Phase

Land Use Type	Phase 1 By Year 2025	Phase 2 By Year 2030	Phase 3 By Year 2035	Total
Industrial	509,260 sq. ft.	118,800 sq. ft.	-	*628,060 sq. ft.*
Life Science & Amenity Bldg.	300,000 sq. ft.	-	-	*300,000 sq. ft.*
Good Manufacturing Practice (GMP)	598,940 sq. ft.	-	-	*598,940 sq. ft.*
General Office	-	90,000 sq. ft.	270,000 sq. ft.	*360,000 sq. ft.*
Research and Development Center	-	264,000 sq. ft.	-	*264,000 sq. ft.*
Retail Services	-	14,000 sq. ft.	-	*14,000 sq. ft.*
Hospital	-	285,000 sq. ft.	-	*285,000 sq. ft.*
Medical/Dental Office	-	150,000 sq. ft.	-	*150,000 sq. ft.*
Total	**1,408,200 sq. ft.**	**921,800 sq. ft.**	**270,000 sq. ft.**	*2,600,000 sq. ft.*

The Redtail Ridge project will include two (2) new east-west roadway connections between 88th Street and 96th Street/Northwest Parkway. The first phase, prior to Year 2025, will include the extension of Campus Drive from the current dead end near Monarch High School (approximately 2,200 feet east of S. 88th Street) to 96th Street. This new connection will serve traffic generated by the proposed development, as well as existing traffic currently traveling along 88th Street and Dillon Road. The existing intersection of 88th Street/Campus Drive is full-movement and signalized. With the Campus Drive extension, a new full-movement signalized intersection is proposed on S. 96th Street at the northeast corner of the site, which will be near where Old 96th Street/Disc Drive currently intersects as a 3/4 movement access.

The first phase will also include construction of Rockcress Drive from Northwest Parkway to midway in the project site, which will be extended to S. 88th Street within the second phase (prior to Year 2030). This will be an additional east-west connection through the area. The existing intersection on Northwest

Parkway will remain full movement and signalized. The future intersection on S. 88th Street is planned to be full movement and side-street stop-controlled with the appropriate auxiliary lanes.

This study evaluates Year 2025, Year 2030, and Year 2040 with and without the project. A summary of the scenarios that were evaluated in this study are shown in **Table 2.** Note that while detailed traffic analysis was not completed for Year 2035, the development phasing was utilized to estimate the timeline for when improvements would be needed.

Table 2. Evaluation Scenarios Summary

Scenario	Background Traffic	Phase 1 Development Traffic	Phase 2 Development Traffic	Phase 3 (Build Out) Development Traffic	Campus Drive Extension	Rockcress Drive Extension
Existing	✓					
Year 2025 Background	✓					
Year 2025 Background + Project Trips	✓	✓			✓	
Year 2030 Background	✓					
Year 2030 Background + Project Trips	✓	✓	✓		✓	✓
Year 2040 Background	✓					
Year 2040 Background + Project Trips	✓	✓	✓	✓	✓	✓

3.0 Previous Studies

There have been numerous traffic, corridor, and multimodal studies conducted in recent years within or near the study area that were reviewed in preparation of the Redtail Ridge evaluation and included in the future assumptions. An overview of the studies is provided in the **Appendix**. The following studies were reviewed, and pertinent information was included in the Redtail Ridge analysis:

1. *88th Street/Campus Drive Traffic Evaluation.* FHU, May 2018.
2. *Dillon Road Corridor Study*. FHU, June 2018.
3. *96th and Dillon Commercial Development.* LSC, January 2020.

4. *Morgan Ranch – Downtown Superior Traffic Impact Analysis*. November 2019.
5. *Level 1 Traffic and Revenue Study Jefferson Parkway*. SDM Smith, April 2018.
6. *City of Louisville Transportation Master Plan.* Adopted October 2019.
7. *Boulder County Transportation Master Plan*. February 2020.
8. *DRCOG Active Transportation Plan*. 2017.
9. *Mobility Choice Blueprint*. Denver Metro Chamber, DRCOG, CDOT, and RTD, February 2019.
10. *RTD First and Last Mile Strategic Plan*. Spring 2019.
11. *RTD Northwest Area Mobility Study*. 2019.
12. *ConocoPhillips Campus Traffic Impact Study*. 2010.
13. *Parkway Circle South Retail Development Traffic Impact Study*. December 2016.
14. *Louisville Industrial Park Traffic Impact Analysis.* LSC, January 2020.

Each of these studies included forecasts for future vehicular and multimodal demand with recommendations for intersection and roadway improvements to accommodate the anticipated future growth. The key considerations from previous studies are as follows:

- **Extend Campus Drive** east to connect to S. 96th Street as a two-lane roadway to reduce congestion along S. 88th Street and Dillon Road (studies 1, 2, 3).
- Include dual northbound left-turn lanes and a free-flow southbound right-turn deceleration lane at the **S. 96th Street/Campus Drive intersection** (studies 5, 13).
- **Maintain two-lanes on Dillon Road** through Year 2040 and **widen to a four-lane roadway** when capacity is exceeded (studies 2, 3).
- **Include trip volumes from adjacent developments** in background scenarios (studies 4, 13, 14).
- **Possible Northwest Parkway extension** and anticipated improvements, including an interchange at 96th Street and possible future frontage road network (study 5).
- **Widen 96th Street** to a four- or five-lane cross-section since it is a key corridor within Boulder County (study 6, 7).

- **Leverage the transit opportunities** to encourage multimodal travel due to close proximity to local and regional transit services. This includes the possible future Bus Rapid Transit (BRT) service on S. 96th Street (studies 6, 8, 9, 10).

- **Consider including bike share stations** to connect to other stations at McCaslin Station, Avista Hospital, the Colorado Technology Center (CTC), Downtown, DELO, and Kestrel (studies 8, 9).

- **Include local multimodal facilities** that connect to the regional network, transit services, and support active transportation corridors (S. 96th Street/State Highway 42 from Broomfield to Longmont is identified as a regional active transportation corridor) (study 6, 8, 10, 11).

- **Develop incentives** to improve ride hailing and ridesharing operations and encouraging shared use of driverless automated vehicles (study 9).

4.0 Study Considerations

4.1 Data Collection

Intersection turning movement and daily traffic volumes were collected in January 2023 in the study area when school was in session on the Monarch school campus. The existing traffic volumes are illustrated on **Figure 3.** The existing intersection geometry and traffic control are also shown on this figure. Signal-related information for the existing intersections were provided by the City of Louisville and Broomfield and updated based on video observations to reflect current field operations. Count data sheets are provided in the **Appendix**.

4.2 Evaluation Methodology

The traffic operations analysis addressed the signalized and unsignalized intersection operations using the procedures and methodologies set forth by the *Highway Capacity Manual (HCM)*[1]. Existing peak hour factors were applied to the intersections for the existing scenarios. Study intersections were evaluated using Synchro (version 11) software.

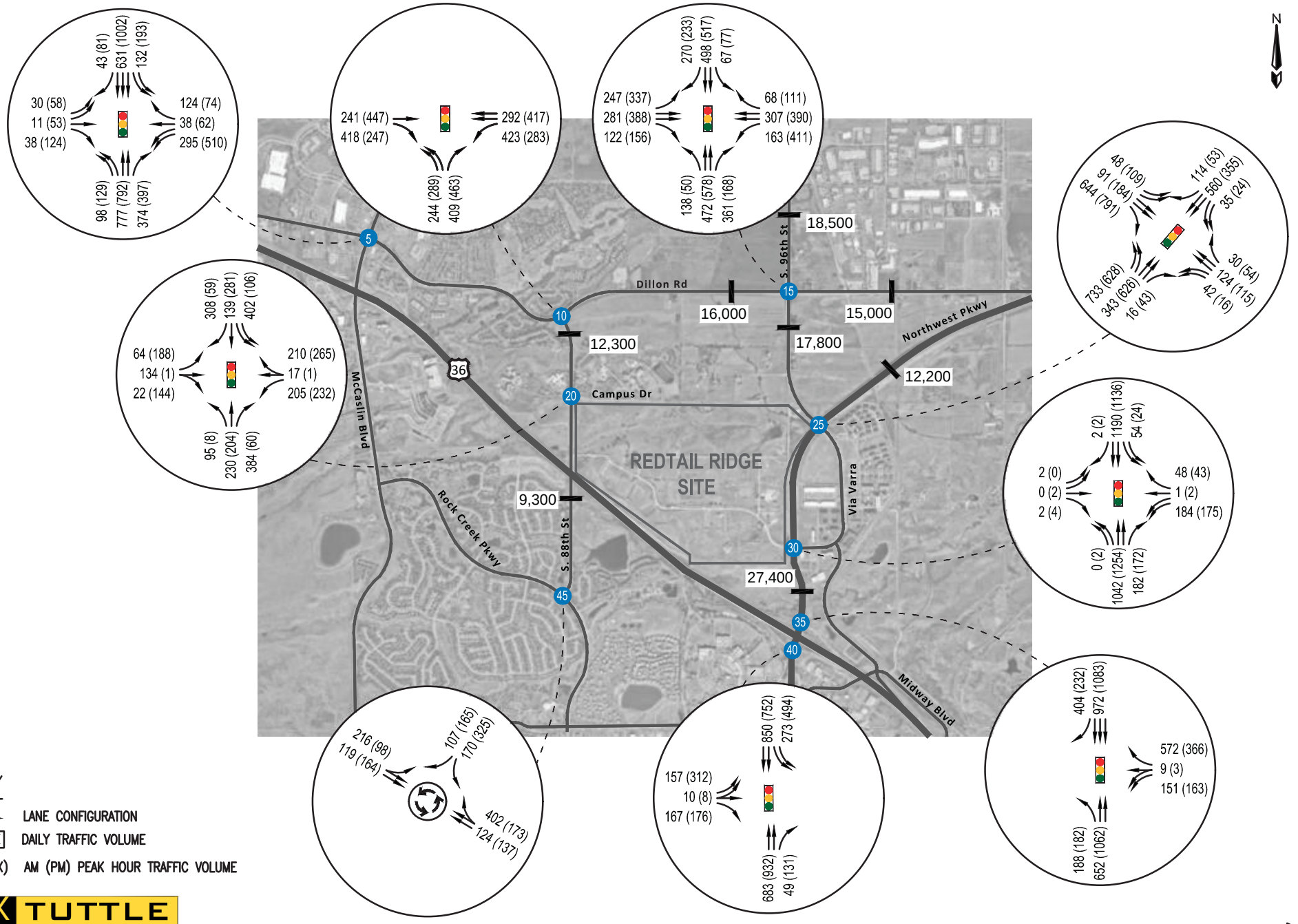
[1] Highway Capacity Manual, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 2010 and 6th Edition (2016).

4.3 Level of Service Definitions

A Level of Service analysis was conducted to determine the existing and future performance of the study area intersection and to determine the most appropriate traffic control device and need for auxiliary lanes for the study intersections.

To measure and describe the operational status of the study intersections, transportation engineers and planners commonly use a grading system referred to as "Level of Service" (LOS) that is defined by the *HCM*. LOS characterizes the operational conditions of an intersection's traffic flow, ranging from LOS A (indicating very good, free flow operations) and LOS F (indicating congested and sometimes oversaturated conditions). These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with traveling through the intersections. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference.

Typically, LOS A through C is considered to be good for the overall intersection operations and the desired standard for overall intersection performance is LOS D or better. Individual movements may be allowed to fall to LOS E or F depending on the circumstances, such as a low-volume, side-street approach to an arterial where signal warrants are not met, or a protected-only, signalized left-turn movement where safety is prioritized over operational efficiency.



KEY

→ LANE CONFIGURATION

X,XXX DAILY TRAFFIC VOLUME

XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2023 EXISTING TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	3

4.4 Safety for all Modes of Travel

Safety is an important factor for transportation planning and infrastructure investments. Intersections are key areas where a significant number of conflicts between people and vehicles can occur. The actual and perceived safety of an intersection or a corridor can greatly impact people's desire to utilize certain routes, particularly for those on foot or on bike. Safety in relation to schools is also a key factor in mobility and health. Monarch K-8 and Monarch High School, while accessible with trails and sidewalks, are located along corridors with higher travel speeds and volumes which pose potential risks. The roadways around the site are currently designed to optimize motor vehicle travel during peak times at speeds that present challenges for non-motorized travelers.

High Crash Locations

Four (4) existing arterial intersections near the Redtail Ridge project were identified as high crash locations in the City of Louisville TMP, including the intersections of:

1. Dillon Road/S. 88th Street
2. Dillon Road/S. 96th Street
3. S. 88th Street/Campus Drive
4. Northwest Parkway/S. 96th Street/Via Varra

These intersections are shown on **Figure 4**. Additionally, three (3) of the locations have documented bicycle crashes. The Dillon Road/S. 88th Street intersection has the highest number of bicycle crashes in the City of Louisville.

The City of Louisville's TMP recommends a series of infrastructure, maintenance and training programs designed to reduce crashes for all roadway users. Likewise, the TMP recommends building more "Great/Complete" streets citywide.

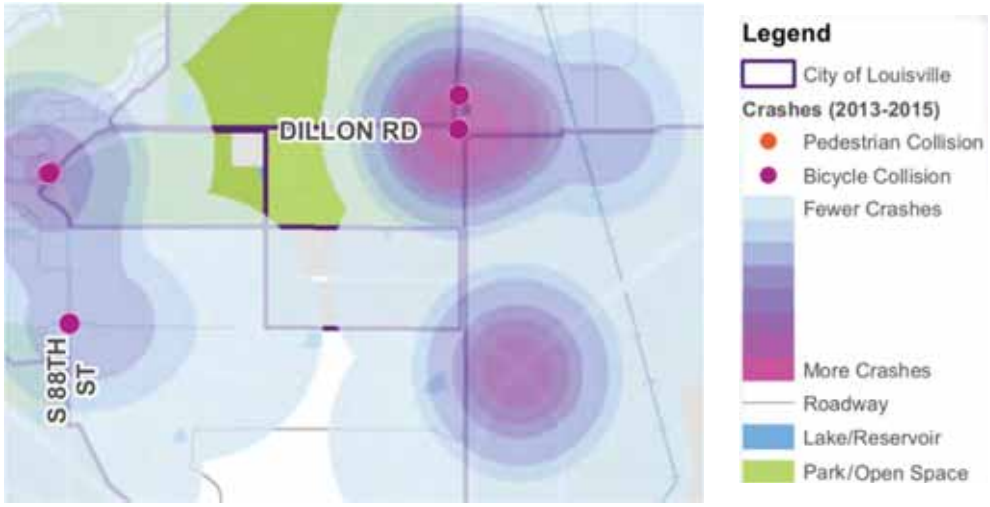


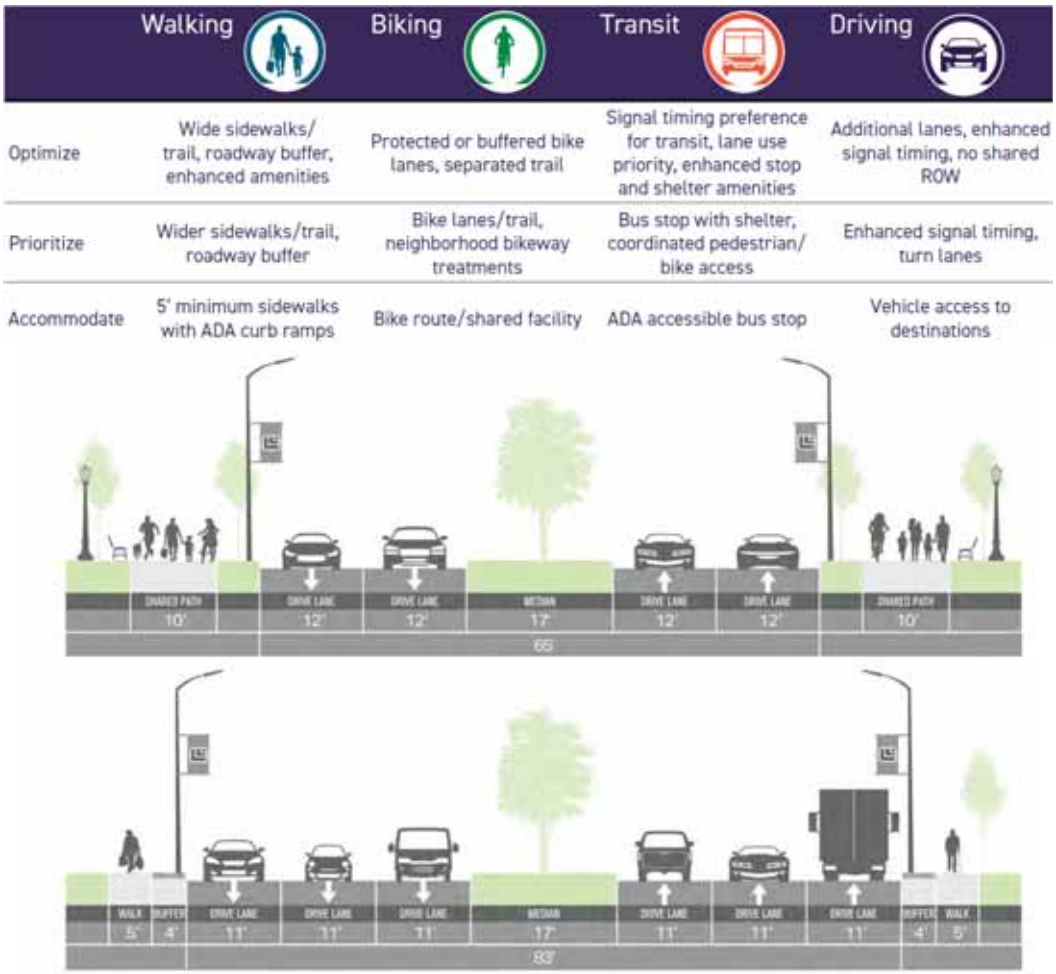
Figure 4. High Crash Locations (Source: City of Louisville Transportation Master Plan)

Great/Complete Street Design

Great/Complete Streets include adding treatment such as detached sidewalks, landscaping, protected bikeways, and travel dimensions that support driving speeds at or below the speed limits (see **Figure 5** below, Figure 4.2 in the TMP). Great/Complete Streets have been shown to reduce conflicts that lead to crashes in research conducted by the Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA).

It is recommended that Great/Complete Street design treatments be implemented on S. 88th Street, Dillon Road, and S. 96th Street corridors and intersections consistent with the TMP's policies. Such streets and intersections will be designed and operated to be safe and accessible for all users, regardless of ability, age, or mode. These corridors and intersections will make Louisville a more livable place, increase comfort and safety for pedestrian and bicyclists, improve first and last mile access to transit, reduce congestion and improve air quality.

Figure 5. Great/Complete Street Graphic from the City of Louisville's TMP



5.0 Existing Conditions

5.1 Roadways

The study area boundaries were established based on conversations with City staff. The existing study area street network consists of arterial and collector roadways as well as a US Highway. The primary public roadways that serve the project site are discussed in the following text.

US 36 is a freeway that connects Denver and Boulder from I-25 in Denver to Table Mesa Drive in Boulder. Near the study area, US 36 has two general purpose lanes in both directions and there is an Express Lane in each direction, alongside the general-purpose lanes. There are three (3) interchange accesses near the project area, at McCaslin Boulevard which was reconstructed to a Diverging Diamond Interchange in Year 2016, at Northwest Parkway/Interlocken Loop, which is diamond interchange, and there are two half diamond interchanges with one on either side of the Northwest Parkway/Interlocken Loop interchange. The RTD's Flatiron Flyer BRT service that connects Denver, Boulder, and other cities operates along the US 36 corridor. US 36 currently serves approximately 89,000 vpd west of the McCaslin Boulevard interchange and approximately 84,000 vpd east of the Northwest Parkway/Interlocken Loop interchange. The posted speed limit along this segment of US 36 is 65 miles per hour (mph).

Northwest Parkway is a four-lane divided highway under the jurisdiction of the City and County of Broomfield south of S. 96th Street. Northeast of S. 96th Street, Northwest Parkway becomes a toll road and freeway section with no at-grade intersection access. The roadway section consists of two travel lanes in each direction with a raised center median. Northwest Parkway currently serves approximately 26,700 vpd north of US 36 and 12,200 vpd northeast of S. 96th Street. The posted speed limit is 45 mph within the study area.

Dillon Road is a four-lane divided arterial roadway west of S. 88th Street and transitions to a two-lane undivided rural roadway east of S. 88th Street. Dillon Road is an east-west street that provides a direct connection between McCaslin Boulevard (to the west) and the Northwest Parkway (to the east) where it makes connections via interchange ramp terminals at US 287. While east of S. 88th Street, Dillon Road is a two-lane roadway, at the S. 88th Street and S. 96th Street intersections a second through lane is added in each direction to increase vehicular capacity through the intersections. The extra through lanes merge to one lane as motorists proceed away from these intersections, except that Dillon Road continues to have a second through lane to the west of S. 88th Street. Dillon Road currently serves approximately 16,000 vpd west of S. 96th Street and approximately 15,000 vpd east of S. 96th Street. There are existing on-street bike lanes striped on Dillon Road. The posted speed limit is 35 mph west of S. 88th Street and 45 mph east of S. 88th Street within the study area.

McCaslin Boulevard is a six-lane divided roadway within the study area, but transitions to a four-lane divided roadway to the north at Via Appia and to the south, south of the US 36 interchange. McCaslin Boulevard provides north-south connectivity between South Boulder Road and 120th Avenue. Between US 36 and Dillon Road, McCaslin Boulevard serves approximately 33,900 vpd whereas north of Dillon Road McCaslin Boulevard serves approximately 22,300 vpd. There are existing on-street bike lanes striped on McCaslin Boulevard. The posted speed limit is 35 mph.

South 88th Street is a two-lane roadway that provides north-south connectivity between Rock Creek Parkway in the Town of Superior and Dillon Road in the City of Louisville. It provides access opportunities for the Monarch K-8 and High Schools via Campus Drive and to medical facilities along Health Park Drive. S. 88th Street has a grade-separated bridge crossing of US 36 to the south of Campus Drive. There are existing on-street bike lanes striped on S. 88th Street north of Campus Drive. S. 88th Street currently serves approximately 12,300 vpd between Dillon Road and St. Andrews Lane. The posted speed limit along S. 88th Street is 35 mph; however, the speed limit is reduced to 20 mph three (3) times per day during school activity hours.

S. 96th Street is a two-lane undivided roadway through most of the study area. S. 96th Street provides direct access to the Northwest Parkway to the south. To the north, S. 96th street continues past South Boulder Road with access to downtown Louisville before transitioning into N. 95th Street and continuing to the City of Longmont. Like the eastbound/westbound directions of Dillon Road, S. 96th Street also widens to two through lanes in each direction at Dillon Road to provide extra capacity through the existing signalized intersection. There are existing on-street bike lanes striped on S. 96th Street within the study area. S. 96th Street currently serves approximately 17,800 vpd south of Dillon Road and approximately 16,500 vpd north of Dillon Road. The posted speed limit is 40 mph within the study area.

5.2 Intersections

The study area includes nine existing intersections that are listed below with the current traffic control. These intersections were analyzed for existing and future years with and without the project trips:

- Dillon Road and McCaslin Boulevard [signalized]
- Dillon Road and S. 88th Street [signalized]
- Dillon Road and S. 96th Street [signalized]
- S. 88th Street and Campus Drive [signalized]
- S. 88th Street and Rock Creek Parkway [multi-lane roundabout]
- Northwest Parkway and S. 96th Street/Via Varra [signalized]
- Northwest Parkway and Rockcress Drive/Via Varra [signalized]

- Northwest Parkway and US 36 Westbound/North Ramps [signalized]
- Northwest Parkway and US 36 Eastbound/South Ramps [signalized]

The existing lane configuration at each of the study locations is illustrated on **Figure 3.** Additional site-access intersections were analyzed for the scenarios with the addition of project-added traffic. It should be noted that the PM peak hour does not coincide with when Monarch schools end (K-8 ends at 3:05 PM and the High School ends at 3:30 PM).

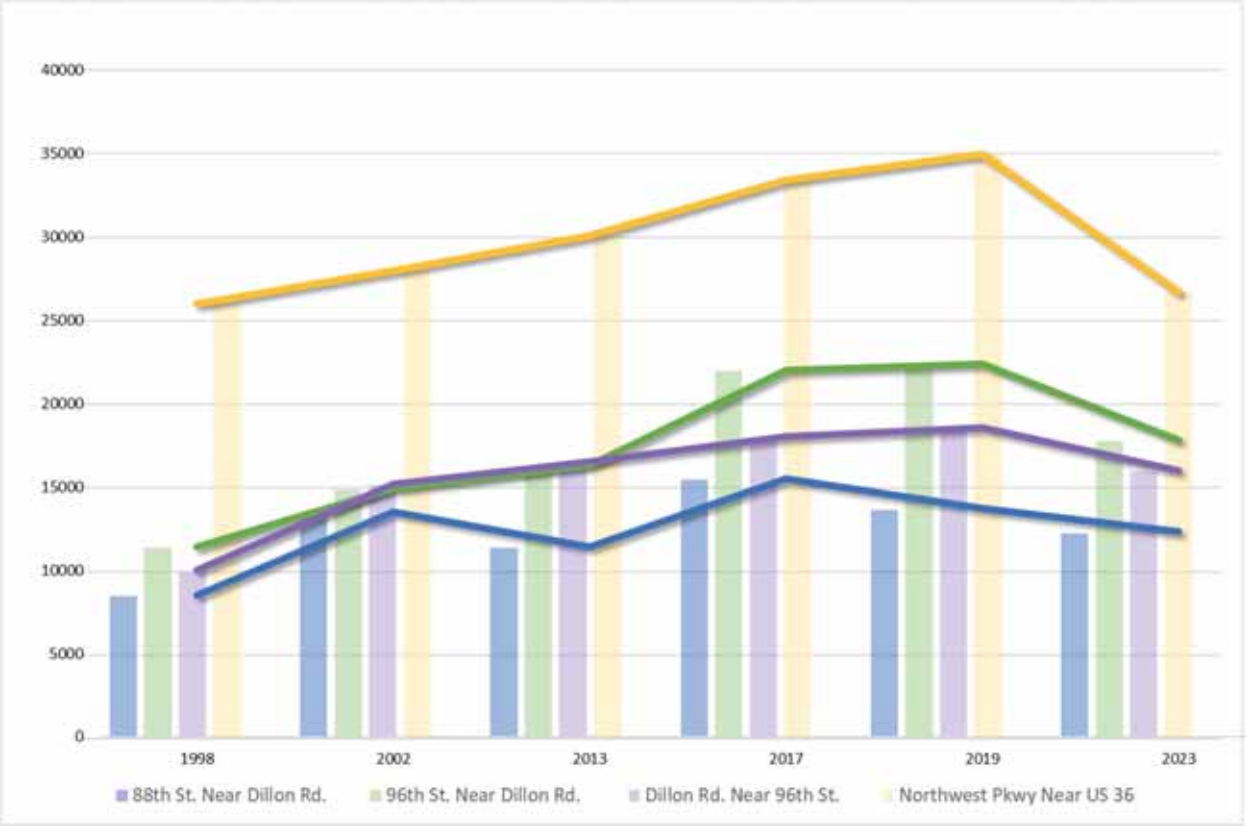
5.3 Traffic Changes Since Storage Tek Closure

Many changes have taken place in the Redtail Ridge project area since Storage Tek was an active campus in the late 1990's. The Town of Superior implemented their Comprehensive Plan that included new single-family residential neighborhoods and a mixed-use town center. The City and County of Broomfield constructed a major regional shopping center at Flatiron Crossing and a mix of uses along the eastern side of what is now the Northwest Parkway and Interlocken Loop. The City of Louisville also added new uses to the Colorado Technology Center. Also, over this timeline the number of open enrollment students attending Monarch K-8 and Monarch High School, who are not provided school bus services, has remained consistent at almost 40% of the student body at Monarch High School (approximately 700 students) and 25% at Monarch K8 (approximately 75 students). All these changes over the past 18 years since the Storage Tek property closed have utilized the vehicle capacity historically used by traffic generated from Storage Tek on the S. 88th Street, Dillon Road, and S. 96th Street corridors.

The historic volumes and trends for each corridor on **Figure 6** show what has occurred in the area since the Storage Tek site was vacated in the early 2000's. The corridors of S. 88th Street, Dillon Road, and S. 96th Street corridors were reaching capacity in Year 2019; however, since the COVID-19 pandemic traffic volumes have been reduced and capacity has become available for future development.

Planning level daily capacity estimates for two-lane roadways with turn lanes range from 16,000 to 18,000 vpd. Increased capacity at the Dillon Road/ S. 96th Street intersection and the limited number of access locations on these corridors are reasons that these segments can accommodate between 22,000 and 24,000 vpd. If additional conflict points are added to the corridors, the capacity will likely decrease.

Figure 6. Volume Trends on Study Roadways



5.4 Traffic Pattern Changes Due to COVID-19

The COVID-19 pandemic shifted traffic patterns as habits and uses have changed in response to disruptions from business as usual. Many companies have permanently adopted greater flexibility for employees even as offices and businesses are reopened. Increased telework and flexible hours have reduced the magnitude of travel demand during peak hours, instead resulting in less traffic more evenly spread travel throughout the day. Nearly three (3) years after the beginning of the pandemic, these changes have persisted and can be expected to represent long-term trends.

Traffic count data collected in January 2023 captures the enduring impact of COVID-19 on travel after patterns have normalized. Compared to count data collected in 2019, AM and PM peak hour traffic volumes have been reduced by an average of 17% overall within the study area.

5.5 Walking in the Project Area

Most of the existing sidewalk and multi-use path network near the Redtail Ridge project is in the S. 88th Street corridor. This is due to the open lands that mostly front Dillon Road and S. 96th Street in the study

area. The S. 88th Street sidewalks and multi-use paths connect the Monarch school campus to neighborhoods in Louisville and Superior. There is an existing underpass under S. 88th Street just south of Dillon Road. This underpass connects the Monarch school campus to the sidewalks on Dillon Road west of S. 88th Street. There are missing sidewalk and trail connections along S. 88th Street, Dillon Road, and S. 96th Street, with an example shown in **Figure 7**.

It is anticipated that the demand to complete the sidewalk and multi-use path network between the CTC Campus, Redtail Ridge, Monarch school campus, residential areas, and retail centers will be increasingly important in the future as the TMP priorities are implemented. Specifically, new sidewalks and pathways will be necessary given future plans for shared ride mobility and BRT near Dillon Road and in the S. 96th Street corridor.

Figure 7. Coal Creek Regional Trail Informal Connection

The southeast corner of the Redtail Ridge site has an existing underpass that connects under Northwest Parkway (a photo of the underpass is shown in **Figure 8**). This connects sidewalks and multi-use pathways on the westside of Northwest Parkway to the new Broomfield sidewalk network on the eastside of Northwest Parkway. This underpass is also a critical part of the future walking connections to the Rock Creek and Broomfield Trails.

Figure 8. Northwest Parkway Multi-Use Path Underpass

5.6 Bicycling in the Project Area

The Redtail Ridge site is located at the confluence of many off-street trails and on-street bicycle lanes. The Coal Creek Trail, Rock Creek Trail and the US 36

Bikeway are located within a short bike ride (5 minutes or less than one mile) of the project site.

S. 88th Street, Dillon Road, and S. 96th Street currently have on-street bicycle lanes that provide connections to the Coal/Rock Creek Regional Trails and the US 36 Bikeway. The City of Boulder is located within a 6-mile bike ride on the US 36 Bikeway and the RTD US 36 and East Flatiron Station is located within a one-mile bike ride of the project site. Each intersection in the study area has approaches and departures that have accommodations for people on bicycles. The S. 88th Street underpass provides access to the Monarch school campus from Dillon Road.

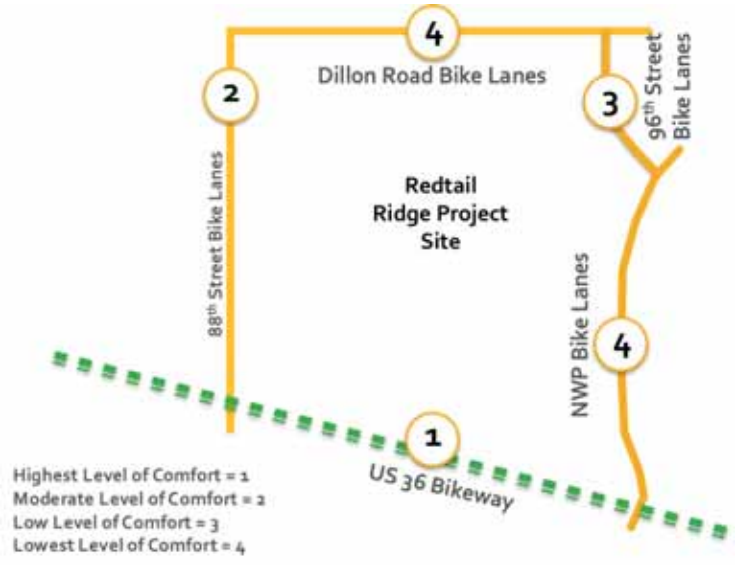


Figure 9. Existing Bicycle Level of Comfort (Source: City of Louisville Transportation Master Plan)

The City of Louisville TMP evaluated the corridors of S. 88th Street, Dillon Road, and S. 96th Street and the critical intersections for the level of bicycling comfort. A map summarizing the results of the bicycle level of comfort results in illustrated in **Figure 9**.

Based on the TMP analysis, the current design of the corridors and intersections have a high level of stress. This appears to be correlated to the high number of crashes that were shown **Section 4.4**. The high posted speed limits in these corridors and significant peak hour traffic volumes also contribute to the low level of comfort people experience.

The City plans for future implementation of Great/Complete Street design treatments for the S. 88th Street, Dillon Road, and S. 96th Street corridors and intersections consistent with the TMP's policies. This includes the installing protected bike lanes, multi-use pathways, and intersection treatments throughout the project site and connect to the adjacent arterial roadways, which will provide greater opportunity and protection for all skill levels. Implementation on the public roadways by the City will be subject to public input, topographic limitations, right of way availability, conflicts with utilities and accesses, and construction costs.

A later section of this study includes additional details on implementing lower stress bicycle networks in the S. 88th Street, Dillon Road, and S. 96th Street corridors that would connect to the US 36 Bikeway and the Coal/Rock Creek Regional Trails.

5.7 Transit Access in the Study Area

The Redtail Ridge site is located within one (1) mile of the RTD US 36 and East Flatiron Station. This station is serviced by the Flatiron Flyer (Routes FF1 and FF2) and the Sky Ride service to DEN (Route AB). The station has an underpass under US 36 and is connected to a network of first and final mile destinations. There are approximately 265 parking spaces and eight (8) bike racks at the station. This station is connected to the project site via the Northwest Parkway underpass described in in the prior sections.

The Flatiron Flyer BRT system provides fast and efficient service between Boulder and Denver. Buses are available at the US 36 and East Flatiron Station every 15 minutes during peak and every 30 minutes off peak (on average). Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle. There is capacity for six (6) to eight (8) bikes on board depending on luggage and other passenger storage needs. The buses are equipped with charging for mobile devices. The vehicles travel in the High Occupancy Vehicle (HOV) lanes on US 36 and I-25. The trip between the US 36 and East Flatiron Station and Denver Union Station is 28 minutes. The trip between downtown Boulder and the US 36 and East Flatiron Station is 23 minutes. Route AB provides transit services to Denver International Airport (DEN) is available every 30 minutes during most hours of the day. Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle also service this route. The trip between DEN and the US 36 and East Flatiron Station is 34 minutes via the Northwest Parkway.

Although not public transit, the BVSD operates many school buses in the project area to serve the Monarch school campus. The school buses only have one access point to the Monarch campus via S. 88th Street. The school buses provide transportation to students for school, field trips, and after school activities year-round.

5.8 Transportation Demand Management

A transportation demand management (TDM) plan has been developed for the Redtail Ridge development. The TDM plan includes strategies to reduce mode share of single-occupant vehicles and increase usage of public transportation and active modes such as walking and bicycling. Strategies are described in detail in a separate report, titled *Redtail Ridge Transportation Demand Management Plan.*

5.9 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 3**. The results of the LOS calculations for the intersections are summarized in **Table 3.** A detailed table with LOS by movement and 95th percentile queues by lane as well as the intersection LOS worksheets are included in **Appendix A (Table A.1 and A.2)**. **Results of the existing intersection capacity analysis indicate that the majority of the study intersections operate at LOS D or better in both peak hours.**

Table 3. Existing Overall Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	D
20	S. 88th Street/Campus Drive	Signal	C	D
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	C	**E**
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

The following study intersections currently operate overall at LOS E/F or have movements that operate at LOS E/F or having queuing issues during one or both peak hours:

- *#5. Dillon Road and McCaslin Boulevard:* During the AM peak hour, the eastbound through, northbound left-turn, and southbound left-turn movements currently operate at LOS E. No significant queuing issues were observed in the field or in the traffic analysis reports.

  Recommendations: No mitigation measures recommended. The northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements. These delays are typical of side-street or left-turn movements on arterial roadways.

- *#15. Dillon Road and S. 96th Street:* During the AM peak hour, the southbound right-turn currently operates at LOS E due to the high volume of turning vehicles (nearly 300 vph). The 95th percentile queues were calculated to be maintained with the existing storage lengths.

  Recommendations: No mitigation measures recommended.

- *#20. S. 88th Street and Campus Drive:* During the AM peak hour, the eastbound through/right-turn lane currently operates at LOS E. During the PM peak hour, the westbound left-turn movement currently operates at LOS E. This intersection is the only access to the Monarch school campus and the adjacent medical campus. During peak school times, southbound queues on S. 88th Street extend back to Dillon Road, impacting traffic operations at the signal. It was also observed that drivers will turn into the medical campus to then become an eastbound through vehicle to get to the schools.

  Recommendations: No mitigation measures recommended.

- *#25. Northwest Parkway and S. 96th Street/Via Varra:* During the PM peak hour, the intersection currently operates overall at LOS E due to the delay experienced on the northbound left-turn movement (LOS F). The 95th percentile queues within the existing turn lanes are currently maintained within the existing storage lengths.

  Recommendations: No mitigation measures recommended. Currently there are dual northbound left-turn lanes on Northwest Parkway. The southbound right-turn is a free movement and turns into a third through lane (acceleration lane) on S. 96th Street. Three (3) lanes merge into one (1) northbound through lane on S. 96th Street approximately 600 feet north of the intersection. This merge will occasional queue back and cause inefficiencies at the Northwest Parkway intersection.

- *#30. Northwest Parkway and Rockcress Drive/Via Varra:* Although this intersection operate overall at LOS B in both peak hours, there are several side-street movements that currently operate at LOS E in one peak period. During the AM peak hour, the eastbound left-turn, westbound left-turn, and the westbound right-turn movements operate at LOS E. During the PM peak hour, the eastbound through movement operates at LOS E. No significant queuing issues were observed in the field or in the traffic analysis.

  Recommendations: No mitigation measures recommended. The northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements. The volumes on the eastbound approach are less than 10 vph since Rockcress Drive is closed for public access; therefore, these are likely vehicles turning around or mistakenly turned onto the closed roadway.

As previously mentioned, earlier studies have recommended the extension of Campus Drive to S. 96th Street to address the existing issues. The Campus Drive extension is evaluated as part of the Year 2025 with project scenario. The right-of-way for the Campus Drive extension is located on the Redtail Ridge property. Under background conditions, where the Campus Drive extension is not assumed, mitigation options are provided to address the existing/future background capacity issues without the Campus Drive extension.

6.0 Future Background Conditions (without Redtail Ridge)

6.1 Annual Growth Factor and Future Volume Methodology

In order to forecast the future peak hour traffic volumes, background traffic growth assumptions were estimated based on a review of various resources: historical traffic volumes, DRCOG 2050 regional model projections, and planned development projects in the study area.

A comparison of the DRCOG base-year 2020 vs. 2050 projections show annual growth of approximately one-half percent (0.5%) along the study roadways, except along Northwest Parkway, which is anticipated to have an annual growth rate of approximately 2.0%. A review of the assumed projected socio-economic data within the traffic analysis zones (TAZ) where the project is proposed indicates that DRCOG did anticipate that this area would redevelop. Therefore, the background growth rates from DRCOG data represent project traffic forecast to the study roadway network and the traffic volume generated by Redtail Ridge needs to be factored out of the DRCOG forecasts.

There are three (3) planned development projects (bulleted below) in the study area (see section **3.0 Previous Studies** for additional information). Trips generated by these three (3) developments were added to the study intersections in addition to the general background growth rate:

1. **Parkway Circle:** Majority of the Parkway Circle development has already been built out. This area has a mix of residential, retail, and office type uses that generate a high percent of internal capture and trips that can be made walking/biking or taking transit. Most remaining construction in the area is lower-density residential than already constructed. To estimate future traffic volumes generated by this development, vehicles currently entering/exiting the east approaches at the Northwest Parkway/S. 96th Street/Via Varra and Northwest Parkway/ Rockcress Drive/Via Varra intersections were increased by a factor of 1.25. The traffic volumes were then proportionally distributed to the study roadway network based on existing travel patterns.

2. **St. Louis Parish:** The trip generation estimates from the *Louisville Industrial Park Traffic Impact Analysis* (LSC, January 2020) were included in the background forecasts. The industrial/commercial uses were assumed to be operating in the short-term and were included in the Year 2025 background traffic forecasts. The full buildout of the site including the church and school, was assumed to be completed after Year 2030 and those trips were included in the Year 2040 background traffic forecasts.

3. **Morgan Ranch:** Trips provided in the *Morgan Ranch – Downtown Superior Traffic Impact Analysis*. (November 2019) were included in the background forecasts. This project is anticipated to utilize the new 88th Street / Promenade Boulevard intersection and travel through the study intersections. The development trips were included in the Year 2025 background traffic forecasts. Promenade Boulevard is substantially complete to 88th Street, however, was not open to traffic when data was collected in January 2023.

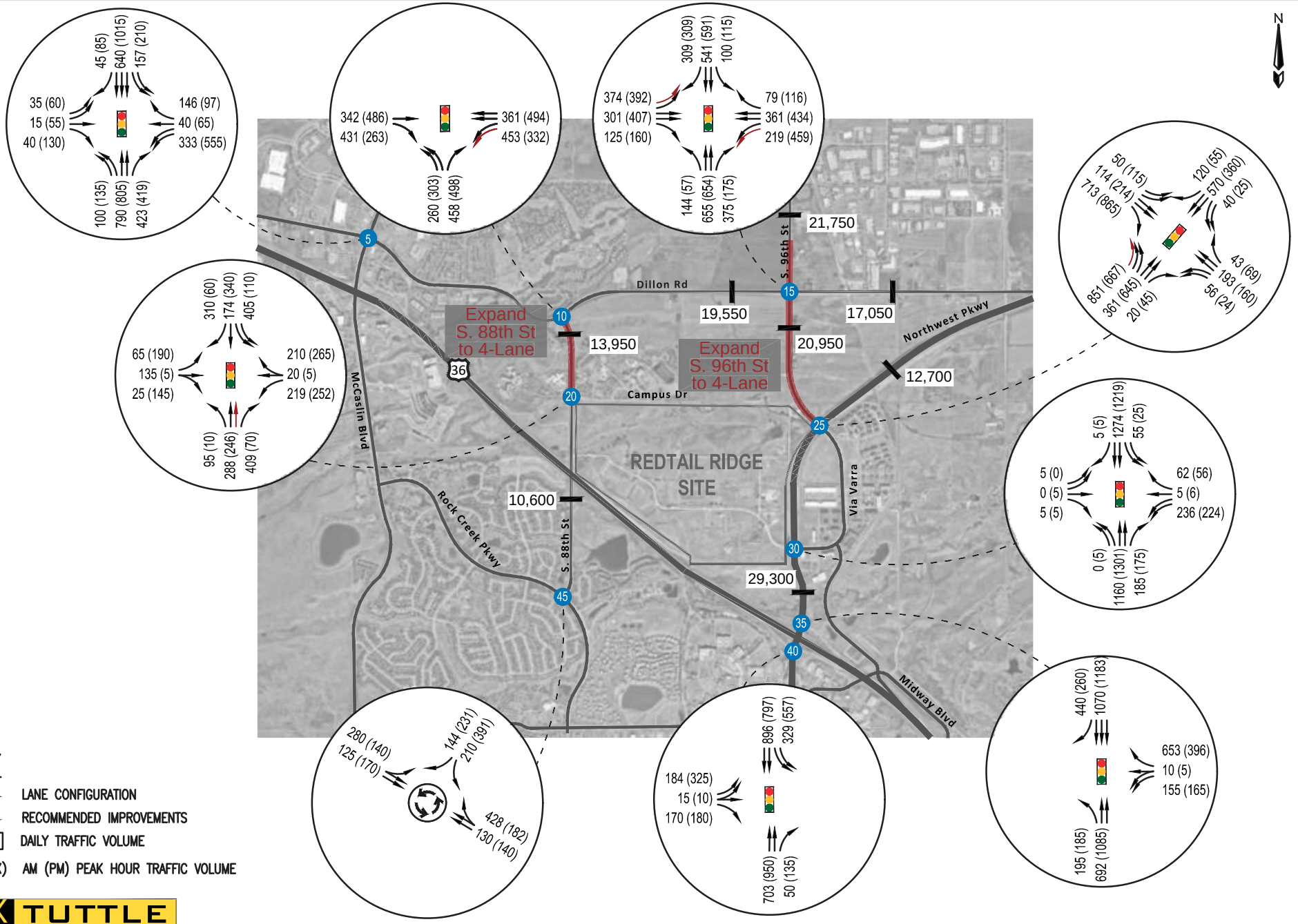
Based on a review of the historical traffic volume trends, the projected future traffic forecasts, and the known planned developments, the projected traffic growth from the DRCOG model was adjusted to account for known developments. The DRCOG model includes the listed planned developments in the vicinity of the project, and therefore accounts for those developments in the predicted growth rate. The known development trips were removed from the DRCOG growth rate for a background growth rate of

0.55% annually. Known development trips were added on top of this background growth rate to obtain background traffic volumes.

Through trips on Northwest Parkway are predicted to increase at a higher rate than other trips in the study area. Northwest Parkway serves more regional trips than other roadways in the study area, with a higher predicted annual growth rate. DRCOG predicts annual growth closer to 2.0% on Northwest Parkway. The background through volumes on Northwest Parkway were increased to achieve a total growth rate of 2.0%.

The resultant background traffic volumes for Year 2025, Year 2030, and Year 2040 are provided in **Figure 10, Figure 11**, and **Figure 12**.

It is important to note that while the Year 2040 background traffic forecasts do not assume the Jefferson Parkway extension, if that project is constructed prior to Year 2040 it would increase traffic volumes along Northwest Parkway at the intersections between S. 96th Street and US 36 from what was projected for this study. As noted in the *Level 1 Traffic and Revenue Study Jefferson Parkway* report, with the Jefferson Parkway extension the project may rebuild the Northwest Parkway/Interlocken Loop corridor between S. 96th Street and SH 128. Under the Northwest Parkway extension scenario, Northwest Parkway may be reconstructed to separate toll and local traffic which would include constructing new interchanges and a frontage road system to accommodate local traffic. The need to increase capacity on Northwest Parkway independent of Redtail Ridge was also identified in the DRCOG Metro Vision Regional Transportation Plan. At this time, no design or concepts have been completed for this segment of Northwest Parkway. Based on preliminary descriptions of possible improvements, Redtail Ridge will not impede future improvements to Northwest Parkway.



KEY

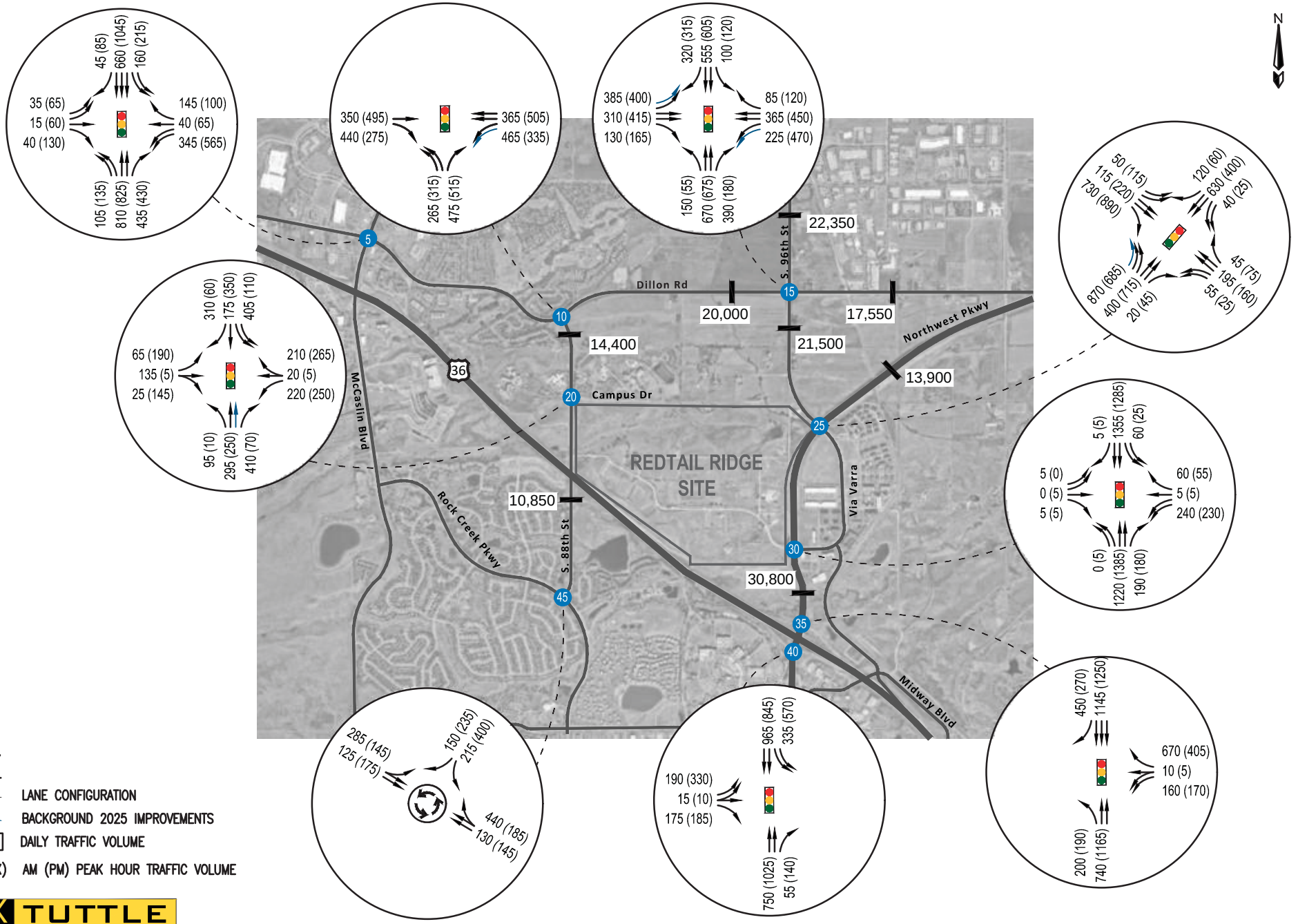
- LANE CONFIGURATION
- RECOMMENDED IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

FOX TUTTLE
Transportation Group

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2025 BACKGROUND (WITHOUT REDTAIL RIDGE) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	10

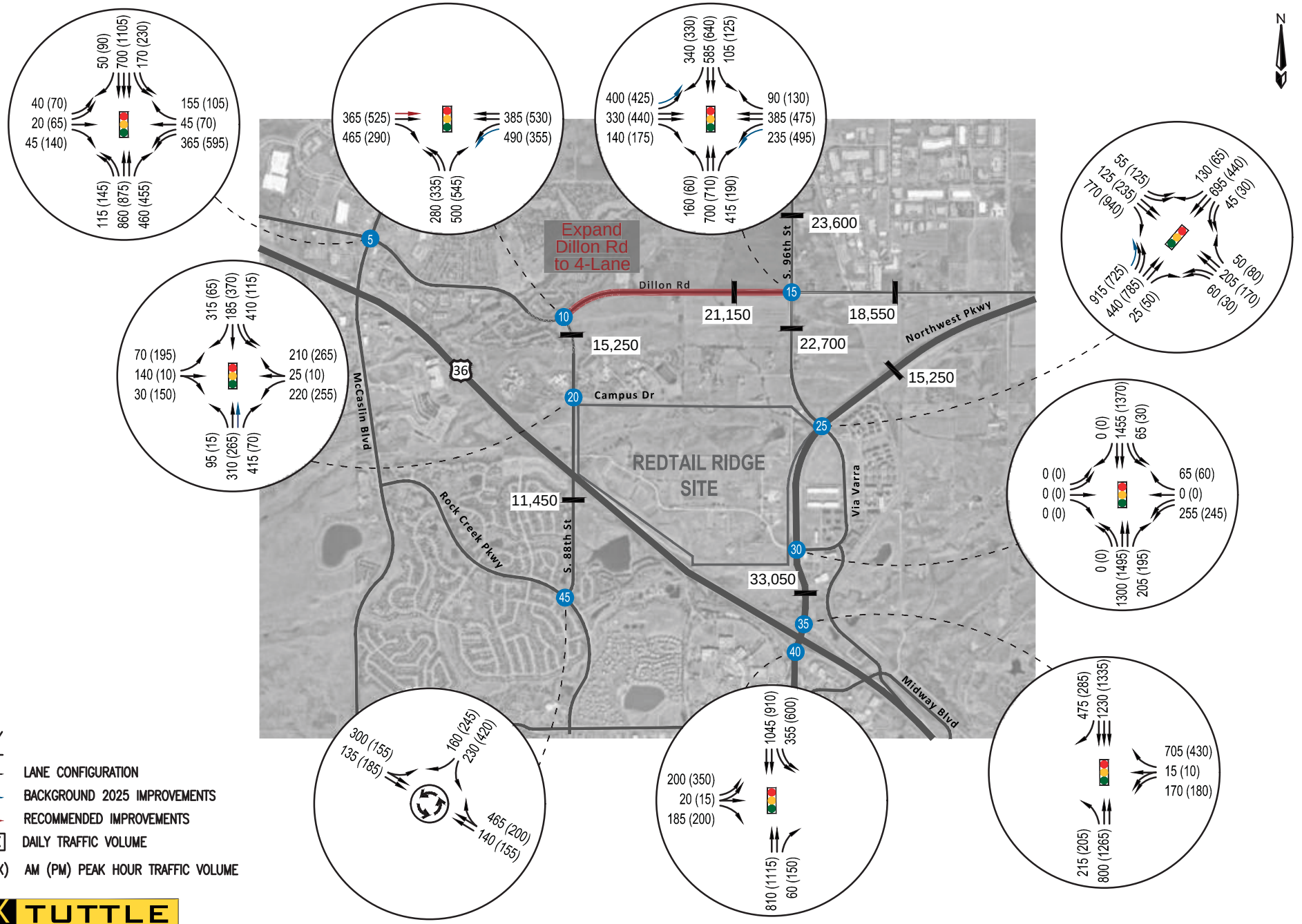


FOX TUTTLE
Transportation Group

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2030 BACKGROUND (WITHOUT REDTAIL RIDGE) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	11



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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2040 BACKGROUND (WITHOUT REDTAIL RIDGE) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	12

6.2 Future Multimodal Network Assumptions

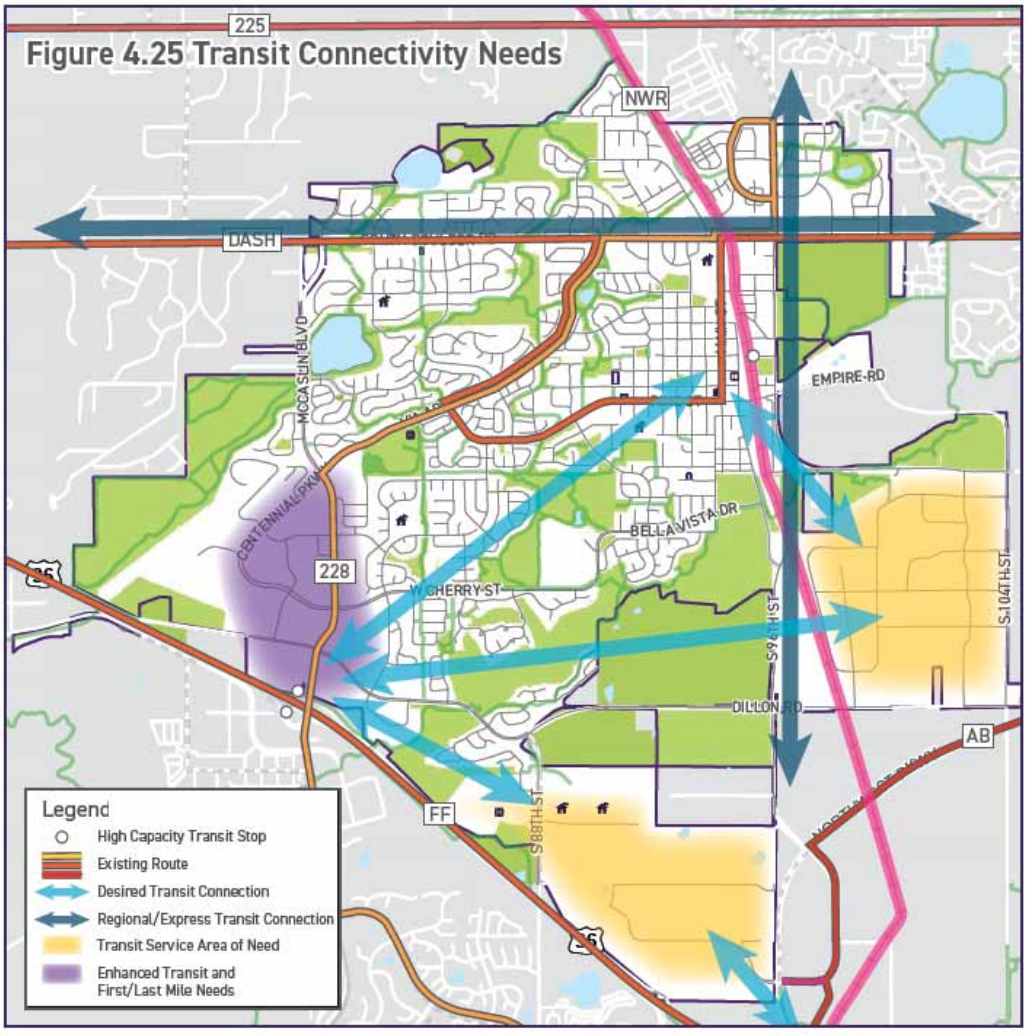
The future multimodal network improvements around Redtail Ridge project were outlined in the *City of Louisville TMP* and shown in **Figure 13.** They include a series of bike lanes, transit stops, underpasses, and multiuse trail connections.

Figure 13. Future Multimodal Network Identified in the City of Louisville TMP

- A Bicycle facility connecting Dillon Rd to the US 36 bikeway
- B New underpasses at proposed locations along Dillon Road
- C Trail connections to provide increased access to the schools and hospital
- D Proposed future transit connecting McCaslin Station to the hospital, schools, and CTC
- E On-street shoulder bikeway improvements
- F Dillon Road capacity improvements to improve intersection operations
- G Campus Drive Extension to improve school circulation and improve emergency access
- H Paradise Lane realignment to eliminate intersection at S 96th Street. (*Note: Paradise Lane is on County property).
- I New signal at Campus Drive and S 96th Street near fire house

The City's TMP also recommends a partnership with the business community to provide a shuttle circulator that connects employment areas to regional transit, retail, and other destinations. CTC, Centennial Valley, and Redtail Ridge were identified as service areas for the route. The transit network also includes BRT service in the S. 96th street corridor and two (2) Northwest Rail station within a mile of Redtail Ridge (see **Figure 14**). The Northwest Rail stations are planned to be located near the CTC and at the Flatiron and US 36 Park-n-Ride.

Figure 14. Future Transit Network Identified in the City of Louisville TMP



The City has been having discussions with RTD about a new local route that would serve the project site. The new route would require approval from RTD and grant funding. This project should support the development of that route and promote connections between Redtail Ridge and Downtown Louisville, McCaslin Station, CTC, and the Flatiron and US 36 Park-n-Ride. In addition, the project should include determining the feasibility of adding a stop for the Flatiron Flyer BRT to the west of Northwest Parkway on the project site.

Table 4 provides a summary of the assumed multimodal network under background conditions. This table only assumes what would occur in the future without additional support from the Redtail Ridge project. The recommendations for an expanded multimodal network and TDM programs with the Redtail Ridge project can be found in **Section 7.0** of this study.

Table 4. Future Multimodal Network Assumption Summary

Corridor	Bike Lanes	Multi-Use Pathways	Sidewalks	Bus Lanes
S. 88th Street (US 36 to Dillon Road)	buffered or protected	westside or eastside	westside and eastside	none
Dillon Road (S. 88th to S. 96th Street)	buffered or protected	northside	northside and southside	none
S. 96th Street (Northwest Parkway to Front Street)	buffered or protected	westside	westside and eastside	yes
Northwest Parkway (S. 96th Street to US 36)	none	eastside	eastside	shoulder running

6.3 Year 2025 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations for the Year 2025 and to identify any capacity constraints associated with background traffic in the short-term scenario. The background volumes, lane configuration, and traffic control are illustrated on **Figure 10**.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the Year 2025 background scenario. The results of the LOS calculations for the intersections are summarized in **Table 5**. The detailed results of the LOS calculations for the intersections and all movements are summarized in **Table A.1** in **Appendix A.** The 95th percentile queues by movement are included in **Appendix A (Table A.2).** The intersection LOS and queuing report worksheets are attached in the **Appendix**. Note that signal timing was assumed to be optimized at the study intersections. **Results of the Year 2025 background intersection capacity analysis indicate that the majority of the study intersections operate at LOS D or better in both peak hours.**

Table 5. Year 2025 Background Conditions Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	C	B
15	Dillon Road/S. 96th Street	Signal	D	D
20	S. 88th Street/Campus Drive	Signal	D	D
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	**E**	**F**
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	C	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

The following study intersections currently operate overall at LOS E/F or have movements that operate at LOS E/F or having queuing issues during the one of both peak hours:

- *#5. Dillon Road and McCaslin Boulevard:* Similar to the existing conditions, the eastbound through, northbound left-turn, and southbound left-turn movements currently operate at LOS E during the AM peak hour. No significant queuing issues were observed in the field or in the traffic analysis reports.

  Recommendations: No mitigation measures recommended.

- *#15. Dillon Road and S. 96th Street:* During the AM peak hour, the southbound right-turn was estimated to begin to operate at LOS F due to the high volume of turning vehicles (over 300 vph). During the PM peak hour, the northbound through movement was estimated to operate at LOS E. The 95th percentile queues were calculated to be maintained with the existing storage lengths.

  Recommendations: No mitigation measures recommended.

- *#20. S. 88th Street and Campus Drive:* During the AM peak hour, the eastbound through/right-turn lane was estimated to continue to operate at LOS E. During the PM peak hour, the westbound left-turn movement was estimated to begin to operate at LOS F.

  Recommendations: Based on roadway capacity thresholds being exceeded, it is recommended that S. 88th Street be widened to four-lanes between Campus Drive and Dillon Road. At the intersection of S. 88th Street and Campus Drive, this would include a second northbound through lane. In addition, signal timing should be adjusted to accommodate the additional volumes and capacity. With these

improvements, the intersection was calculated to operate overall at LOS C in both peak hours with all movements operating at LOS D or better.

- *#25. Northwest Parkway and S. 96th Street/Via Varra:* During the AM peak hour, this signalized intersection was estimated to begin to operate overall at LOS E due to the additional delay on the northbound left-turn movement. During the PM peak hour, the intersection was estimated to begin to operate overall at LOS F due to increased delay experienced on the northbound left-turn movement (LOS F). The 95th percentile queues within the existing turn lanes are currently maintained within the existing storage lengths.

  Recommendations: Based on roadway capacity thresholds being exceeded, it is recommended that S. 96th Street be widened to four-lanes west of Northwest Parkway. At the intersection of Northwest Parkway and S. 96th Street/Via Varra, it is recommended a third northbound left-turn lane be constructed. This would require the elimination of the existing southbound right-turn acceleration lane; therefore, consider adding an overlap phase for the southbound right-turn. With these recommendations, the intersection was calculated to improve to overall at LOS D in the AM peak hour and LOS C in the PM peak hour with all movements operating at LOS D or better.

- *#30. Northwest Parkway and Rockcress Drive/Via Varra:* During the AM peak hour, the westbound left-turn and right-turn movements were estimated to operate at LOS F due to limited green time. During the PM peak hour, the eastbound through and westbound left-turn movements were estimated to operate at LOS E. No significant queuing issues shown in the traffic analysis.

  Recommendations: Adjust the signal timing in both peak hours. In the AM peak period consider adding four (4) seconds to the westbound phases which would be taken from the northbound/southbound through phase. This would improve the side-street movements to LOS D. In the PM peak period consider adding two (2) seconds to the westbound phases which would be taken from the northbound/southbound through phase. This improves the westbound left-turn to LOS D and the eastbound through movement would remain the same (less than five vehicles).

Based on the roadway capacity thresholds, the following improvements are recommended to be implemented in Year 2025 background:

- **Widen S. 88th Street** between Dillon Road and Campus Drive to a four-lane roadway. This provides the opportunity for the following mitigation measures at the impacted intersections:
  - *#10. Dillon Road/S. 88th Street* modify the westbound approach to include a 2nd left-turn lane.
  - *#20. S. 88th Street/Campus Drive* extend the northbound right-turn lane to provide a minimum of 500 feet of storage. Construct a second northbound through lane that begins approximately 500 feet south of Campus Drive.

  - Even with the recommended improvements at the S. 88th Street intersections, it is still anticipated there will be congested during the Monarch school campus arrival/departure peak periods. However, these improvements will significantly reduce queues and delay to non-school related traffic traveling through the study network. Generally, it is considered acceptable for queuing/delay issues to occur near intersections adjacent to a school during a school's arrival/departure peak periods, since the congestion occurs for a relatively short period of time.

- **Widen S. 96th Street** between Dillon Road and Northwest Parkway to a four-lane roadway. This provides the opportunity for the following mitigation measures at the impacted intersections:
  - *#15. Dillon Road/S. 96th Street* construct dual eastbound and westbound left-turn lanes.
  - *#25. Northwest Parkway/S. 96th Street/Via Varra* construct triple northbound left-turns, modify the southbound free right-turn movement to no longer have an acceleration lane, and modify the northwest approach on S. 96th Street to allow for three receiving lanes.

Previous studies have identified the Campus Drive extension as a future improvement to mitigate traffic operational issues at the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections. However, the Campus Drive extension is located on the project property and based on conversations with City staff, this improvement would only be constructed as part of a development project. Therefore, it was not considered to mitigate background conditions.

The study intersections were evaluated with the recommended improvements listed above. **Table 6** provides the overall intersection level of service with the recommended improvements that indicate all study intersections will operate at LOS D or better. The recommended geometric improvements are shown with red arrows on **Figure 10**. The intersection LOS and queuing report worksheets are attached in the **Appendix**. Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.3 and A.4)**.

Table 6. Year 2025 Background Conditions Level of Service Summary (Improvements)

No.	Intersection with Recommended Improvements	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	C
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B

6.4 Year 2030 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations for the Year 2030 and to identify any capacity constraints associated with anticipated mid-term background conditions. The background volumes, lane configuration, and traffic control are illustrated on **Figure 11**. Mitigation measures recommended in Year 2025 background were assumed to be implemented by Year 2030 and included in the analysis.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the Year 2030 background volumes. The results of the LOS calculations for the intersections are summarized in **Table 7**. The intersection LOS and queuing report worksheets are attached in the **Appendix**. Note that signal timing was assumed to be optimized at the study intersections.

Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.1 and A.2)**. **Results of the Year 2030 background intersection capacity analysis indicate that all of the study intersections operate at LOS D or better in both peak hours.**

Table 7. Year 2030 Background Conditions Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	C
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (B)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

While the **Dillon Road at McCaslin Boulevard (#5)** intersection is expected to operate overall at LOS C in both peak periods, the same movements that operated at LOS E in the in AM peak hour will continue to experience delays (eastbound through, northbound left-turn, and southbound left-turn). The eastbound through movement at **Northwest Parkway and Rockcress Drive/Via Varra (#30)** was estimated to continue to operate at LOS E in the PM peak hour with the intersection operating overall at LOS B.

Further, while congestion is anticipated to continue to occur near the Monarch school campus near the school arrival/departure peaks, the queues/delays were acceptable for the conditions. Further, no other significant queuing issues are anticipated.

6.5 Year 2040 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations for the Year 2040 background scenario and to identify any capacity constraints associated with background condition in a long-term buildout scenario. The background volumes, lane configuration, and traffic control are illustrated on **Figure 12.** Note that peak hour factors were updated to 0.92 for movements that were not associated with the school traffic or those with an existing value higher than 0.92. This was conducted since the increase in volumes is anticipated to spread the traffic over the hour. Mitigation measures recommended in previous background scenarios was assumed to be implemented by Year 2040 and included in the analysis.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the long-term background scenario. The results of the LOS calculations for the intersections are summarized in **Table 8.** Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.1 and A.2).** The intersection LOS worksheets are attached in the **Appendix**. **Results of the Year 2040 background intersection capacity analysis indicate that all of the study intersections operate at LOS D or better in both peak hours.**

Table 8. Year 2040 Background Conditions Level of Service Summary

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C
10	Dillon Road/S. 88th Street	Signal	B	B
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	D
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	C	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

Based on the roadway capacity thresholds, the following improvements are recommended to be implemented in Year 2040 background:

- **Widen Dillon Road** between S. 88th Street and S. 96th Street to a four-lane roadway. This will improve the poor lane utilization at the intersection with S. 96th Street. This provides the opportunity for the following mitigation measures at the impacted intersections:
  - *#10. Dillon Road/S. 88th Street* modify the eastbound approach to include a 2nd through lane.
- **Widen S. 96th Street** to a four-lane roadway north of Dillon Road. As noted in **Section 3.0 (Previous Studies)**, there are other studies that analyzed the S. 96th Street corridor. Traffic volume projections indicate the need to expand S. 96th Street to a four-lane roadway to the north, through the SH 42 intersection. The Louisville Industrial Park/St. Louis Parish development on the northeast corner of S. 96th Street and Dillon Road has already expanded S. 96th Street to four lanes adjacent to that property.

The study intersections were evaluated with the recommended improvements listed above. **Table 9** provides the overall intersection level of service with the recommended improvements. The recommended geometric improvements are shown with red arrows on **Figure 12**. Detailed tables with LOS and 95th percentile queues by movement are included in the **Appendix A (Tables A.3 and A.4)**.

Table 9. Year 2040 Background Conditions Level of Service Summary (Improvements)

No.	Intersection with Recommended Improvements	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	B

7.0 Proposed Development Traffic with Redtail Ridge

7.1 Proposed Internal Roadway Network

Campus Drive Extension

Construction of the Campus Drive extension is proposed to coincide with the opening of the first vertical development of Redtail Ridge. Once extended, Campus Drive will connect from where it dead ends (approximately 2,200 feet east of S. 88th Street) to S. 96th Street. This will provide an alternative route for traffic generated by the Monarch school campus; it will also serve as a primary access to/from the Redtail Ridge development as shown in **Figure 2**.

In addition to serving traffic to/from the Monarch school campus, Campus Drive is anticipated to be utilized by the residents living in the Rock Creek subdivision and as an alternative route to Dillon Road. It should be noted that the Centennial Peaks Hospital/Avista Family Life Center medical facilities are planning to be relocated to a parcel within Redtail Ridge. With the project the hospital traffic will be rerouted from the existing location to the new site.

To estimate the number of drivers that will change their route to use Campus Drive, existing travel patterns were reviewed, and a travel time analysis was performed. The primary movements that are anticipated to most likely shift from their current route to Campus Drive are the northbound right-turn and westbound left-turn movements at the Dillon Road/S. 88th Street intersection.

Vehicles that are traveling from south of the S. 88th Street/Campus Drive intersection to Northwest Parkway are anticipated to use the Campus Drive extension once it is constructed, since this is expected to be a faster route than Dillon Road. When looking at travel time to/from the Dillon Road/S. 96th Street intersection to the Monarch school campus, the travel distance for vehicles using the S. 96th Street/Campus Drive intersection versus the S. 88th Street/Campus Drive intersection is approximately 25% fewer. The travel distance for vehicles destined to/from the hospital is approximately the same.

Based on current travel patterns, it is estimated that approximately 75% of vehicles currently making a northbound right-turn and westbound left-turn movements at the Dillon Road/S. 88th Street intersection would reroute to use Campus Drive during the AM peak hour. During the PM peak hour, it is estimated that 50% of vehicles currently utilizing these movements would reroute to use Campus Drive.

The travel conditions of the Campus Drive extension to the existing traffic volumes during the AM and PM peak hours are illustrated on **Figure 15**.

The Campus Drive concept layout near the Monarch school campus is shown in **Figure 16**. Campus Drive is proposed to be a four-lane roadway with roundabouts at the K-8 access, the High School access (peanut

roundabout), and Street B. The project team has met with BVSD on three (3) occasions to discuss the proposed roundabout and has received positive feedback on the proposed layout. A follow-up study is planned to evaluate the Campus Drive at the K-8 and High School intersection design in more detail.

In addition to studying the AM peak hour which coincides with the school arrival peak period, additional data will need to be collected for the afternoon peak period which coincides with the school departure period. Observations will also be conducted to evaluate the internal operations and current queues so that recommendations can be provided to BVSD to improve the internal operations.

Rockcress Drive

Redtail Ridge is planning to construct Rockcress Drive incrementally and is expected to be fully constructed prior to Year 2030. Like Campus Drive, this two-lane roadway will also be a new connection between S. 88th Street and Northwest Parkway. With the first phase of Redtail Ridge, Rockcress Drive is planned to be constructed from Northwest Parkway to the west to the approximate midpoint of the site. The future connection at S. 88th Street is anticipated to be in the same location as the Tape Drive access.

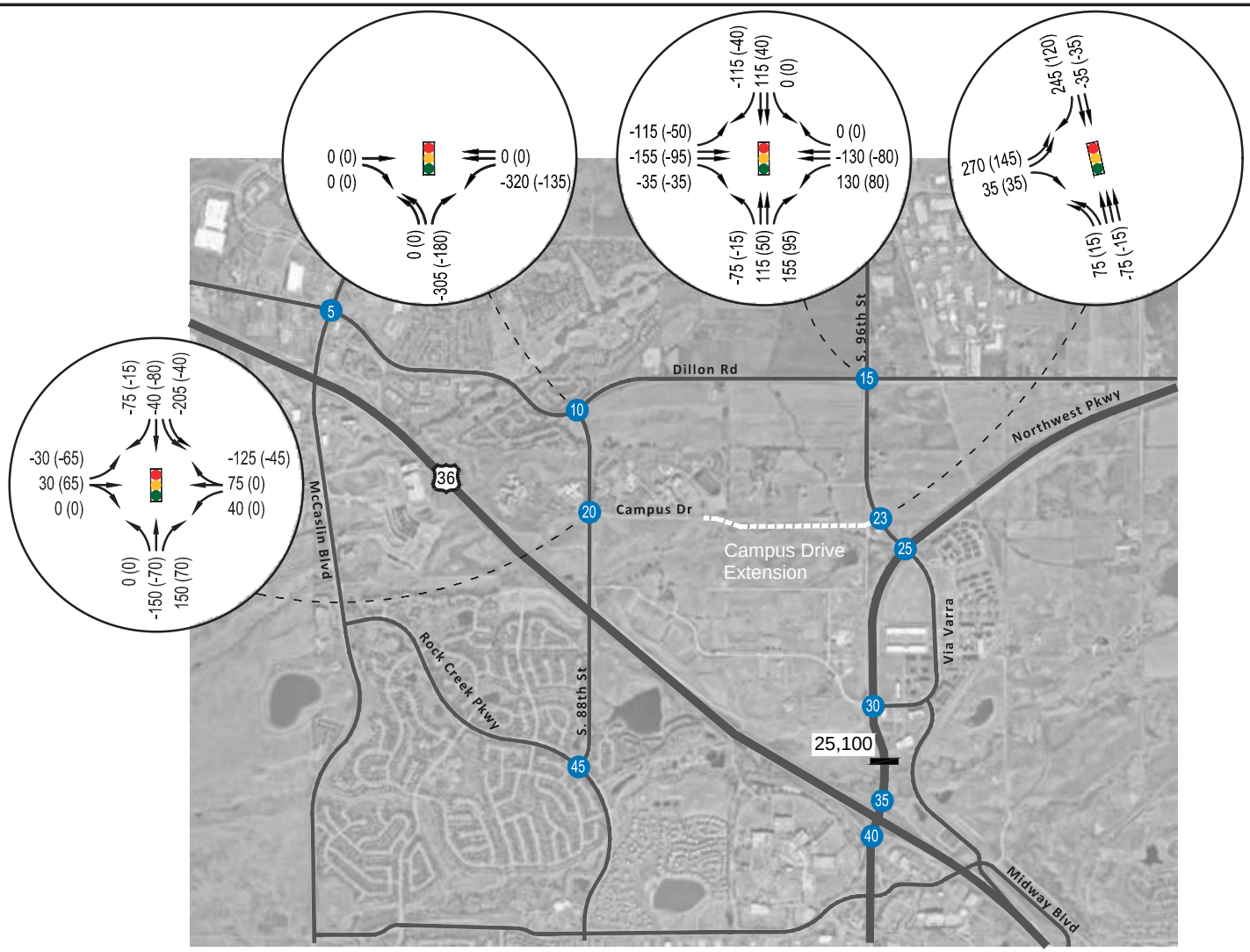
Consideration was given to the likelihood of existing/background vehicles rerouting to use Rockcress Drive from their current route. However, based on this review, few non-project related vehicles are anticipated to use Rockcress Drive to connect between S. 88th Street and Northwest Parkway.

Sorrel Avenue

The primary north-south roadway within Redtail Ridge will connect Campus Drive to Rockcress Drive, approximately 750 feet west of Northwest Parkway, and named Sorrel Avenue. This two-lane roadway will provide access to other internal collectors and driveways. It is proposed that the intersections at either end be constructed as roundabouts.

Internal Collectors

Three (3) internal roadways will be constructed within Redtail Ridge, in addition to those listed above. These two-lane roadways will provide direction access to the driveways, parking lots, loading areas, and circulation through the site. There is planned to be one north-south roadway between Campus Drive and Rockcress Drive at the west end of the site and then two east-west roadways connecting Sorrel Avenue to the north-south collector.



KEY

- LANE CONFIGURATION
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRIP VOLUME CHANGE FROM EXISTING

**Note: Traffic volume shifts are only shown for the study intersections impacted by the Campus Drive extenion

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CAMPUS DRIVE EXTENSION TRAFFIC PATTERN CHANGES (EXISTING VOLUMES)

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	15

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

CAMPUS DRIVE LAYOUT FOR MONARCH SCHOOL CAMPUS ACCESSES

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	16

7.2 Proposed Multimodal Network

The Redtail Ridge project will be built over the next 10 years. During this time major shifts in transportation mobility and regional transportation project completion are expected to take place. Transit projects such Northwest Rail, SH 42 BRT, and the RTD local circulator will potentially be operating before Year 2040. In addition, enhancements, and construction of complete streets on S. 88th Street, Dillon Road, and S. 96th Street, as well as the new connections within the project on Campus Drive, Rockcress Drive, and Sorrel Avenue, will be a major part of the multimodal transformation in Louisville. As outlined in the policy documents in the background section of this report, these corridors will serve many more travelers and modes in the future. The transformations will use the current right-of-way to move more people using safe, reliable, connected, and sustainable transportation options.

The enhanced-future multimodal network in the area is shown in **Table 10**. Additional details regarding at-grade signalized crossings, underpasses, trail connections, transit stops, shared ride mobility, and other multimodal infrastructure on the Redtail Ridge site will be detailed as this project continues ahead in the PUD process.

Table 10. Enhanced-Future Multimodal Network Assumptions

Corridor	Bike Lanes	Multi-use pathways	Sidewalks	Bus Lanes
Campus Drive (S. 88th Street to S. 96th Street)	buffered or protected	southside	northside	none
Rockcress Drive (S. 88th Street to Northwest Parkway)	buffered or protected	none	northside and southside	none
Sorrel Avenue (Campus Drive to Rockcress Drive)	buffered or protected	none	eastside and westside	none

** Expanded future multimodal network will include on-site improvements with connections to City multi-modal facilities, existing or future.*

The conceptual multimodal trail network for the Redtail Ridge project area is also illustrated in **Figure 17**. As shown in the graphic, the project proposes to provide multimodal connections through the project site, giving users more route options to travel through the area. Redtail Ridge will install sidewalks on both sides of the internal roadways, along Campus Drive, and along the west side of Northwest Parkway. In addition, the internal roadways will have on-street bike lanes in both directions.

Figure 17. Enhanced Redtail Ridge Conceptual Trail Network

**Note: conceptual multimodal trail network shown in red.*

7.3 Travel Demand Management Strategies

Transportation Demand Management (TDM) refers to activities that help people use the transportation system more efficiently, while reducing traffic congestion, vehicle emissions and fuel consumption. TDM activities help get the most out of transportation infrastructure and services by making lower-cost, higher-efficiency transportation options easier to use and more readily available.

TDM activities include such options as eliminating or shortening trips, changing the mode of travel, or changing the time of day a trip is made, as well as actions that increase transportation system efficiency through carpooling, vanpooling, transit, bicycling and walking. TDM strategies also include employer-based programs such as alternative work schedules, which can shift demand away from peak travel times, and telework, which can reduce the need for trips entirely.

The Redtail Ridge project has developed a TDM Plan under a separate document. The programs listed in the TDM Plan are provided at this time as possible tools given where the project stands in the GDP process. Future submittals can provide additional information when additional details on land uses, tenants and funding is known. It is recommended that the Metro District partner with a local expert in transportation management solutions to help facilitate these programs.

Note that all vertical developers in the project will be required to submit a customized TDM for their building identifying what programs will be implemented to meet the non-SOV goals of the project. Periodic surveys will be conducted to evaluate the TDM program effectiveness and adjustments will be made, if needed, to reach the project non-SOV goals.

7.4 External Non-Single Occupant Vehicle (Non-SOV) Trips

Non-single occupant vehicles (non-SOV) trips are trips that originate from outside the site or are being made from the site to external destinations. These trips are made by people who bicycle, carpool, vanpool, used shared ride mobility services and/or ride transit. As previously reference, based on the *American Community Survey US Census Data,* the mixed-use development sites in the US 36 corridor currently have 25% to 30% non-SOV trips coming to/from the sites daily. In addition, this project reviewed mode share and trip generation data for other large-scale developments in the Denver Metro area as well as trip generation studies to estimate non-SOV percentages anticipated for this project area. A summary of the findings and references are provided in the **Appendix**.

The non-SOV goals for this project are to have 25% or more non-SOV trips, which is achievable based on the current conditions and proposed TDM programs. However, based on feedback provided by City staff, to provide a more conservative analysis, a lower non-SOV reduction was assumed for the trip generation and traffic analysis for this study.

A non-SOV of 12% was assumed for all of the land uses within the proposed development, including the retail, industrial park, and office space. This accounts for employees/visitors /customers who walk, bicycle, carpool, vanpool, use shared ride mobility services and/or use transit.

It is assumed that some of the planned regional mobility plans for this area will be constructed/implemented by the time this project is built-out and that these projects will further reduce the non-SOV trips for the project and background trips to the study area (such as Northwest Rail, NAMS BRT corridors, complete streets in the 88th Street, Dillon Road, and 96th Street corridor).

7.5 Trip Generation

A trip generation analysis was performed to determine the traffic characteristics for the project. Trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*[2] were applied to estimate the traffic for the proposed land uses. ITE trip generation rates for "Industrial Park" (#130), "Manufacturing" (#140), "Hospital" (#610), "General Office Building" (#710), "Medical-Dental Office Building" (#720), "Research and Development Center" (#760), and "Shopping Center" (#820) were utilized for the industrial, office, and retail uses, respectively. Specific land uses and tenants for the office and retail spaces are unknown currently. It is anticipated that the retail uses will be designed to support the industrial and office development.

The ITE *Trip Generation Handbook (Volume 3)* provides recommendations for when to use the average rate versus the equation (fitted curve) when estimated trips for land use codes. Based on this review, land use codes where the equation has a R^2 value of at least 0.75 was used to determine what land use codes the equation was utilized versus the average rate to estimate the trip generation estimates before reductions were applied. The proposed project is expected to experience mostly new trips, also known as 'primary trips', as well as pass-by trips, multi-use trips, and non-auto trips which are discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered "new" trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Multi-Use (Internal) Trips. These internal trips occur from one land use or building to another within the site boundaries. For example, an office patron may also use a retail store or restaurant in one vehicular visit to the site. Multi-use or multi-purpose trips typically do not affect the exterior site access points, nor add any additional traffic volumes to the adjacent street network. For this project it is projected that the small retail uses on the site will be focused on serving the office and industrial employees of the project and most (75% estimated) of the trips accessing them will be on-site or internal trips. The other end of these internal trips were attributed to the office and industrial employees and resulted in a 3% reduction for those uses. Based on this approach, the multi-use factors applied for this project were assumed to be 3% for the industrial and office uses and 75% for the retail uses**.**

Non-SOV Trips. These trips originate from outside the site that may be completed by walking, bicycling, carpooling, shared ride mobility, or riding transit. The 12% non-SOV assumption identified in **Section 7.4** were applied to the trip generation estimates.

[2] Trip Generation 11th Edition, Institute of Transportation Engineers, 2021.

As shown in **Table 11**, with the assumptions listed above, the project site is expected to generate approximately 6,663 daily, 758 AM peak hour, and 803 PM peak hour external trips by Year 2025. At full build out the project site is expected to generate approximately 21,285 daily, 1,908 AM peak hour, and 2,149 PM peak hour external trips.

Table 11. Trip Generation Summary

	Land Use	Size	Unit	Non-SOV	Internal Capture	Net Reduction Factor	Average Weekday Trips Rate	Average Weekday Trips Total	Weekday AM Peak Hour Trips Rate	Weekday AM Peak Hour Trips Total	Weekday AM Peak Hour Trips In	Weekday AM Peak Hour Trips Out	Weekday PM Peak Hour Trips Rate	Weekday PM Peak Hour Trips Total	Weekday PM Peak Hour Trips In	Weekday PM Peak Hour Trips Out
Phase 1 (2025)	#130 Industrial Park	509.26	KSF	**12%**	**3%**	85%	*	1,868	0.4	174	141	33	0.4	174	37	137
	#760 Research and Development Center (Life Science + Amenity)	300.0	KSF	**12%**	**3%**	85%	**	2,695	1.03	264	216	48	0.98	251	40	211
	#140 Manufacturing (GMP)	598.94	KSF	**12%**	**3%**	85%	*****	2,100	******	320	243	77	0.74	378	117	261
		######	**KSF**			**Subtotal**		**6,663**		**758**	**600**	**158**		**803**	**194**	**609**
Phase 2 (2030)	#820 Shopping Center	14.0	KSF	**12%**	**75%**	22%	37.75	116	0.94	3	2	1	3.81	12	6	6
	#130 Industrial Park	118.8	KSF	**12%**	**3%**	85%	*	877	0.4	41	33	8	0.40	41	9	32
	#710 General Office Building	90	KSF	**12%**	**3%**	85%	**	818	***	95	82	13	****	88	14	74
	#760 Research and Development Center	264.00	KSF	**12%**	**3%**	85%	**	2,397	1.03	232	190	42	0.98	221	35	186
	#610 Hospital	160.0	BEDS	**12%**	**3%**	85%	22.32	3,048	1.79	244	176	68	1.69	231	76	155
	#720 Medical-Dental Office Bldg	150.0	KSF	**12%**	**3%**	85%	36.00	4,609	***	296	234	62	3.93	503	151	352
		921.80	**KSF**			**Subtotal**		**12,037**		**911**	**717**	**194**		**1,096**	**291**	**805**
Ph 3 (2040)	#710 General Office Building	270.0	KSF	**12%**	**3%**	85%	**	2,374	***	239	206	33	****	250	40	210
		270.00	**KSF**			**Subtotal**		**2,585**		**239**	**206**	**33**		**250**	**40**	**210**
						Full Buildout Total		**21,285**		**1,908**	**1,523**	**385**		**2,149**	**525**	**1,624**

* ITE Equation: EXP(0.52*LN(X) *** ITE Equation: (0.94*X+ 26.49) ***** ITE Equation 3.77*X+201.98
** ITE Equation: EXP(0.97*LN(X) **** ITE Equation EXP(0.95*LN(X) ****** ITE Equation 0.61*X+9.54

7.6 Trip Distribution and Assignment

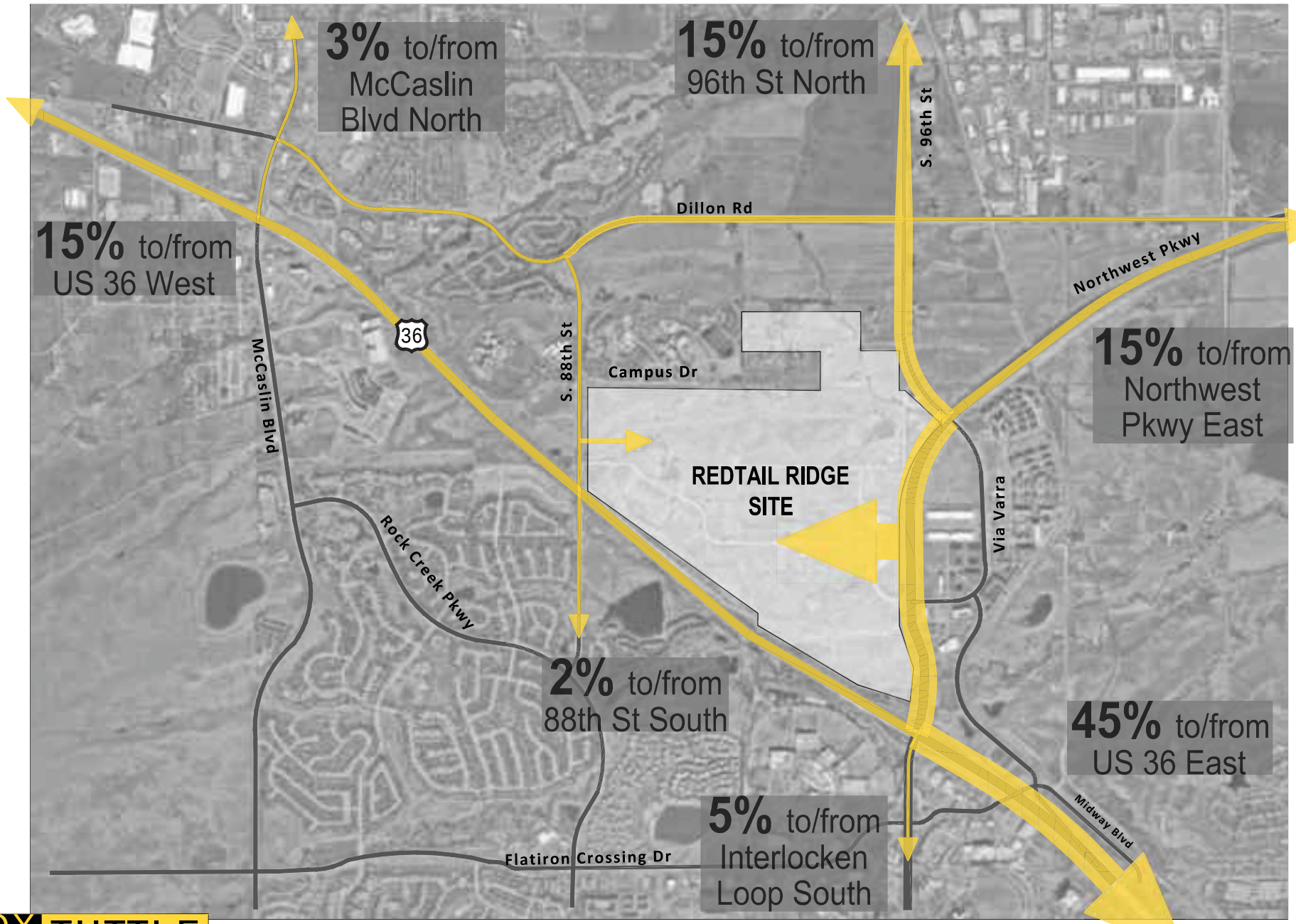
To develop the trip distribution for the proposed development, available traffic count and travel pattern data was reviewed. The proposed land uses for the project site were also taken into consideration which suggests that traffic generated to/from the project site is expected to utilize the regional transportation system, with a smaller percent of the trips generated by the local system. Therefore, most vehicles are expected to use the regional routes (such as US 36, Northwest Parkway, and S. 96th Street to the north) and few vehicles are expected to use local roads. Travel routes/patterns were reviewed to determine how vehicles are expected to access the site and what route is likely to be fastest for vehicles to use to

get to Boulder and Denver, but also communities to the south such as Arvada, Golden, Wheat Ridge, Westminster, etc.

In addition to available traffic/travel pattern information, data available from the StreetLight Data Company was reviewed for the offices in CTC. StreetLight collects mobility data on vehicle trips that can be used to analyze trip origin-destination, trip travel time/route, and trip purpose; this data was used to determine the trip distribution for existing traffic entering/exiting the offices in CTC. This data provided a baseline for where existing office trips in the study area have origins/destinations.

Taking into consideration the factors listed above, the trip distribution was developed for the development traffic entering/exiting the project site and is summarized in **Figure 18**. It is important to note that this trip distribution was evaluated by the City as well as their third-party consultant who used the DRCOG Year 2040/2050 travel demand model for comparison purposes. Based on their review, the trip generation estimates shown in **Figure 18** were found to be acceptable.

Using these distribution assumptions, the projected site traffic was assigned to the study area roadway network for the weekday AM and PM peak hours. The site-generated traffic for Year 2025, Year 2030, and Year 2040 are shown on **Figure 19, Figure 20,** and **Figure 21**, respectively.



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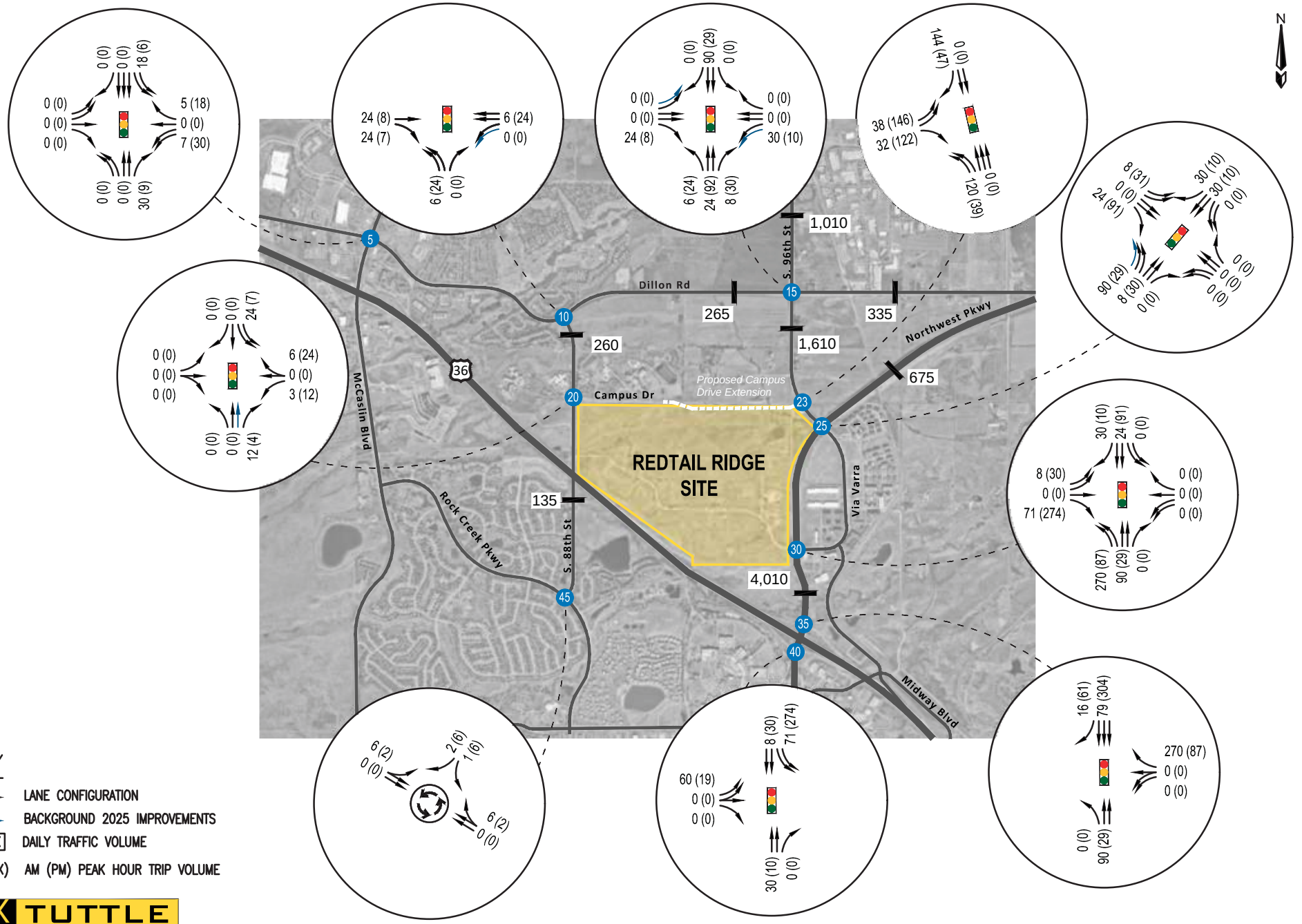
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

TRIP DISTRIBUTION

FT Project #	19055	Original Scale	NTS	Date	02/15/2023	Drawn by	MAR	Figure #	18



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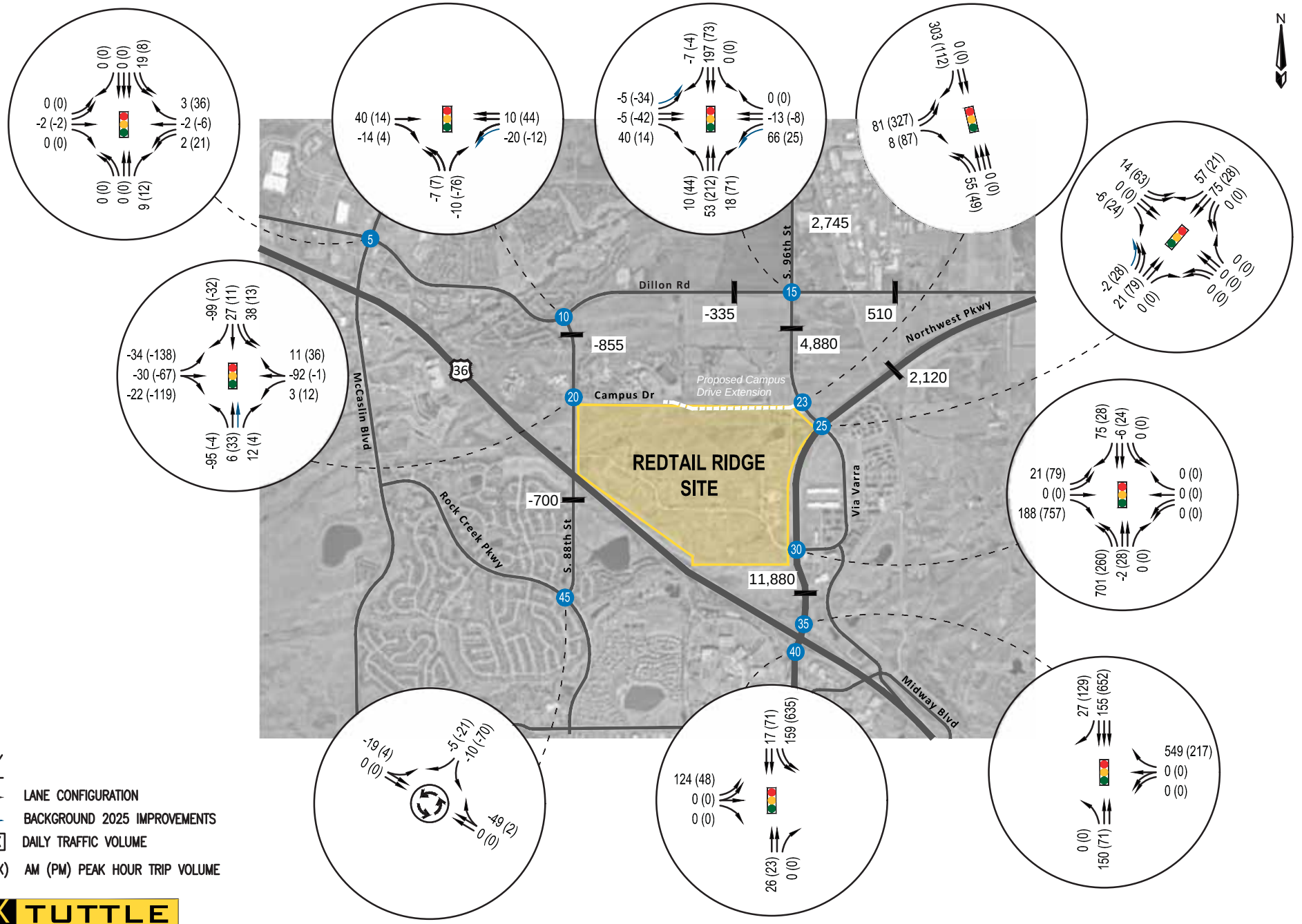
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

REDTAIL RIDGE SITE-GENERATED TRIP VOLUMES - PRIOR TO YEAR 2025

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	19



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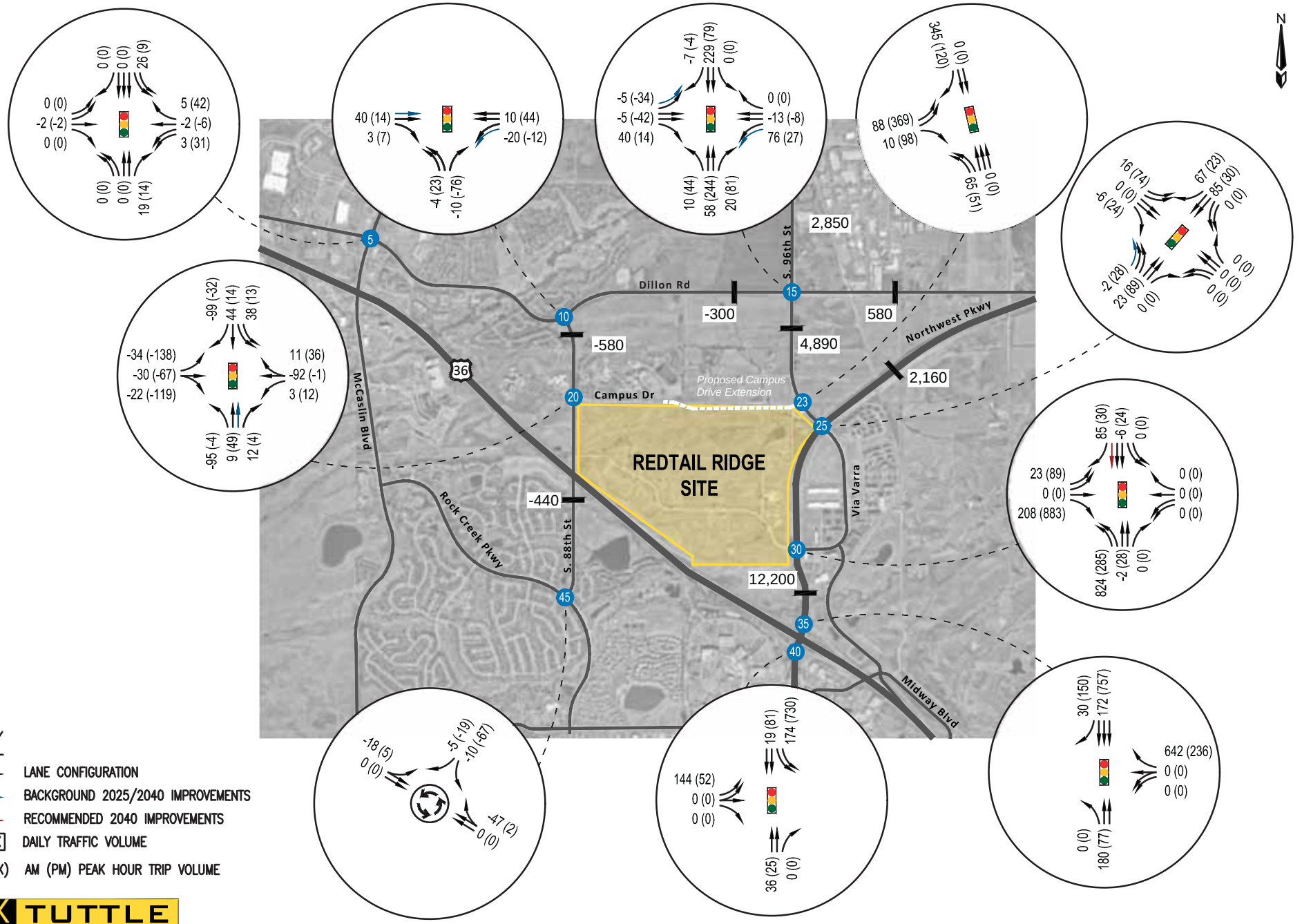
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

REDTAIL RIDGE SITE-GENERATED TRIP VOLUMES - PRIOR TO YEAR 2030

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	20



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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

REDTAIL RIDGE SITE-GENERATED TRIP VOLUMES - PRIOR TO YEAR 2040

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	21

8.0 Future Conditions + Redtail Ridge Traffic

This section evaluates the anticipated future traffic operations with the project trips. This section discusses travel conditions associated with the addition of development trips to the Year 2025 conditions.

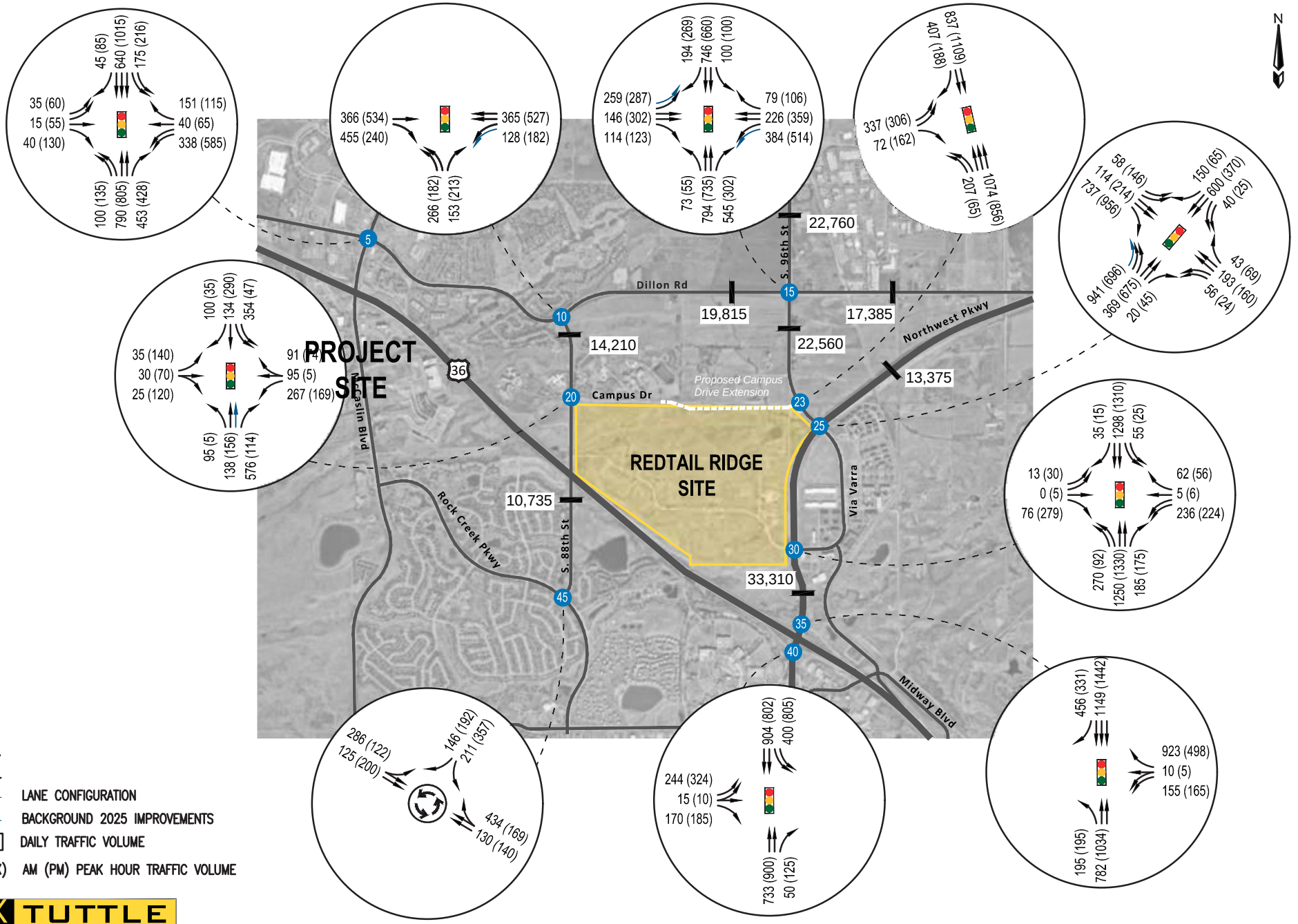
8.1 Year 2025 Background + Project Intersection Capacity Analysis

The improvements identified under Year 2025 background conditions were not assumed, since the Campus Drive extension could potentially reduce the need for some of the improvements. The following assumptions were implemented for Year 2025 Background + Project scenario:

- Extend Campus Drive to S. 96th Street.
- Construct Rockcress Drive from Northwest Parkway to Sorrel Ave.
- Construct Sorrel Avenue and internal collector roads.
- Construct and signalize the new full movement intersection of S. 96th Street/Campus Drive. Include one southbound right-turn lane, dual northbound left-turn lanes, dual eastbound left-turn lanes, and one eastbound right-turn lane (consistent with previous study recommendations).
- Modify the intersection of Northwest Parkway/ Rockcress Drive/Via Varra to replace the existing dual eastbound left-turn lanes with a single eastbound left-turn lane to better align with the proposed Rockcress Drive alignment to the west. Remove the split phasing for eastbound and westbound and replaced with a protected+permitted left-turn phase and through phase.
- Optimize signal timing at all the study intersections.

The projected site-generated traffic was added to the Year 2025 background study area traffic volumes, which assumes travel pattern shifts for existing/background traffic due to the Campus Drive extension. The resultant traffic volumes are illustrated on **Figure 22**.

The results of the LOS calculations for the intersections are summarized in **Table 12**. Detailed tables with LOS and 95th percentile queues by movement and comparison to background are available in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **The project trips will have minimal impacts to the majority of the existing study intersections.** The redirected traffic to Campus Drive reduces delays at several intersections. The Redtail Ridge project has the most significant impacts to the intersections of Northwest Parkway at Rockcress Drive and Northwest Parkway at S. 96th Street/Via Varra. **The internal intersections were found to operate at LOS B or better for both peak periods.**



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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2025 BACKGROUND + REDTAIL RIDGE (PHASE 1) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	22

Table 12. Year 2025 + Project Conditions Level of Service Summary

No.	Intersection	Traffic Control	Background + Project Overall Intersection LOS		Background Intersection Overall LOS	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C	C	C
10	Dillon Road/S. 88th Street	Signal	B	B	C	B
15	Dillon Road/S. 96th Street	Signal	C	C	D	D
20	S. 88th Street/Campus Drive	Signal	C	D	D	D
23	S. 96th Street/Campus Drive	Signal	C	C	-	-
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	F	F	E	F
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	C	C	C	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	B	D	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)	A (A)	A (A)
101	Campus Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
102	Campus Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
103	Rockcress Drive/North-South Collector	Side-Street Stop	A (A)	A (A)	-	-
104	Rockcress Drive/East-West Collector (South)	Side-Street Stop	A (A)	A (A)	-	-
105	Rockcress Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
106	Sorrel Avenue/East-West Collector (South)	All-Way Stop	A (A)	A (A)	-	-
107	Sorrel Avenue/East-West Collector (North)	All-Way Stop	A (A)	A (A)	-	-
108	N-S Collector/ E-W Collector (North)	Side-Street Stop	A (A)	A (A)	-	-
205	Sorrel Avenue/PUD 2 Access E	Side-Street Stop	A (A)	A (A)	-	-

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

Additional lane geometry/traffic control recommendations for internal roadways are included in a later section: **Section 9.0 (Internal Intersection Analysis)**. This scenario was also evaluated with the recommended improvements from the Year 2025 background scenario (illustrated in **Figure 22**), including widening S. 88th Street; widening S. 96th Street; adding a second westbound left-turn lane at Dillon Road/S. 88th Street; adding a second northbound through lane at S. 88th Street/Campus Drive; adding second eastbound and westbound left-turns at S. 96th Street/Dillon Road; and adding third northbound left-turn lane at Northwest Parkway/S. 96th Street.

It is recommended that additional green time be provided to the southbound left-turn at the Northwest Parkway and US 36 South Ramp (Eastbound) during the PM peak period to reduce the delay and queue.

The results of the LOS calculations for the intersections with the recommended improvements are summarized in **Table 13.** Detailed tables with LOS and 95th percentile queue by movement as well as the intersection LOS worksheets are included in the **Appendix A (Tables A.5 and A.6)**.

Table 13. Year 2025 Background + Project Conditions Level of Service Summary (Improvements)

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	A
15	Dillon Road/S. 96th Street	Signal	C	C
20	S. 88th Street/Campus Drive	Signal	C	C
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	C
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	N/A	C

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

8.2 Year 2030 Background + Project Intersection Capacity Analysis

This section discusses travel conditions associated with the addition of development trips to the Year 2030 background conditions and the resultant traffic volumes are illustrated on **Figure 23**. The following assumptions were implemented for Year 2030 Background + Project scenario:

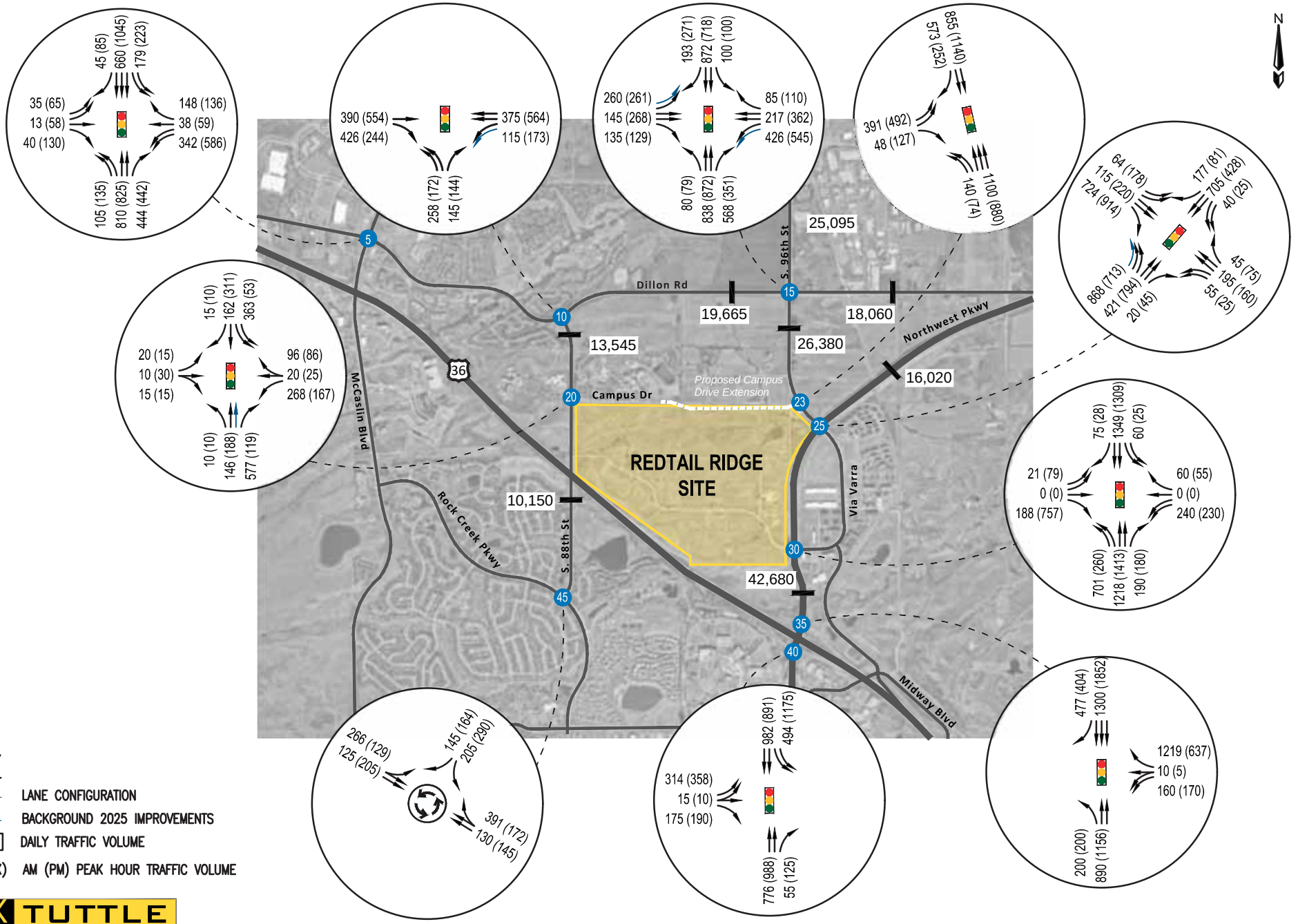
- Improvements identified in Year 2025 background + project, plus:
- Extend Rockcress Drive to S. 88th Street
- Add overlap phase for southbound right-turn at S. 96th Street/Campus Drive
- Optimize signal timing at all the study intersections.

The results of the LOS calculations for the intersections are summarized in **Table 14**. Detailed tables with LOS and 95th percentile queues by movement and compared to eh background scenario is available in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **Majority of the study intersections were estimated to operate similarly to the background scenario at overall LOS D or better.**

Table 14. Year 2030 + Project Conditions Level of Service Summary

No.	Intersection	Traffic Control	Background + Project Overall Intersection LOS		Background Intersection Overall LOS	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C	C	C
10	Dillon Road/S. 88th Street	Signal	B	B	B	B
15	Dillon Road/S. 96th Street	Signal	D	D	C	C
20	S. 88th Street/Campus Drive	Signal	C	C	C	C
22	S. 88th Street/Rockcress Drive	Side-Street Stop	A (C)	A (B)	-	-
23	S. 96th Street/Campus Drive	Signal	B	C	-	-
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	D	D	D	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	D	D	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	C	**F**	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)	A (B)	A (A)
101	Campus Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
102	Campus Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
103	Rockcress Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
104	Rockcress Drive/East-West Collector (South)	Side-Street Stop	A (A)	A (B)	-	-
105	Rockcress Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
106	Sorrel Avenue/East-West Collector (South)	All-Way Stop	A (C)	A (C)	-	-
107	Sorrel Avenue/East-West Collector (North)	All-Way Stop	A (B)	A (B)	-	-
108	N-S Collector/ E-W Collector (North)	Side-Street Stop	A (A)	A (A)	-	-
205	Sorrel Avenue/PUD 2 Access E	Side-Street Stop	A (B)	A (B)	-	-

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).



KEY

- LANE CONFIGURATION
- BACKGROUND 2025 IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2030 BACKGROUND + REDTAIL RIDGE (PHASE 1 & 2) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	23

Under Year 2030 background + project conditions, the following intersections were calculated to begin to have movements that operate at LOS E/F:

- *#30. Northwest Parkway and Rockcress Drive/Via Varra:* During both peak hours, the northbound left-turn movement was estimated to operate at LOS F due to high turning volume and limited green time. No significant queuing issues were shown in the traffic analysis.

  Recommendations: No mitigation measures recommended. The delay is under the cycle length so it is anticipated there will not be cycle failure and the 95th percentile queues were shown to be maintained within the storage length.

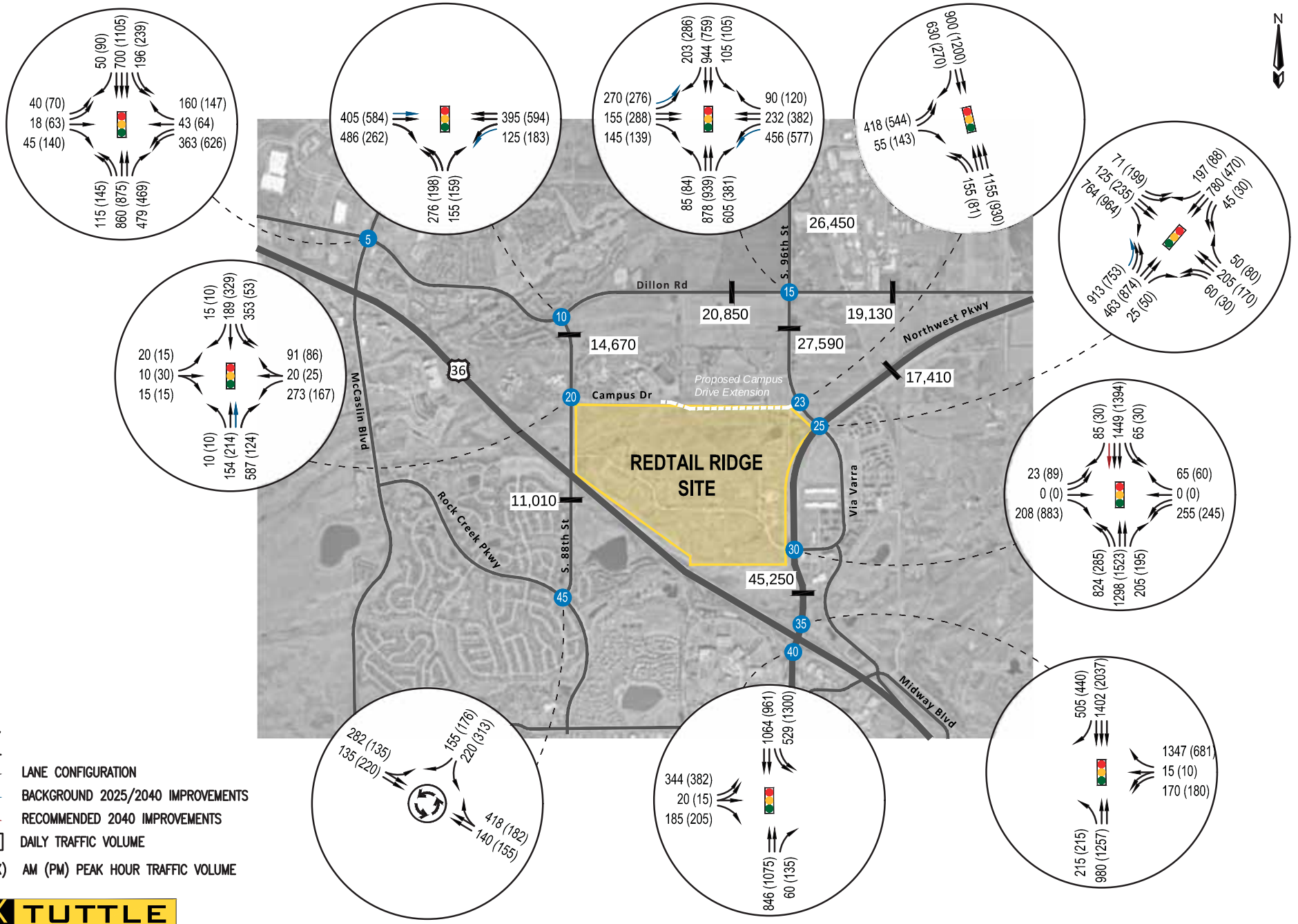
- *#40. Northwest Parkway and US 36 South Ramps (Eastbound):* During the PM peak hour, this signalized intersection was estimated to operate at LOS F due to the added volume on the southbound left-turn lane. Delay is estimated to be up to five (5) minutes.

  Recommendations: As noted under the background conditions, due to the unknowns of future roadway plans within this area (including both Northwest Parkway Extension and Jefferson Parkway), no specific mitigation is recommended. Additional capacity is needed to accommodate the forecasted traffic volumes with and without the Redtail Ridge trips, which will likely require the bridge to be widened. Additional study/analysis should be conducted at the interchange to determine the optimal design to meet the future needs. With a new design that increases capacity, this interchange should operate acceptably in the future.

8.3 Year 2040 Background + Project Intersection Capacity Analysis

This section discusses travel conditions associated with the full build out of the proposed development in the long-term scenario (Year 2040). The projected site-generated traffic was added to the Year 2040 background study area traffic volumes and are illustrated on **Figure 24**. The following assumptions were recommended in Year 2040 background (without Redtail Ridge) and assumed to be implemented for Year 2040 Background + Project scenario:

- Improvements identified in Year 2030 background + project, plus:
- Widen Dillon Road and S. 96th Street to be four-lane roadways as presented in Year 2040 background
- Optimize signal timing at all the study intersections.



KEY

- LANE CONFIGURATION
- BACKGROUND 2025/2040 IMPROVEMENTS
- RECOMMENDED 2040 IMPROVEMENTS
- X,XXX DAILY TRAFFIC VOLUME
- XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

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REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2040 BACKGROUND + REDTAIL RIDGE (FULL BUILDOUT) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	24

The results of the LOS calculations for the intersections are summarized in **Table 15**. Detailed tables with LOS and 95th percentile queues by movement and compared to the background scenario are available in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **Majority of the study intersections were estimated to operate similarly to the background scenario at overall LOS D or better.**

Table 15. Year 2040 + Project Conditions Level of Service Summary

No.	Intersection	Traffic Control	Background + Project Overall Intersection LOS		Background Intersection Overall LOS	
			AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
5	Dillon Road/McCaslin Boulevard	Signal	C	C	C	C
10	Dillon Road/S. 88th Street	Signal	B	B	B	B
15	Dillon Road/S. 96th Street	Signal	D	D	C	C
20	S. 88th Street/Campus Drive	Signal	C	C	C	D
22	S. 88th Street/Rockcress Drive	Side-Street Stop	A (C)	A (B)	-	-
23	S. 96th Street/Campus Drive	Signal	B	C	-	-
25	Northwest Parkway/S. 96th Street/Via Varra	Signal	C	C	C	C
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	E	E	B	B
35	Northwest Parkway/US 36 North Ramps (WB)	Signal	A	A	A	A
40	Northwest Parkway/US 36 South Ramps (EB)	Signal	C	F	B	C
45	S. 88th Street/Rock Creek Parkway	Roundabout	A (A)	A (A)	A (A)	A (A)
101	Campus Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
102	Campus Drive/Sorrel Avenue	Roundabout	A (B)	A (B)	-	-
103	Rockcress Drive/North-South Collector	Side-Street Stop	A (B)	A (B)	-	-
104	Rockcress Drive/East-West Collector (South)	Side-Street Stop	A (B)	A (B)	-	-
105	Rockcress Drive/Sorrel Avenue	Roundabout	A (A)	A (A)	-	-
106	Sorrel Avenue/East-West Collector (South)	All-Way Stop	B (C)	B (C)	-	-
107	Sorrel Avenue/East-West Collector (North)	All-Way Stop	A (B)	A (B)	-	-
108	N-S Collector/ E-W Collector (North)	Side-Street Stop	A (A)	A (A)	-	-
205	Sorrel Avenue/PUD 2 Access E	Side-Street Stop	A (B)	A (B)	-	-

Note: Level of service for unsignalized intersections is listed as Overall (Worst Movement).

With the additional traffic associated with the full buildout of Redtail Ridge, the following intersections were calculated to begin to operate overall at LOS E/F or have movements that operate at LOS E/F:

- *#15. Dillon Road and S. 96th Street:* During the PM peak hour, the northbound through movement was estimated to begin to operate at LOS E due to high turning volume and limited green time. No significant queuing issues were shown in the traffic analysis.

  Recommendations: Adjust signal timing as appropriate.

- *#20. S. 88th Street and Campus Drive:* During the AM peak hour, the westbound left-turn movement was estimated to begin to operate at LOS E as experienced in the existing conditions due to high turning volume and limited green time.

  Recommendations: Adjust signal timing as appropriate.

- *#30. Northwest Parkway and Rockcress Drive/Via Varra:* In both peak hours, this signalized intersection was estimated to being to operate at LOS E due to the added delay on the northbound left-turn lane and opposing southbound through lane. Each of these signal phases impacts the other. During the morning peak hour, the northbound left-turn queue was calculated to exceed the storage length.

  Recommendations: Consider constructing a third southbound through lane on Northwest Parkway to reduce the delay on this movement and to reallocate green time to the northbound left-turn phase. Adjustments to the signal timing alone will not improve the overall intersection delay and northbound already includes two turn lanes. With the additional capacity, it was estimated that this intersection will improve to LOS D overall. The northbound left-turn will continue to operate at LOS F in both peak periods but is not expected to experience cycle failure and queues are not expected to exceed the storage length. Note that Redtail Ridge trips are only seven (7) percent of the total traffic on southbound Northwest Parkway.

- *#40. Northwest Parkway and US 36 South Ramps (Eastbound):* During the PM peak hour, this signalized intersection was estimated to operate at LOS F due to the added volume on the eastbound left-turn lane and southbound left-turn lane. Delay on the southbound left-turn was estimated to be just over six (6) minutes.

  Recommendations: As identified and discussed in the background (without project) scenario, additional capacity is needed at the US 36/Northwest Parkway interchange, no specific mitigation is recommended. The future design will likely require that the bridge to be widened. Additional study/analysis should be conducted at the interchange to determine the optimal design to meet the future needs on Northwest Parkway and US 36.

The Year 2040 background + project conditions were evaluated with the improvements to Northwest Parkway. The results of the LOS calculations for the intersections are summarized in **Table 16.** A summary table with LOS and 95th percentile queue by movement in **Appendix A (Tables A.5 and A.6).** The intersection LOS worksheets are also included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that with the recommended capacity improvements all study intersections are expected to operate at an overall LOS D or better during the AM and PM peak hours.**

Table 16. Year 2040 + Project Conditions Level of Service Summary (Improvements)

No.	Intersection	Traffic Control	Overall Intersection LOS	
			AM Peak Hour	PM Peak Hour
10	Dillon Road/S. 88th Street	Signal	B	A
30	Northwest Parkway/Rockcress Drive/Via Varra	Signal	D	D

The Jefferson Parkway study has identified the potential need for a grade separated intersection at Northwest Parkway and S. 96th Street/Via Varra, however, there are uncertainties to if/when that project would occur. Additional study should be conducted along the Northwest Parkway corridor between S. 96th Street and US 36 in conjunction with the planned improvements at the US 36 interchange to determine how capacity can be increased under future conditions. Key stakeholders include CDOT, Northwest Parkway, the City of Louisville, City and County of Broomfield, and Jefferson Parkway Public Highway Authority.

9.0 Internal Intersection Analysis

Fox Tuttle Transportation Group has worked with the Redtail Ridge team to design an internal roadway network that can accommodate the full buildout of the project trips safely and efficiently. The internal roadway consists of the Campus Drive extension to S. 96th Street, construction of Rockcress Drive between S. 88th Street and Northwest Parkway, as well as construction of Sorrel Avenue between Campus Drive and Rockcress Drive and other internal collector roadways.

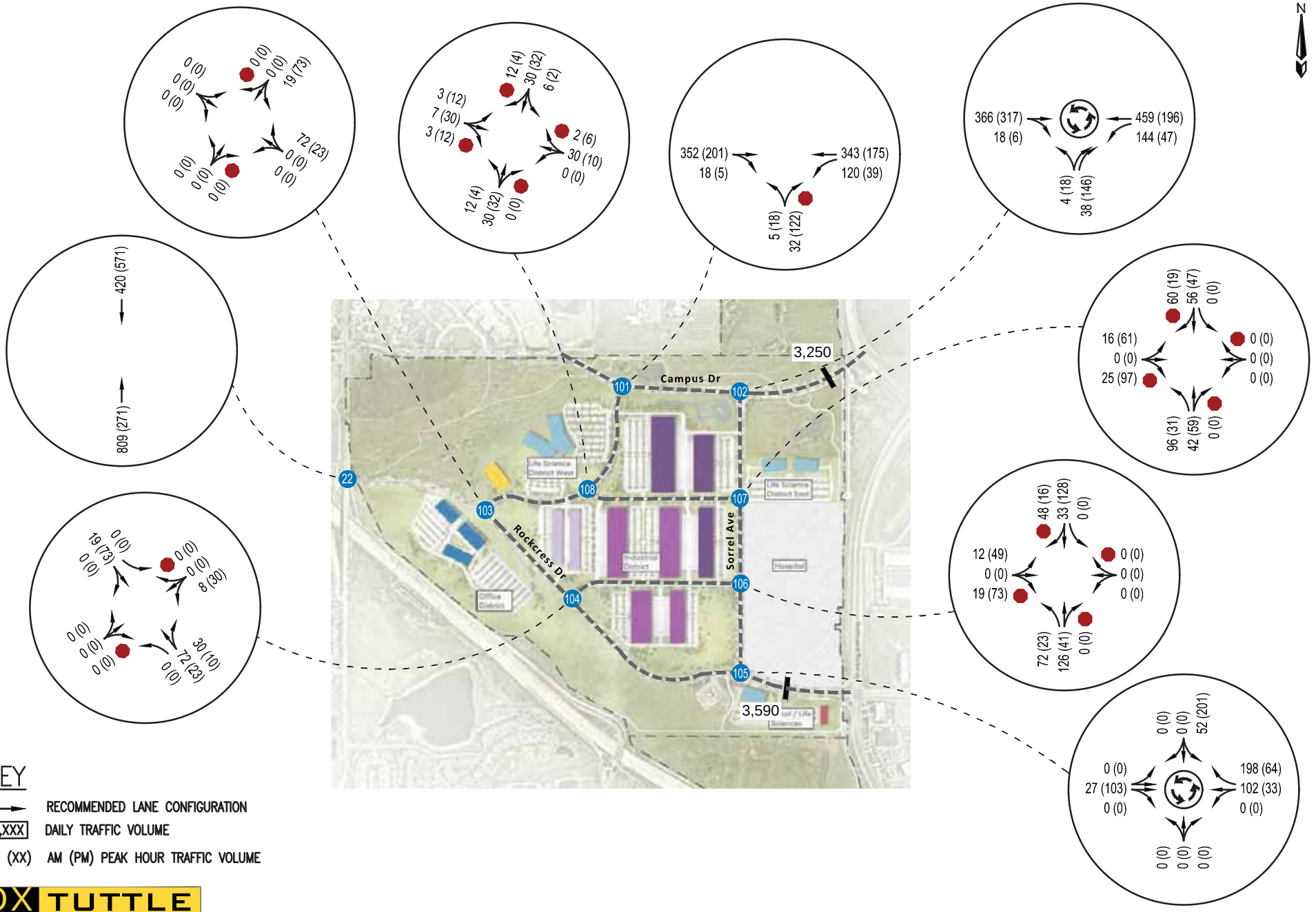
- **Campus Drive**: recommended to be a three-lane roadway between S. 88th Street and the Monarch High School eastern roundabout and a four-lane roadway between Sorrel Avenue and S. 96th Street, the section between the Monarch High School eastern roundabout and Sorrel Avenue is anticipated to operated acceptably as a two-lane roadway. Roundabout access is recommended at the Monarch school campus to the K-8 and High School main accesses as well as at Sorrel Avenue.

- **Rockcress Drive**: recommended to be a four-lane roadway between Sorrel Avenue and Northwest Parkway and to transition to two-lane collector west of Sorrel Avenue. The Sorrel Avenue intersection is recommended to be a roundabout.
- **Sorrel Avenue:** recommended to be a two-lane roadway; the driveway accesses and internal intersections are expected to operate acceptably as unsignalized.
- **Sorrel Avenue at Internal Collector Intersections:** recommended to be all-way stop controlled at the two accesses into the hospital for acceptable operations. Warrants for all-way stop control at these two intersections are included in the **Appendix**.
- **Access intersections on Rockcress Drive, Sorrel Avenue, and Internal Collectors**: there will be several driveways along the internal roadways into the parking areas and loading docks of the development. It is recommended that the access be minimized and cross-access aligned to reduce friction and improve safety for all roadway users.
- **Multi-modal facilities:** recommended to include on-street buffered bike lanes on internal roadways and sidewalks on both sides of the roadways that link to each building within the site and connect to external facilities.

Trips for Phase 1 are shown in **Figure 25** and trips volumes for Phase 2 are shown in **Figure 26**. Projected Year 2040 background + project (full build out) conditions traffic volumes are shown in **Figure 27** for Campus Drive at Sorrel Avenue and the internal roadways. The recommended intersection geometrics and traffic control for full build out conditions are shown on this figure. Recommended turn lane and taper lengths are shown in **Figure 28** and **Figure 29. All internal intersections and access locations are anticipated to operate at LOS C or better during the AM and PM peak hours and there were no queuing issues identified.** The intersection capacity reports are provided in the **Appendix**. Note that access locations will continue to be analyzed and refined through the PUD process.

The proposed cross section for internal local streets was designed to provide a high degree of access and comfortable multimodal travel, as shown in **Figure 30**. Internal local roadways are all proposed to have one travel lane per direction, a buffered bicycle lane in each direction, and detached 5-foot sidewalks on both sides of the street separated from the roadway by an 8-foot landscape buffer. Vehicle volumes on internal roadways are expected to be below 2,500 vpd. Turning volumes and opposing through volume, under the full buildout scenario, do not justify the addition of dedicated turn lanes at access points to individual lots.

The proposed cross section of the two-lane section of Rockcress Drive (west of Sorrel Avenue) is shown in **Figure 31**. The proposed cross section of Sorrel Avenue is shown in **Figure 32**. Both Rockcress Drive and Sorrel Avenue will have buffered bike lanes and detached sidewalks for comfortable multimodal travel.



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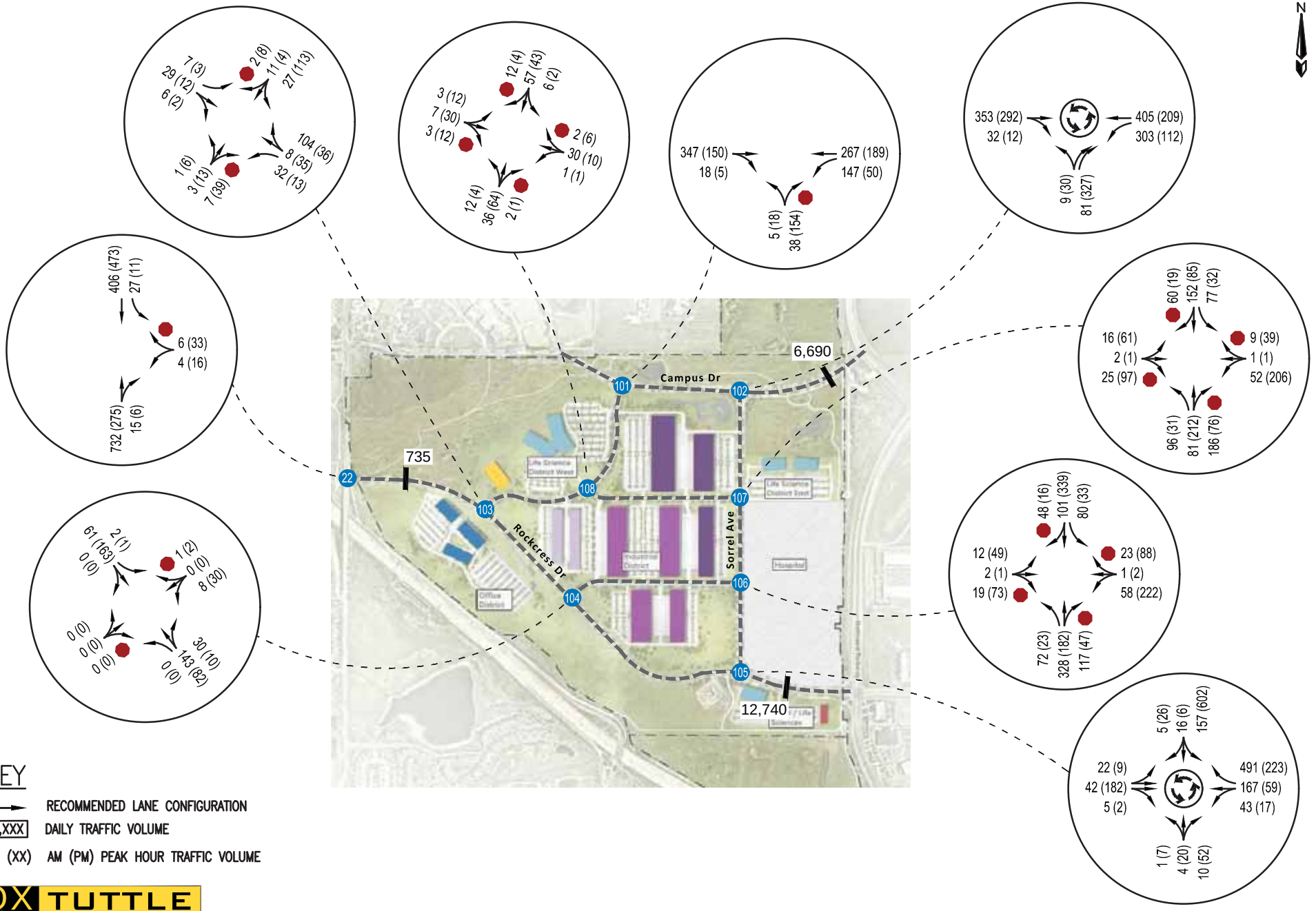
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2025 BACKGROUND + REDTAIL RIDGE (PHASE 1) TRAFFIC VOLUMES [INTERNAL INTERSECTIONS]

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	25



KEY

→ RECOMMENDED LANE CONFIGURATION

X,XXX DAILY TRAFFIC VOLUME

XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

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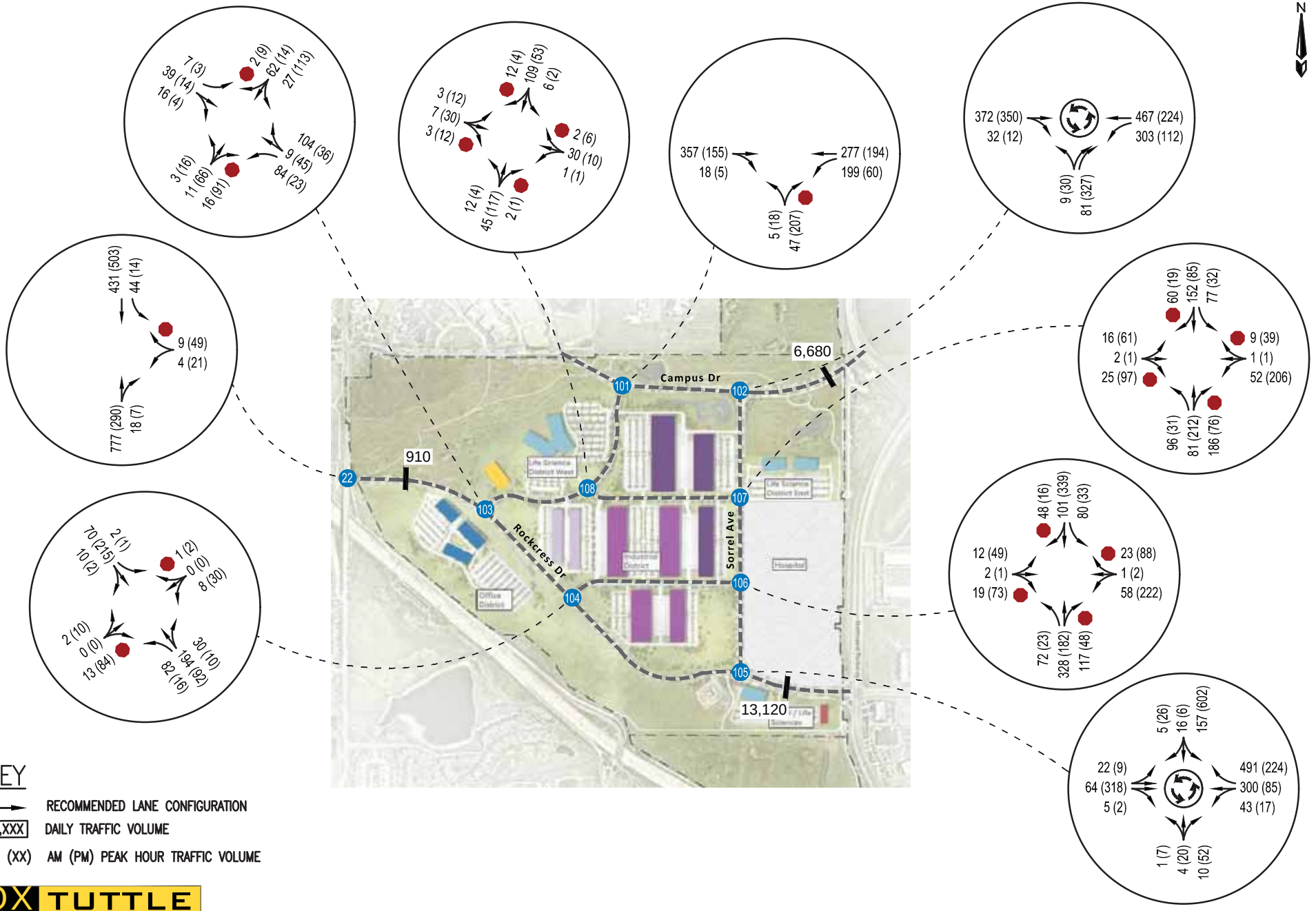
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2030 BACKGROUND + REDTAIL RIDGE (PHASE 1 & 2) TRAFFIC VOLUMES [INTERNAL INTERSECTIONS]

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	26



KEY

→ RECOMMENDED LANE CONFIGURATION

X,XXX DAILY TRAFFIC VOLUME

XX (XX) AM (PM) PEAK HOUR TRAFFIC VOLUME

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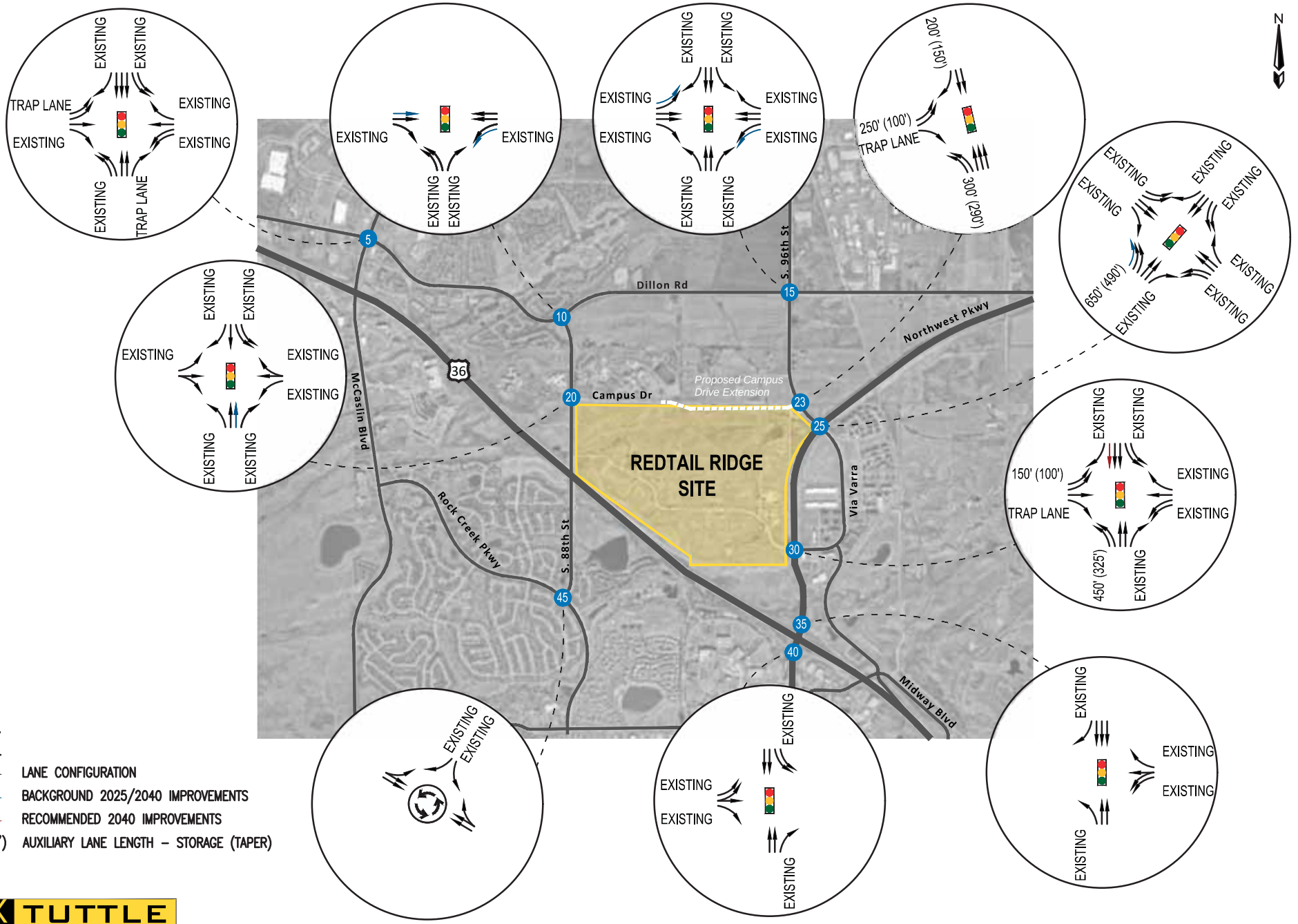
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

YEAR 2040 BACKGROUND + REDTAIL RIDGE (FULL BUILDOUT) TRAFFIC VOLUMES [INTERNAL INTERSECTIONS]

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	27



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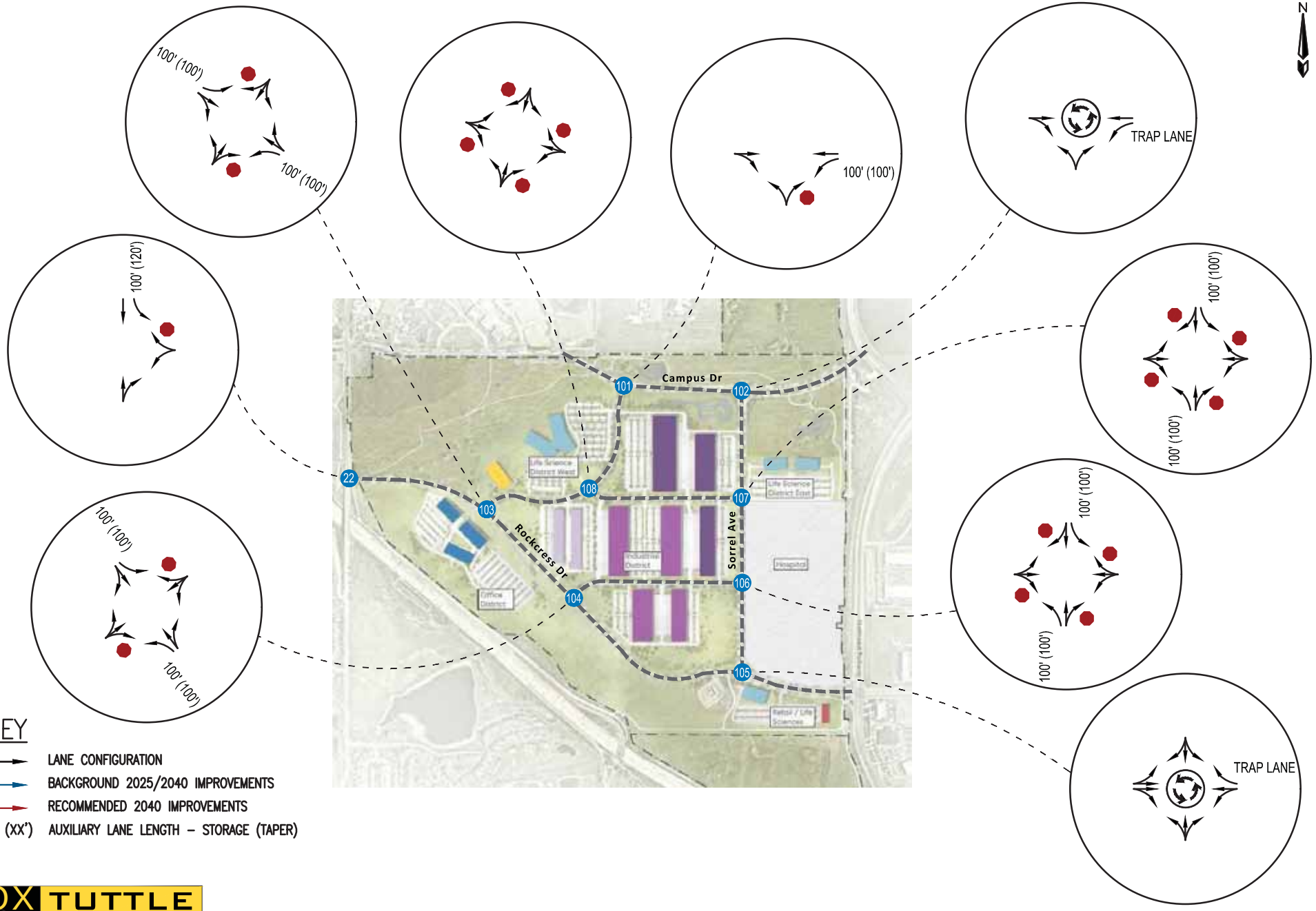
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

EXTERNAL TURN LANE DESIGN

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	28



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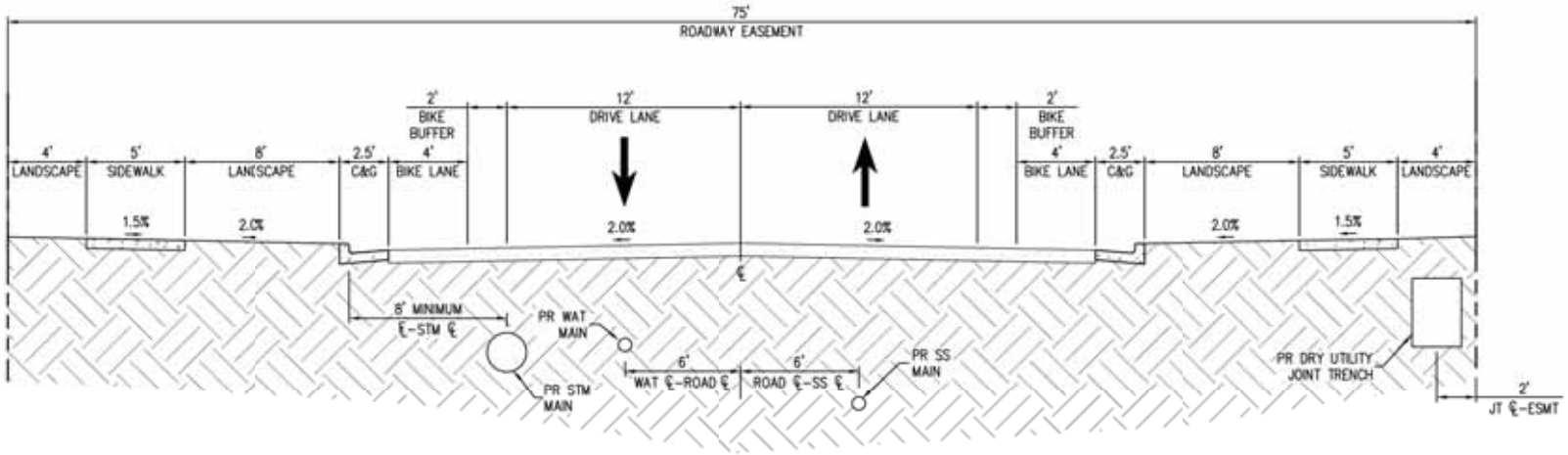
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

INTERNAL TURN LANE DESIGN

FT Project #	19055	Original Scale	NTS	Date	10/04/2023	Drawn by	SKK	Figure #	29



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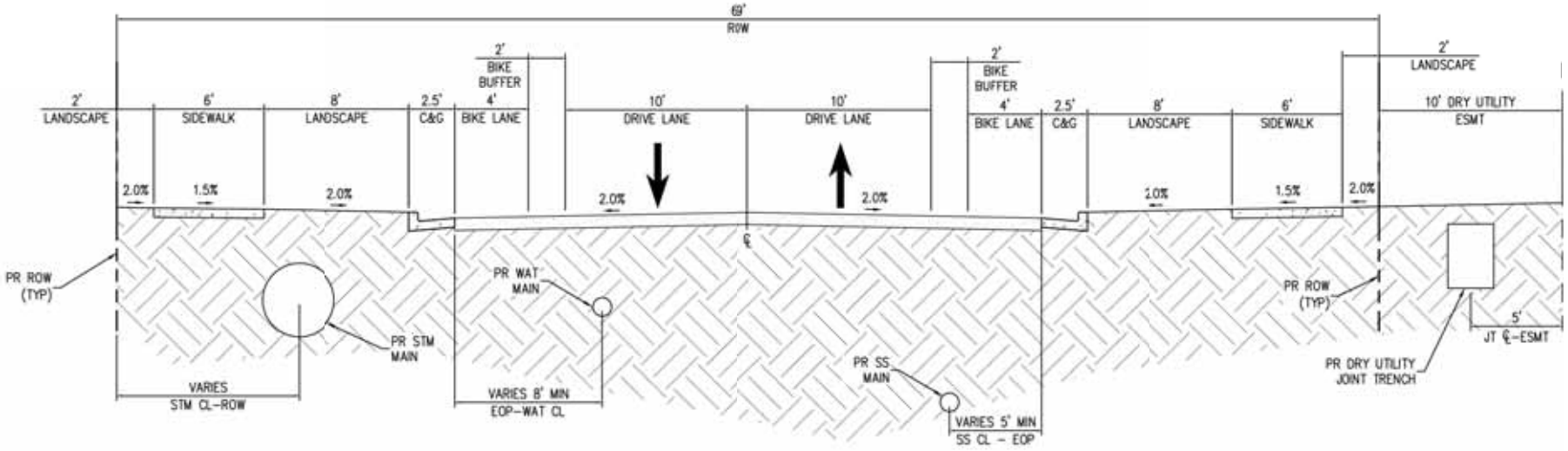
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

INTERNAL LOCAL ROADWAY CROSS SECTION

FT Project #	19055	Original Scale	NTS	Date	10/12/2023	Drawn by	SKK	Figure #	30



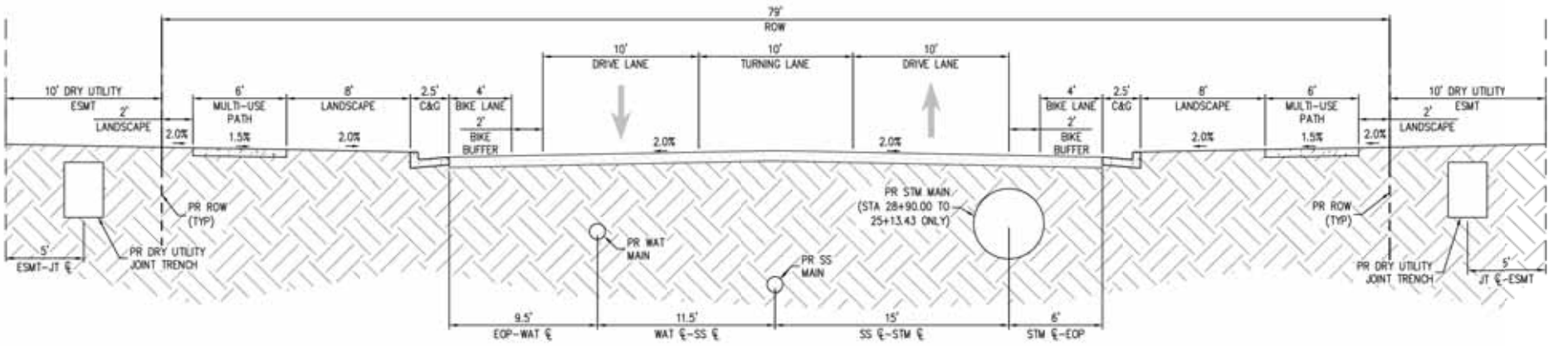
ROCKCRESS DRIVE TYPICAL CROSS SECTION – LOOKING NORTHWEST

FOX TUTTLE
Transportation Group

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

ROCKCRESS DRIVE TWO-LANE CROSS SECTION

FT Project #	19055	Original Scale	NTS	Date	10/12/2023	Drawn by	SKK	Figure #	31



SORREL AVE TYPICAL CROSS SECTION – LOOKING NORTH

STATIONS: 3+21.31 TO 28+90.00

FOX TUTTLE
Transportation Group

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

SORREL AVENUE CROSS SECTION

FT Project #	19055	Original Scale	NTS	Date	10/12/2023	Drawn by	SKK	Figure #	32

10.0 Queuing Analysis

A queuing analysis was performed to determine if the 95th percentile queues would be accommodated by the existing and proposed storage lengths and if any of the queues would impact an upstream intersection/access. The 95th percentile queues for each existing and future scenario as calculated by Synchro (assuming each vehicle utilizes 25 feet of space) are detailed in the tables of the **Appendix**.

It should be noted that the 95th percentile queue length is a theoretical queue that is 1.65 standard deviations above the average queue length. In theory, the 95th percentile queue would be exceeded 5% of the time based on the average queue length, but it is also possible that a queue this long may not occur. **The analysis resulted in all queues being maintained within the existing and proposed storage lengths.**

S. 96th Street/Campus Drive Influence on Fire Station Access

Additional analysis was conducted for the fire station access near the future intersection of S. 96th Street/Campus Drive to determine the anticipated queuing, provided storage lengths, and impact of the fire station access. On S. 96th Street there is approximately 730 feet between the northbound stop line at Campus Drive and the southbound stop line at Northwest Parkway. It is proposed that the dual southbound left-turns at Northwest Parkway remain, and one northbound left-turn lane be constructed at Campus Drive.

The **southeast-bound left-turns on S. 96th Street at Northwest Parkway** will have a total of 480 feet of storage (inside lane with 160 feet and outside lane with 320 feet) and taper length of 130 feet. The 95th percentile queue was estimated to be up to 100 feet with full buildout of Redtail Ridge and completion of recommended improvements. **Based on the queuing analysis, the southeast-bound left-turn storage at S. 96th Street and Northwest Parkway is adequate to accommodate the 95th percentile queue at full buildout.**

The **northbound left-turn lane at Campus Drive** is proposed to have a total of 630 feet of storage. The 95th percentile queue was estimated to be up to 100 feet with full buildout of Redtail Ridge and completion of recommended improvements. **Based on the queuing analysis, the northbound left-turn storage at S. 96th Street and Campus Drive is adequate to accommodate the 95th percentile queue at full buildout.**

The existing fire station has one access on S. 96th Street, approximately 165 feet from the northbound stop line at the future Campus Drive intersection. The existing median has a break for exiting emergency vehicles that is approximately 28 feet. There is a second break in the median for entering emergency vehicles with a width of 32 feet. If the access on 96th Street remains, it is proposed that "Do Not Block" pavement markings will be needed for the northbound approach, including in the northbound left-turn

lane. **It is recommended that the "Do Not Block" box on S. 96th Street be no longer than 65 feet to continue to be able to accommodate the estimated 95th percentile queue.** This area is wider than the existing median break, but the design would need to be approved by the fire department.

With the Campus Drive Extension, a new T-intersection will be created on S. 96th Street. The **eastbound approach (Campus Drive)** is proposed to provide two left-turn lanes and one right-turn lane. The inside left-turn lane is proposed to extend 450 feet and the outside left-turn lane will be the striped for 450 feet but is one of the through lanes on Campus Drive that will end at S. 96th Street (total of 950 feet of storage). The right-turn lane is the second through lane that ends at S. 96th Street. The 95th percentile queue for the eastbound left-turn movement was estimated to be up to 250 feet with full buildout of Redtail Ridge and completion of recommended improvements. **Based on the queuing analysis, the eastbound left-turn storage at S. 96th Street and Campus Drive is adequate to accommodate the 95th percentile queue at full buildout.**

There is potential for the fire station will have access on Campus Drive approximately 100 feet west of the eastbound stop line at 96th Street. The proposed break in the median is approximately 100 feet. **It is recommended that the "Do Not Block" box on Campus Drive be no longer than 100 feet to continue to be able to accommodate the estimated 95th percentile queue and match the proposed break in the median.** This area is wider than the existing median break on 96th Street, but the design would need to be approved by the fire department.

11.0 Crash Reduction and Vision Zero

The crash analysis completed in the City of Louisville TMP, also shown in **Section 3.0** of this study, documents the crash trends in the Redtail Ridge study area. As a result of the high crash locations, the TMP outlined priorities to work toward reducing all crashes in the City. The term "Vision Zero" encapsulates the concept of providing safe and complete roadways for all users with a goal of reducing all crashes, specifically fatal and life threating crashes.

The Redtail Ridge design team is proposing to enhance the TMP Vision Zero recommendations with the internal connectivity and roadway design. The intersection and multimodal improvements recommended in this study will accelerate the City's progress toward Vision Zero and provide safe travel as new residents, visitors and employees travel to and from Redtail Ridge. A specific overview of the recommended projects that could work toward Vision Zero are outlined below.

- **Extension of Campus Drive east to S. 96th Street** would provide a secondary route to/from the Monarch school campus and alternative route to Dillon Road. This would provide redundant access for emergency services and redistribute AM peak traffic to new intersections with enhanced safety features outlined below.
- Each of the intersections in the study area was evaluated in this study with **future changes to signal timing and vehicle storage to reduce crashes**. Providing safe clearance times and adequate storage will work toward Vision Zero goals in the S. 88th Street, Dillon Road, and S. 96th Street corridors.
- The intersections in this study utilized **best practices for pedestrian signal timing** at intersections. This includes walk phases that allow adequate time for seniors and children to cross streets. Additional protection is possible if City staff and the community would be willing to accept additional travel time delay during peak AM travel conditions. We look forward to finding the right balance that works toward Vision Zero goals.
- The bicycle network in this study recommends going beyond the TMP recommendations by **building a network of buffered and protected bikeways** in the S. 88th Street, S. 96th Street, and Dillon Road corridors as well as through the currently inaccessible project site. This would include intersection treatments that protect people on bicycles from turning movements when they are waiting for signals.

The design team will continue to apply Vision Zero best practices as additional site plan details are prepared during the PUD process. This includes the use of traffic calming features, properly sized lane widths, roundabouts, speed limits, and signage that works toward the City of Louisville's TMP safety goals.

12.0 Improvement Phasing

A summary of improvements recommended in this report at the study intersections and segments is provided in **Table 17** for both with and without project conditions. The estimated timeline for when the improvement is needed/triggered is also noted in the summary table.

Table 17. Improvement Phasing Summary

Roadway or Intersection	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1	Phase 2	Phase 3	
S. 88th Street	Widen to 4-lanes (Dillon Rd to Campus Dr)	✪						9%
S. 96th Street	Widen to 4-lanes (Dillon Rd to NW Pkwy)	✪						11%
	Widen to 4-lanes (1/2 mile north of Dillon Rd)			✪				14%
Dillon Road	Widen to 4-lanes (S. 88th St to S. 96th St)			✪				4%
Northwest Pkwy	Add 3rd Southbound through lane (S. 96th St. to US 36 Interchange)						✪	7%
Campus Drive	Extension to S. 96th Street				✪			95%
Rockcress Drive	Construct as two-lane road (NWP to N-S Internal Collector)				✪			100%
	Extend to S. 88th Street					✪		100%
Sorrel Avenue	Construct as a two-lane road with center left-turn lane				✪			100%
Internal Collectors	Construct as two-lane roads				✪			100%
#10. Dillon Road at S. 88th Street	Restripe 2nd WB left-turn lane	✪						0%
#15. Dillon Road at S. 96th Street	Construct dual EB left-turn lanes	✪						0%
	Construct dual WB left-turn lanes	✪						4%
#20. S. 88th Street at Campus Drive	Construct 2nd NB thru lane (begin approx. 500 feet south of Campus Drive)	✪						23%
	Extend NB right-turn lane (500 feet)	✪						3%
#22. S. 88th Street at Rockcress Drive	Construct as side-street stop-controlled, with full movement					✪		8%
	Construct one SB left-turn lane					✪		100%
#23. S. 96th Street at Campus Drive	Construct dual NB left-turn lanes				✪			64%
	Construct SB right-turn lane				✪			39%
	Construct dual EB left-turn lanes				✪			62%
	Construct one EB right-turn lane				✪			100%
	Signalize				✪			20%
#25. Northwest Parkway at S. 96th Street / Via Varra	Construct 3rd NB left-turn lane	✪						4%
	Capacity improvements on NWP			✪				8%

Roadway or Intersection	Mitigation	Trigger Timeline						Percent of Redtail Ridge Traffic
		Background (Non-Project Related)			Redtail Ridge Project			
		2025	2030	2040	Phase 1	Phase 2	Phase 3	
#30. Northwest Parkway at Rockcress Drive / Via Varra	Modify EB with one left-turn lane, one thru lane, and one right-turn lane				●			100%
	Remove the split phase on EB/WB				●			100%
#35 & #40. Northwest Parkway at US 36 Interchange	New Interchange			●				19%
#101. Campus Drive at N-S Internal Collector	Implement Side-Street Stop-Control				●			100%
	Construct WB left-turn lane				●			100%
#102. Campus Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				●			65%
#103 & #104. Rockcress Drive at Internal Collectors	Implement Side-Street Stop-Control				●			100%
#105. Rockcress Drive at Sorrel Avenue	Construct as Multi-Lane Roundabout				●			100%
#106 & #107. Sorrel Avenue at E-W Internal Collectors	Implement Side-Street Stop-Control				●			100%
	Implement All-Way Stop					●		100%
	Construct NB left-turn lane				●			100%
	Construct SB left-turn lane					●		100%
#108. N-S Internal Collector at E-W Internal Collector (North)	Implement Side-Street Stop-Control				●			100%
#205. Sorrel Avenue at PUD 2 Access E	Implement Side-Street Stop-Control				●			100%

Table 17 includes a number of potential improvements to roadway segments and intersections that the City of Louisville should monitor over time as area traffic increases, including:

- The need to widen Dillon Road to four lanes between S. 88th Street and S. 96th Street
- The need to widen S. 96th Street from south of Dillon Road to SH 42

The City will also want to monitor potential improvements to the Northwest Parkway between 96th Street and US 36, and potential implementation of the Jefferson Parkway.

13.0 Next Steps

After the Filing 1 plat submittal, vertical developers will be required to submit PUD documents prior to construction, including traffic conformance letters. The PUD documents will identify if/when traffic signals at the internal intersections are projected to be warranted as well as signal timing modifications/adjustments needed to the study intersections. In addition, the vertical developers will be required to submit building specific Travel Demand Management (TDM) Plans. The projected non-single occupancy vehicle (non-SOV) goals will be evaluated and adjusted as needed to reach goals. The Metro District will monitor the plans effectiveness and make changes as needed to reach goals.

Appendix:

A - Level of Service by Movement and Queuing Summary Tables

B - Previous Studies

C - Existing Traffic Data

D - Level of Service Definitions

E - Non-SOV References

F - Intersection Capacity Worksheets (Synchro)

G – All-Way Stop Control Warrant Analysis

H – Percent Contribution

Appendix A – Level of Service and Queuing Summary Tables

Table A.1 - Peak Hour Intersection Level of Service Summary (Existing and Background Conditions)

Intersection and Lanes Groups	Existing (Year 2023)				Year 2025 Bkgrd				Year 2025 Bkgrd (With Improvements)					Year 2030 Bkgrd				Year 2040 Bkgrd				Year 2040 Bkgrd (With Improvements)				
	AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
Signalized Control																										
5. Dillon Road and McCaslin Boulevard	**28**	**C**	**31**	**C**	**30**	**C**	**33**	**C**						**30**	**C**	**33**	**C**	**29**	**C**	**34**	**C**					
Eastbound Left	54	D	46	D	55	D	47	D						55	D	48	D	54	D	48	D					
Eastbound Through	56	E	51	D	57	E	52	D						57	E	54	D	57	E	52	D					
Eastbound Right	0	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
Westbound Left	55	D	47	D	54	D	49	D						53	D	50	D	54	D	50	D					
Westbound Through	49	D	36	D	48	D	36	D						47	D	35	D	48	D	35	C					
Westbound Right	0	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
Northbound Left	58	E	49	D	58	E	50	D						58	E	51	D	58	E	51	D					
Northbound Through	15	B	23	C	17	B	24	C						18	B	25	C	17	B	27	C					
Northbound Right	0	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
Southbound Left	59	E	49	D	62	E	50	D						62	E	50	D	59	E	50	D					
Southbound Through	12	B	20	B	13	B	21	C						13	B	22	C	13	B	22	C					
Southbound Right	2	A	0	A	0	A	0	A						0	A	0	A	0	A	0	A					
10. Dillon Road and 88th Street	**18**	**B**	**12**	**B**	**26**	**C**	**16**	**B**		**16**	**B**	**11**	**B**	**16**	**B**	**11**	**B**	**20**	**B**	**13**	**B**		**17**	**B**	**11**	**B**
Eastbound Through	26	C	20	B	53	D	33	C	Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL	24	C	16	B	25	C	17	B	43	D	19	B	Widen Dillon Rd (4 lanes)	32	C	13	B
Eastbound Right	13	B	8	A	22	C	13	B		10	A	6	A	10	A	6	A	11	B	6	A		10	B	6	A
Westbound Left	15	B	9	A	30	C	13	B		11	B	8	A	12	B	8	A	24	C	9	A		20	B	6	A
Westbound Through	8	A	6	A	12	B	9	A		12	B	9	A	10	A	6	A	18	B	6	A		18	B	6	A
Northbound Left	51	D	44	D	49	D	44	D		49	D	44	D	48	D	44	D	31	C	44	D		31	C	44	D
Northbound Right	1	A	1	A	1	A	1	A		1	A	1	A	1	A	1	A	1	A	1	A		1	A	1	A
15. Dillon Road and 96th Street	**33**	**C**	**37**	**D**	**44**	**D**	**43**	**D**		**31**	**C**	**33**	**C**	**31**	**C**	**33**	**C**	**30**	**C**	**33**	**C**					
Eastbound Left	22	C	26	C	32	C	39	D	Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR	22	C	22	C	22	C	22	C	20	C	22	C					
Eastbound Through	28	C	33	C	30	C	36	D		27	C	30	C	27	C	30	C	25	C	30	C					
Eastbound Right	28	C	34	C	30	C	37	D		27	C	31	C	28	C	31	C	25	C	31	C					
Westbound Left	22	C	26	C	24	C	38	D		22	C	21	C	22	C	21	C	21	C	21	C					
Westbound Through	31	C	33	C	37	D	37	D		31	C	30	C	32	C	31	C	28	C	29	C					
Westbound Right	28	C	32	C	33	C	35	D		28	C	29	C	28	C	29	C	27	C	28	C					
Northbound Left	28	C	35	C	36	D	37	D		29	C	31	C	31	C	32	C	26	C	32	C					
Northbound Through	30	C	48	D	40	D	56	E		34	C	46	D	34	C	47	D	36	D	47	D					
Northbound Right	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Southbound Left	28	C	35	C	32	C	37	D		27	C	32	C	27	C	32	C	27	C	32	C					
Southbound Through	38	D	44	D	45	D	47	D		38	D	39	D	39	D	40	D	37	D	40	D					
Southbound Right	59	E	46	D	112	F	54	D		36	D	45	D	38	D	29	C	31	C	30	C					
20. 88th Street and Campus Drive	**33**	**C**	**36**	**D**	**36**	**D**	**40**	**D**		**33**	**C**	**34**	**C**	**33**	**C**	**35**	**C**	**34**	**C**	**38**	**D**					
Eastbound Left	35	C	44	D	35	C	43	D	Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT	34	C	37	D	34	C	43	D	34	C	48	D					
Eastbound Through+Right	57	E	42	D	60	E	42	D		54	D	42	D	54	D	42	D	53	D	41	D					
Westbound Left	35	C	63	E	40	D	81	F		39	D	48	D	39	D	51	D	44	D	51	D					
Westbound Through+Right	38	D	43	D	41	D	43	D		41	D	43	D	41	D	41	D	47	D	49	D					
Northbound Left	26	C	20	B	26	C	20	B		26	C	21	C	26	C	21	C	26	C	23	C					
Northbound Through	42	D	26	C	51	D	28	C		35	D	25	C	35	D	25	C	34	C	27	C					
Northbound Right	24	C	12	B	25	C	12	B		24	C	12	B	24	C	12	B	25	C	14	B					
Southbound Left	24	C	14	B	29	C	15	B		23	C	16	B	23	C	15	B	22	C	18	B					
Southbound Through	31	C	22	C	32	C	25	C		32	C	28	C	32	C	27	C	31	C	32	C					
Southbound Right	30	C	17	B	30	C	18	B		30	C	20	B	30	C	19	B	30	C	22	C					

Not Applicable (Year 2025 Bkgrd (With Improvements))

Not Applicable (Year 2040 Bkgrd (With Improvements))

Table A.1 - Peak Hour Intersection Level of Service Summary (Existing and Background Conditions)

Intersection and Lanes Groups	Existing (Year 2023)				Year 2025 Bkgrd				Year 2025 Bkgrd (With Improvements)					Year 2030 Bkgrd				Year 2040 Bkgrd				Year 2040 Bkgrd (With Improvements)				
	AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
25. Northwest Parkway and 96th Street/Via Varra	**25**	**C**	**77**	**E**	**73**	**E**	**91**	**F**		**35**	**D**	**27**	**C**	**35**	**D**	**34**	**C**	**31**	**C**	**29**	**C**					
Eastbound Left - 96th Street	45	D	45	D	45	D	44	D	Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase	46	D	44	D	45	D	44	D	46	D	43	D	Not Applicable				
Eastbound Through - 96th Street	47	D	47	D	48	D	46	D		48	D	46	D	48	D	46	D	5	A	46	D					
Eastbound Right - 96th Street	5	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Westbound Left - Via Varra	42	D	45	D	43	D	44	D		43	D	44	D	43	D	44	D	43	D	44	D					
Westbound Through - Via Varra	44	D	49	D	53	D	49	D		54	D	49	D	53	D	49	D	52	D	49	D					
Westbound Right - Via Varra	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Northbound Left - NWP	34	C	>120	F	>120	F	>120	F		41	D	27	C	40	D	47	D	39	D	41	D					
Northbound Through - NWP	4	A	9	A	9	A	11	B		9	A	11	B	9	A	11	B	9	A	11	B					
Northbound Right - NWP	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Southbound Left - NWP	46	D	51	D	52	D	51	D		52	D	51	D	52	D	51	D	51	D	51	D					
Southbound Through - NWP	51	D	24	C	37	D	26	C		32	C	35	D	35	C	27	C	24	C	19	B					
Southbound Right - NWP	0	A	0	A	0	A	0	A		21	C	24	C	22	C	18	B	16	B	12	B					
30. Northwest Parkway and Via Varra (Rockcress)	**14**	**B**	**13**	**B**	**20**	**C**	**16**	**B**		**15**	**B**	**15**	**B**	**16**	**B**	**16**	**B**	**15**	**B**	**16**	**B**					
Eastbound Left	57	E	0	A	52	D	0	A	AM: +4s on WB, - 4s on NB/SB Thru PM: AM: +2s on WB, - 2s on NB/SB Thru	52	D	0	A	52	D	0	A	52	D	0	A	Not Applicable				
Eastbound Through	0	A	78	E	0	A	64	E		0	A	64	E	0	A	64	E	0	A	64	E					
Eastbound Right	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
Westbound Left	66	E	51	D	117	F	55	E		53	D	51	D	53	D	51	D	55	D	52	D					
Westbound Through	44	D	43	D	44	D	42	D		42	D	41	D	42	D	41	D	41	D	41	D					
Westbound Right	63	E	47	D	100	F	46	D		52	D	45	D	50	D	45	D	45	D	45	D					
Northbound Left	0	A	52	D	0	A	50	D		0	A	50	D	0	A	50	D	0	A	50	D					
Northbound Through	9	A	9	A	10	B	11	B		12	B	11	B	13	B	12	B	13	B	13	B					
Northbound Right	7	A	6	A	7	A	7	A		8	A	7	A	8	A	8	A	8	A	7	A					
Southbound Left	49	D	51	D	49	D	51	D		49	D	51	D	49	D	51	D	49	D	51	D					
Southbound Through	6	A	8	A	6	A	10	B		7	A	10	B	8	A	11	B	9	A	12	B					
Southbound Right	0	A	0	A	0	A	0	A		0	A	0	A	0	A	0	A	0	A	0	A					
35. Northwest Parkway & US 36 North Ramps (WB)	**8**	**A**	**8**	**A**	**9**	**A**	**8**	**A**						**9**	**A**	**8**	**A**	**8**	**A**	**8**	**A**					
Westbound Left	46	D	45	D	46	D	45	D		Not Applicable				46	D	45	D	46	D	46	D	Not Applicable				
Westbound Through	46	D	45	D	46	D	45	D						46	D	46	D	46	D	45	D					
Westbound Right	1	A	0	A	1	A	0	A						1	A	0	A	1	A	1	A					
Northbound Left	19	B	20	C	28	C	27	C						27	C	24	C	27	C	23	C					
Northbound Through	2	A	4	A	2	A	4	A						3	A	5	A	3	A	6	A					
Southbound Through	6	A	5	A	6	A	5	A						6	A	6	A	6	A	6	A					
Southbound Right	11	B	6	A	12	B	6	A						11	B	6	A	9	A	5	A					

Table A.1 - Peak Hour Intersection Level of Service Summary (Existing and Background Conditions)

Intersection and Lanes Groups	Existing (Year 2023)				Year 2025 Bkgrd				Year 2025 Bkgrd (With Improvements)					Year 2030 Bkgrd				Year 2040 Bkgrd				Year 2040 Bkgrd (With Improvements)				
	AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv.	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
40. Northwest Parkway & US 36 South Ramps (EB)	**15**	**B**	**22**	**C**	**16**	**B**	**23**	**C**						**16**	**B**	**23**	**C**	**16**	**B**	**25**	**C**					
Eastbound Left	*46*	*D*	*51*	*D*	*46*	*D*	*52*	*D*	*Not Applicable*					*47*	*D*	*53*	*D*	*47*	*D*	*53*	*D*	*Not Applicable*				
Eastbound Through	*46*	*D*	*51*	*D*	*47*	*D*	*51*	*D*						*47*	*D*	*51*	*D*	*47*	*D*	*53*	*D*					
Eastbound Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Through	*11*	*B*	*19*	*B*	*13*	*B*	*20*	*B*						*13*	*B*	*21*	*C*	*14*	*B*	*23*	*C*					
Northbound Right	*8*	*A*	*14*	*B*	*10*	*A*	*14*	*B*						*10*	*A*	*15*	*B*	*10*	*B*	*15*	*B*					
Southbound Left	*47*	*D*	*46*	*D*	*43*	*D*	*47*	*D*						*47*	*D*	*49*	*D*	*48*	*D*	*49*	*D*					
Southbound Through	*4*	*A*	*6*	*A*	*4*	*A*	*6*	*A*						*4*	*A*	*6*	*A*	*4*	*A*	*6*	*A*					
Roundabout Controlled																										
45. 88th Street and Rock Creek Parkway	**6**	**A**	**5**	**A**	**7**	**A**	**6**	**A**						**7**	**A**	**6**	**A**	**7**	**A**	**6**	**A**					
Eastbound Left	*6*	*A*	*5*	*A*	*8*	*A*	*6*	*A*	*Not Applicable*					*8*	*A*	*6*	*A*	*7*	*A*	*6*	*A*	*Not Applicable*				
Eastbound Through	*4*	*A*	*5*	*A*	*5*	*A*	*6*	*A*						*5*	*A*	*6*	*A*	*4*	*A*	*6*	*A*					
Westbound Through	*5*	*A*	*4*	*A*	*6*	*A*	*4*	*A*						*6*	*A*	*5*	*A*	*5*	*A*	*5*	*A*					
Westbound Right	*8*	*A*	*4*	*A*	*10*	*A*	*4*	*A*						*10*	*B*	*4*	*A*	*9*	*A*	*5*	*A*					
Southbound Left	*5*	*A*	*7*	*A*	*5*	*A*	*7*	*A*						*5*	*A*	*8*	*A*	*5*	*A*	*7*	*A*					
Southbound Right	*4*	*A*	*5*	*A*	*4*	*A*	*5*	*A*						*4*	*A*	*5*	*A*	*4*	*A*	*5*	*A*					

Note: Delay represented in average seconds per vehicle.

Note: Under conditions with improvements, level of service results are only provided for intersections with recommended improvements.

Table A.2 - 95th Percentile Queuing Summary (Existing and Background Conditions)

Intersection and Lane Groups	Storage Length	Existing (Year 2023)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Improvements)			Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Improvements)		
		AM Peak	PM Peak	AM Peak	PM Peak	Imprv	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv	AM Peak	PM Peak
5. Dillon Road and McCaslin Boulevard		*Signalized*		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	425'	26'	46'	29'	47'				29'	50'	36'	54'			
Eastbound Through	-	27'	81'	33'	83'				33'	89'	44'	99'			
Eastbound Right	120'	0'	0'	0'	0'				0'	0'	0'	0'			
Westbound Left	500'	164'	275'	180'	302'				187'	311'	197'	334'			
Westbound Through	-	60'	75'	62'	78'				62'	78'	66'	87'			
Westbound Right	280'	46'	0'	47'	1'				47'	3'	59'	7'			
Northbound Left	540'	68'	89'	69'	93'				72'	93'	78'	97'			
Northbound Through	-	320'	371'	346'	378'				362'	391'	369'	419'			
Northbound Right	190'	34'	59'	36'	60'				36'	60'	64'	76'			
Southbound Left	240'	84'	119'	95'	128'				97'	131'	107'	138'			
Southbound Through	-	142'	275'	151'	280'				158'	291'	165'	309'			
Southbound Right	110'	0'	**0'**	0'	0'				0'	0'	0'	0'			
10. Dillon Road and 88th Street		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Signalized*		
Eastbound Through	-	286'	399'	492'	521'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL*	377'	381'	392'	399'	396'	437'	*Widen Dillon Rd (4 lanes)*	168'	167'
Eastbound Right	270'	35'	13'	36'	15'		29'	9'	29'	9'	32'	18'		32'	16'
Westbound Left	400'	305'	125'	455'	195'		135'	65'	138'	67'	150'	71'		150'	71'
Westbound Through	-	88'	83'	244'	245'		244'	245'	110'	104'	121'	112'		121'	112'
Northbound Left	-	142'	132'	151'	137'		151'	137'	157'	142'	189'	148'		189'	148'
Northbound Right	200'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'		0'	0'
15. Dillon Road and 96th Street		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	415'	174'	257'	328'	333'	*Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR*	119'	136'	122'	139'	126'	147'			
Eastbound Through	-	133'	192'	148'	205'		134'	194'	137'	198'	144'	213'			
Eastbound Right	415'	35'	39'	37'	39'		33'	38'	35'	38'	45'	54'			
Westbound Left	425'	118'	327'	159'	373'		73'	159'	75'	163'	77'	172'			
Westbound Through	-	146'	206'	172'	235'		166'	221'	169'	233'	184'	239'			
Westbound Right	425'	10'	32'	19'	33'		19'	32'	23'	33'	29'	47'			
Northbound Left	350'	113'	58'	117'	64'		113'	60'	118'	59'	135'	67'			
Northbound Through	-	227'	350'	335'	410'		324'	391'	334'	408'	353'	432'			
Northbound Right	325'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left	335'	65'	85'	90'	119'		87'	112'	87'	118'	92'	125'			
Southbound Through	-	264'	304'	289'	355'		281'	335'	290'	347'	303'	358'			
Southbound Right	350'	19'	67'	24'	76'		172'	73'	187'	105'	156'	103'			
20. 88th Street and Campus Drive		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	150'	90'	211'	90'	214'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT*	90'	209'	90'	209'	97'	223'			
Eastbound Through+Right	-	201'	0'	205'	0'		203'	0'	203'	0'	211'	0'			
Westbound Left	240'	306'	292'	346'	275'		345'	308'	349'	318'	369'	316'			
Westbound Through+Right	-	0'	0'	7'	0'		7'	0'	7'	0'	49'	0'			
Northbound Left	190'	110'	15'	112'	17'		112'	18'	112'	18'	112'	23'			
Northbound Through	-	305'	260'	413'	316'		178'	152'	183'	154'	194'	164'			
Northbound Right	190' (Ex); 500' (2025	8'	8'	77'	15'		5'	12'	6'	12'	5'	12'			
Southbound Left	400'	197'	58'	207'	59'		198'	61'	198'	61'	201'	63'			
Southbound Through	-	186'	361'	230'	488'		230'	513'	230'	536'	249'	579'			
Southbound Right	215'	3'	0'	3'	0'		3'	0'	3'	0'	2'	0'			

Table A.2 - 95th Percentile Queuing Summary (Existing and Background Conditions)

Intersection and Lane Groups	Storage Length	Existing (Year 2023) AM Peak	Existing (Year 2023) PM Peak	Year 2025 Bkgrd AM Peak	Year 2025 Bkgrd PM Peak	Year 2025 Bkgrd (With Improvements) Imprv	Year 2025 Bkgrd (With Improvements) AM Peak	Year 2025 Bkgrd (With Improvements) PM Peak	Year 2030 Bkgrd AM Peak	Year 2030 Bkgrd PM Peak	Year 2040 Bkgrd AM Peak	Year 2040 Bkgrd PM Peak	Year 2040 Bkgrd (With Improvements) Imprv	Year 2040 Bkgrd (With Improvements) AM Peak	Year 2040 Bkgrd (With Improvements) PM Peak
25. Northwest Parkway and 96th Street/Via Varra		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left - 96th Street	370'	36'	60'	36'	61'	*Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase*	36'	61'	36'	61'	38'	65'			
Eastbound Through - 96th Street	-	58'	98'	69'	111'		69'	111'	70'	113'	75'	119'			
Eastbound Right - 96th Street	400'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Westbound Left - Via Varra	265'	303'	13'	39'	18'		39'	18'	38'	19'	40'	24'			
Westbound Through - Via Varra	-	71'	68'	105'	88'		105'	88'	106'	89'	111'	93'			
Westbound Right - Via Varra	250'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Northbound Left - NWP	725'	196'	201'	247'	228'		206'	192'	183'	158'	210'	191'			
Northbound Through - NWP	-	29'	88'	34'	92'		96'	240'	38'	100'	30'	56'			
Northbound Right - NWP	320'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left - NWP	500'	26'	21'	28'	22'		29'	22'	28'	22'	34'	26'			
Southbound Through - NWP	-	247'	156'	253'	159'		255'	159'	284'	176'	303'	181'			
Southbound Right - NWP	500'	0'	0'	0'	0'		33'	8'	32'	0'	34'	0'			
30. Northwest Parkway and Via Varra (Rockcress)		*Signalized*		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	130'	3'	0'	6'	0'	*AM: +4s on WB, - 4s on NB/SB Thru PM: AM: +2s on WB, - 2s on NB/SB Thru*	6'	0'	6'	0'	6'	0'			
Eastbound Through	-	0'	7'	0'	13'		0'	13'	0'	13'	0'	0'			
Eastbound Right	200'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Westbound Left	520'	107'	96'	157'	124'		120'	119'	124'	121'	138'	126'			
Westbound Through	-	4'	7'	10'	14'		9'	13'	9'	12'	9'	12'			
Westbound Right	520'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
Northbound Left	450'	0'	2'	0'	5'		0'	4'	0'	4'	0'	4'			
Northbound Through	-	283'	323'	315'	333'		330'	348'	348'	386'	355'	437'			
Northbound Right	250'	25'	13'	12'	13'		24'	18'	19'	22'	19'	32'			
Southbound Left	660'	27'	19'	39'	20'		39'	20'	28'	20'	43'	20'			
Southbound Through	-	127'	194'	260'	225'		299'	235'	162'	244'	156'	503'			
Southbound Right	600'	0'	0'	0'	0'		0'	0'	0'	0'	0'	0'			
35. Northwest Parkway & US 36 North Ramps (WB)		*Signalized*		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Westbound Left	325'	103'	109'	104'	112'				106'	114'	115'	120'			
Westbound Left+Through	-	93'	44'	96'	45'				98'	46'	116'	117'			
Westbound Right	1700'	0'	0'	0'	0'				0'	0'	0'	0'			
Northbound Left	200'	139'	**139'**	164'	**149'**				176'	157'	192'	166'			
Northbound Through	-	57'	141'	58'	116'				63'	234'	81'	326'			
Southbound Through	-	114'	53'	160'	63'				195'	68'	154'	69'			
Southbound Right	250'	11'	8'	33'	15'				46'	13'	19'	12'			
40. Northwest Parkway & US 36 South Ramps (EB)		*Signalized*		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	370'	108'	186'	124'	185'				127'	200'	131'	204'			
Eastbound Left+Through	-	77'	96'	88'	94'				90'	101'	132'	203'			
Eastbound Right	190'	0'	0'	0'	0'				0'	0'	0'	0'			
Northbound Through	-	194'	**312'**	217'	293'				237'	354'	261'	397'			
Northbound Right	300'	8'	17'	9'	**17'**				11'	17'	15'	36'			
Southbound Left	515'	107'	154'	117'	169'				131'	247'	138'	271'			
Southbound Through	-	74'	77'	76'	78'				77'	80'	78'	83'			
45. 88th Street and Rock Creek Parkway		*Roundabout*		*Roundabout*		*Not Applicable*			*Roundabout*		*Roundabout*		*Not Applicable*		
Eastbound Left+Through	825'	25'	25'	50'	25'				50'	25'	25'	25'			
Eastbound Through	-	25'	25'	25'	25'				25'	25'	0'	25'			
Westbound Through	-	25'	0'	25'	0'				25'	25'	25'	25'			
Westbound Through+Right	400'	50'	25'	75'	25'				75'	25'	75'	25'			
Southbound Left	-	25'	50'	25'	50'				25'	50'	25'	50'			
Southbound Right	60'	0'	25'	0'	25'				25'	25'	0'	25'			

Note: Under conditions with improvements, queues are only provided for intersections with recommended improvements.

Table A.3 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2025 Bkgrd+Project (With Improvements)					Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project				Year 2040 Bkgrd+Project (With Improvements)				
	AM Peak		PM Peak		Imprv	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
Signalized Control																						
5. Dillon Road and McCaslin Boulevard	**26**	**C**	**34**	**C**						**31**	**C**	**34**	**C**	**29**	**C**	**35**	**C**					
Eastbound Left	*38*	*D*	*48*	*D*		*Not Applicable*				*55*	*D*	*48*	*D*	*54*	*D*	*48*	*D*		*Not Applicable*			
Eastbound Through	*29*	*C*	*53*	*D*						*57*	**E**	*53*	*D*	*57*	**E**	*53*	*D*					
Eastbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Westbound Left	*39*	*D*	*51*	*D*						*53*	*D*	*51*	*D*	*54*	*D*	*52*	*D*					
Westbound Through	*34*	*C*	*35*	*D*						*47*	*D*	*35*	*C*	*48*	*D*	*34*	*C*					
Westbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Left	*40*	*D*	*51*	*D*						*58*	**E**	*51*	*D*	*58*	**E**	*52*	*D*					
Northbound Through	*21*	*C*	*25*	*C*						*18*	*B*	*26*	*C*	*17*	*B*	*27*	*C*					
Northbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left	*41*	*D*	*50*	*D*						*64*	**E**	*51*	*D*	*61*	**E**	*51*	*D*					
Southbound Through	*16*	*B*	*22*	*C*						*13*	*B*	*22*	*C*	*13*	*B*	*23*	*C*					
Southbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
10. Dillon Road and 88th Street	**16**	**B**	**11**	**B**		**15**	**B**	**10**	**A**	**17**	**B**	**10**	**B**	**19**	**B**	**11**	**B**		**17**	**B**	**10**	**A**
Eastbound Through	*21*	*C*	*16*	*B*	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL*	*20*	*C*	*13*	*B*	*18*	*B*	*13*	*B*	*33*	*C*	*14*	*B*	*Widen Dillon Rd (4 lanes)*	*26*	*C*	*10*	*B*
Eastbound Right	*9*	*A*	*6*	*A*		*8*	*A*	*5*	*A*	*6*	*A*	*5*	*A*	*7*	*A*	*5*	*A*		*7*	*A*	*5*	*A*
Westbound Left	*10*	*A*	*8*	*A*		*9*	*A*	*6*	*A*	*9*	*A*	*6*	*A*	*19*	*B*	*7*	*A*		*17*	*B*	*5*	*A*
Westbound Through	*9*	*A*	*5*	*A*		*9*	*A*	*5*	*A*	*9*	*A*	*5*	*A*	*18*	*B*	*5*	*A*		*18*	*B*	*5*	*A*
Northbound Left	*39*	*D*	*43*	*D*		*35*	*C*	*43*	*D*	*49*	*D*	*43*	*D*	*31*	*C*	*43*	*D*		*31*	*C*	*43*	*D*
Northbound Right	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*
15. Dillon Road and 96th Street	**40**	**D**	**44**	**D**		**32**	**C**	**34**	**C**	**36**	**D**	**37**	**D**	**38**	**D**	**36**	**D**					
Eastbound Left	*38*	*D*	*24*	*C*		*32*	*C*	*22*	*C*	*22*	*C*	*25*	*C*	*21*	*C*	*27*	*C*		*Not Applicable*			
Eastbound Through	*49*	*D*	*34*	*C*		*39*	*D*	*28*	*C*	*27*	*C*	*32*	*C*	*26*	*C*	*35*	*D*					
Eastbound Right	*54*	*D*	*35*	*C*		*42*	*D*	*29*	*C*	*30*	*C*	*34*	*C*	*29*	*C*	*33*	*C*					
Westbound Left	*37*	*D*	*38*	*D*		*29*	*C*	*20*	*B*	*19*	*B*	*22*	*C*	*19*	*B*	*22*	*C*					
Westbound Through	*42*	*D*	*31*	*C*		*37*	*D*	*26*	*C*	*25*	*C*	*29*	*C*	*24*	*C*	*30*	*C*					
Westbound Right	*40*	*D*	*30*	*C*		*36*	*D*	*26*	*C*	*25*	*C*	*28*	*C*	*24*	*C*	*27*	*C*					
Northbound Left	*30*	*C*	*37*	*D*		*24*	*C*	*32*	*C*	*30*	*C*	*32*	*C*	*30*	*C*	*31*	*C*					
Northbound Through	*40*	*D*	*63*	**E**		*33*	*C*	*50*	*D*	*44*	*D*	*54*	*D*	*48*	*D*	*58*	**E**					
Northbound Right	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left	*30*	*C*	*39*	*D*		*24*	*C*	*33*	*C*	*28*	*C*	*35*	*C*	*29*	*C*	*38*	*D*					
Southbound Through	*40*	*D*	*50*	*D*		*32*	*C*	*42*	*D*	*52*	*D*	*44*	*D*	*54*	*D*	*47*	*D*					
Southbound Right	*37*	*D*	*50*	*D*		*23*	*C*	*31*	*C*	*28*	*C*	*31*	*C*	*26*	*C*	*27*	*C*					
20. 88th Street and Campus Drive	**35**	**C**	**35**	**D**		**29**	**C**	**32**	**C**	**24**	**C**	**25**	**C**	**25**	**C**	**25**	**C**					
Eastbound Left	*56*	**E**	*30*	*C*	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT*	*38*	*D*	*28*	*C*	*43*	*D*	*37*	*D*	*42*	*D*	*38*	*D*		*Not Applicable*			
Eastbound Through+Right	*67*	**E**	*67*	**E**		*43*	*D*	*52*	*D*	*46*	*D*	*42*	*D*	*45*	*D*	*43*	*D*					
Westbound Left	*36*	*D*	*33*	*C*		*30*	*C*	*29*	*C*	*54*	*D*	*25*	*C*	*64*	**E**	*24*	*C*					
Westbound Through+Right	*54*	*D*	*33*	*C*		*53*	*D*	*32*	*C*	*37*	*D*	*30*	*C*	*36*	*D*	*29*	*C*					
Northbound Left	*33*	*C*	*24*	*C*		*23*	*C*	*26*	*C*	*20*	*C*	*21*	*C*	*20*	*B*	*21*	*C*					
Northbound Through	*43*	*D*	*29*	*C*		*30*	*C*	*28*	*C*	*22*	*C*	*23*	*C*	*22*	*C*	*24*	*C*					
Northbound Right	*22*	*C*	*16*	*B*		*21*	*C*	*17*	*B*	*16*	*B*	*12*	*B*	*16*	*B*	*12*	*B*					
Southbound Left	*28*	*C*	*19*	*B*		*20*	*C*	*20*	*C*	*13*	*B*	*17*	*B*	*13*	*B*	*17*	*B*					
Southbound Through	*36*	*D*	*30*	*C*		*29*	*C*	*32*	*C*	*17*	*B*	*28*	*C*	*17*	*B*	*28*	*C*					
Southbound Right	*33*	*C*	*22*	*C*		*26*	*C*	*24*	*C*	*14*	*B*	*20*	*B*	*14*	*B*	*20*	*C*					

Table A.3 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2025 Bkgrd+Project (With Improvements)					Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project				Year 2040 Bkgrd+Project (With Improvements)				
	AM Peak		PM Peak		Imprv	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
23. 96th Street and Campus Drive	**22**	**C**	**21**	**C**						**19**	**B**	**24**	**C**	**20**	**B**	**25**	**C**					
Eastbound Left	*39*	*D*	*39*	*D*						*38*	*D*	*37*	*D*	*38*	*D*	*38*	*D*					
Eastbound Right	*35*	*D*	*20*	*C*						*33*	*C*	*32*	*C*	*32*	*C*	*31*	*C*					
Northbound Left	*26*	*C*	*27*	*C*						*29*	*C*	*32*	*C*	*30*	*C*	*33*	*C*					
Northbound Through	*5*	*A*	*4*	*A*						*5*	*A*	*6*	*A*	*6*	*A*	*7*	*A*					
Southbound Through	*25*	*C*	*27*	*C*						*23*	*C*	*28*	*C*	*24*	*C*	*31*	*C*					
Southbound Right	*33*	*C*	*19*	*B*						*19*	*B*	*21*	*C*	*21*	*C*	*21*	*C*					
25. Northwest Parkway & 96th Street/Via Varra	**>120**	**F**	**102**	**F**		**52**	**D**	**34**	**C**	**36**	**D**	**35**	**D**	**31**	**C**	**29**	**C**					
Eastbound Left - 96th Street	*60*	*E*	*44*	*D*	*Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase*	*60*	*E*	*44*	*D*	*46*	*D*	*45*	*D*	*46*	*D*	*45*	*D*					
Eastbound Through - 96th Street	*62*	*E*	*46*	*D*		*62*	*E*	*46*	*D*	*47*	*D*	*46*	*D*	*47*	*D*	*46*	*D*					
Eastbound Right - 96th Street	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Westbound Left - Via Varra	*56*	*E*	*44*	*D*		*56*	*E*	*44*	*D*	*43*	*D*	*44*	*D*	*43*	*D*	*44*	*D*					
Westbound Through - Via Varra	*71*	*E*	*49*	*D*		*71*	*E*	*49*	*D*	*53*	*D*	*49*	*D*	*52*	*D*	*49*	*D*					
Westbound Right - Via Varra	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Left - NWP	*265*	*F*	*212*	*F*		*73*	*E*	*48*	*D*	*40*	*D*	*52*	*D*	*39*	*D*	*41*	*D*					
Northbound Through - NWP	*8*	*A*	*11*	*B*		*8*	*A*	*11*	*B*	*9*	*A*	*12*	*B*	*9*	*A*	*11*	*B*					
Northbound Right - NWP	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left - NWP	*68*	*E*	*51*	*D*		*68*	*E*	*51*	*D*	*52*	*D*	*51*	*D*	*51*	*D*	*51*	*D*					
Southbound Through - NWP	*33*	*C*	*26*	*C*		*33*	*C*	*26*	*C*	*39*	*D*	*27*	*C*	*25*	*C*	*20*	*B*					
Southbound Right - NWP	*0*	*A*	*0*	*A*		*23*	*C*	*18*	*B*	*23*	*C*	*18*	*B*	*18*	*B*	*13*	*B*					
30. Northwest Parkway and Rockcress Drive/Via Varra	**26**	**C**	**23**	**C**						**42**	**D**	**52**	**D**	**64**	**E**	**69**	**E**		**39**	**D**	**41**	**D**
Eastbound Left	*41*	*D*	*42*	*D*						*41*	*D*	*42*	*D*	*41*	*D*	*42*	*D*		*41*	*D*	*42*	*D*
Eastbound Through	*41*	*D*	*46*	*D*						*47*	*D*	*46*	*D*	*46*	*D*	*46*	*D*		*46*	*D*	*46*	*D*
Eastbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*
Westbound Left	*50*	*D*	*41*	*D*						*40*	*D*	*41*	*D*	*40*	*D*	*41*	*D*		*40*	*D*	*41*	*D*
Westbound Through	*37*	*D*	*42*	*D*						*42*	*D*	*42*	*D*	*42*	*D*	*42*	*D*		*42*	*D*	*42*	*D*
Westbound Right	*35*	*D*	*47*	*D*						*52*	*D*	*46*	*D*	*46*	*D*	*46*	*D*		*46*	*D*	*46*	*D*
Northbound Left	*50*	*D*	*52*	*D*						*96*	*F*	*117*	*F*	*171*	*F*	*162*	*F*	*Add 3rd SBT lane & increase NBL green time*	*89*	*F*	*91*	*F*
Northbound Through	*22*	*C*	*13*	*B*						*15*	*B*	*14*	*B*	*15*	*B*	*15*	*B*		*15*	*B*	*15*	*B*
Northbound Right	*4*	*A*	*9*	*A*						*10*	*A*	*9*	*A*	*10*	*A*	*9*	*A*		*10*	*A*	*9*	*A*
Southbound Left	*41*	*D*	*51*	*D*						*49*	*D*	*51*	*D*	*49*	*D*	*51*	*D*		*49*	*D*	*51*	*D*
Southbound Through	*22*	*C*	*22*	*C*						*41*	*D*	*54*	*D*	*58*	*E*	*74*	*E*		*31*	*C*	*35*	*C*
Southbound Right	*0*	*A*	*0*	*A*						*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*		*0*	*A*	*0*	*A*
35. Northwest Parkway and US 36 North Ramps (WB)	**9**	**A**	**8**	**A**						**9**	**A**	**9**	**A**	**10**	**A**	**10**	**A**					
Westbound Left	*46*	*D*	*45*	*D*						*46*	*D*	*45*	*D*	*46*	*D*	*46*	*D*					
Westbound Through	*46*	*D*	*45*	*D*						*46*	*D*	*46*	*D*	*46*	*D*	*45*	*D*					
Westbound Right	*2*	*A*	*1*	*A*						*7*	*A*	*1*	*A*	*12*	*B*	*1*	*A*					
Northbound Left	*32*	*C*	*27*	*C*						*28*	*C*	*49*	*D*	*31*	*C*	*51*	*D*					
Northbound Through	*0*	*A*	*4*	*A*						*3*	*A*	*5*	*A*	*4*	*A*	*6*	*A*					
Southbound Through	*9*	*A*	*6*	*A*						*7*	*A*	*8*	*A*	*7*	*A*	*8*	*A*					
Southbound Right	*9*	*A*	*4*	*A*						*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*					

Not Applicable

To be determined with future interchange study

Table A.3 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2025 Bkgrd+Project (With Improvements)					Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project				Year 2040 Bkgrd+Project (With Improvements)				
	AM Peak		PM Peak		Imprv	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		Imprv	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
40. Northwest Parkway and US 36 South Ramps (EB)	**17**	**B**	**35**	**D**				**31**	**C**	**22**	**C**	**100**	**F**	**23**	**C**	**>120**	**F**					
Eastbound Left	*48*	*D*	*52*	*D*	*PM: +6s on SBL & -6s on NBT*	*N/A*		*46*	*D*	*52*	*D*	*54*	*D*	*53*	*D*	*56*	**E**		*To be determined with future interchange study*			
Eastbound Through	*48*	*D*	*51*	*D*				*46*	*D*	*52*	*D*	*55*	*D*	*53*	*D*	*54*	*D*					
Eastbound Right	*0*	*A*	*0*	*A*				*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Northbound Through	*17*	*B*	*23*	*C*				*23*	*C*	*18*	*B*	*24*	*C*	*20*	*B*	*26*	*C*					
Northbound Right	*13*	*B*	*17*	*B*				*0*	*A*	*13*	*B*	*17*	*B*	*14*	*B*	*17*	*B*					
Southbound Left	*30*	*C*	*85*	**F**				*54*	*D*	*50*	*D*	*>120*	**F**	*53*	*D*	*>120*	**F**					
Southbound Through	*4*	*A*	*6*	*A*				*10*	*A*	*5*	*A*	*6*	*A*	*5*	*A*	*6*	*A*					
Roundabout Controlled																						
45. 88th Street and Rock Creek Parkway	**7**	**A**	**6**	**A**						**7**	**A**	**5**	**A**	**6**	**A**	**5**	**A**					
Eastbound Left	*8*	*A*	*6*	*A*	*Not Applicable*					*7*	*A*	*6*	*A*	*6*	*A*	*6*	*A*	*Not Applicable*				
Eastbound Through	*5*	*A*	*6*	*A*						*5*	*A*	*5*	*A*	*4*	*A*	*5*	*A*					
Westbound Through	*6*	*A*	*4*	*A*						*6*	*A*	*4*	*A*	*5*	*A*	*4*	*A*					
Westbound Right	*10*	*A*	*4*	*A*						*9*	*A*	*4*	*A*	*8*	*A*	*4*	*A*					
Southbound Left	*5*	*A*	*7*	*A*						*5*	*A*	*6*	*A*	*5*	*A*	*6*	*A*					
Southbound Right	*4*	*A*	*5*	*A*						*4*	*A*	*5*	*A*	*4*	*A*	*4*	*A*					
Stop-Controlled																						
22. 88th Street and Rockcress Drive										**0**	**A**	**1**	**A**	**1**	**A**	**1**	**A**					
Westbound Left+Right	*Future Intersection*				*Not Applicable*					*21*	*C*	*13*	*B*	*18*	*C*	*13*	*B*	*Not Applicable*				
Northbound Through+Right										*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					
Southbound Left										*10*	*A*	*8*	*A*	*10*	*B*	*8*	*A*					
Southbound Through										*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*					

Note: Delay represented in average seconds per vehicle.

Note: Under conditions with improvements, level of service results are only provided for intersections with recommended improvements.

Table A.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Improvements)			Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Improvements)		
		AM Peak	PM Peak	Imprv.	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv.	AM Peak	PM Peak
5. Dillon Road and McCaslin Boulevard		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	425'	25'	47'				29'	50'	36'	54'			
Eastbound Through	-	29'	83'				30'	87'	41'	96'			
Eastbound Right	120'	0'	0'				0'	0'	0'	0'			
Westbound Left	500'	157'	338'				185'	340'	196'	361'			
Westbound Through	-	54'	78'				58'	72'	64'	81'			
Westbound Right	280'	44'	16'				48'	34'	60'	42'			
Northbound Left	540'	60'	93'				72'	93'	78'	97'			
Northbound Through	-	312'	378'				365'	391'	374'	417'			
Northbound Right	190'	38'	60'				37'	61'	66'	77'			
Southbound Left	240'	92'	131'				106'	136'	120'	**142'**			
Southbound Through	-	138'	280'				157'	291'	164'	308'			
Southbound Right	110'	0'	**0'**				0'	0'	0'	**0'**			
10. Dillon Road and 88th Street		*Signalized*			*Signalized*		*Signalized*		*Signalized*			*Signalized*	
Eastbound Through	-	411'	420'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd WBL*	367'	351'	354'	366'	368'	401'	*Widen Dillon Rd (4 lanes)*	160'	155'
Eastbound Right	270'	34'	10'		37'	6'	29'	6'	32'	12'		32'	12'
Westbound Left	400'	102'	69'		46'	32'	38'	30'	42'	32'		42'	32'
Westbound Through	-	131'	93'		123'	93'	113'	99'	124'	108'		124'	108'
Northbound Left	1250'	152'	92'		138'	92'	151'	87'	185'	98'		185'	98'
Northbound Right	200'	0'	0'		0'	0'	0'	0'	0'	0'		0'	0'
15. Dillon Road and 96th Street		*Signalized*			*Signalized*		*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	415'	246'	222'	*Widen 96th (4 lanes) n/o NWP & add 2nd EBL & 2nd WBL; Overlap for SBR*	113'	100'	83'	94'	85'	94'			
Eastbound Through	-	104'	153'		96'	148'	76'	137'	78'	144'			
Eastbound Right	415'	20'	37'		20'	36'	37'	38'	50'	50'			
Westbound Left	425'	401'	448'		171'	179'	140'	197'	147'	201'			
Westbound Through	-	137'	193'		128'	172'	95'	176'	103'	175'			
Westbound Right	425'	10'	32'		10'	29'	22'	30'	26'	41'			
Northbound Left	350'	69'	63'		63'	60'	69'	80'	77'	91'			
Northbound Through	-	440'	512'		408'	490'	494'	590'	525'	704'			
Northbound Right	325'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left	335'	97'	105'		88'	102'	90'	105'	93'	111'			
Southbound Through	-	434'	402'		400'	388'	544'	440'	584'	528'			
Southbound Right	350'	16'	71'		12'	53'	16'	88'	45'	82'			

Table A.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Improvements)			Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Improvements)		
		AM Peak	PM Peak	Imprv.	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv.	AM Peak	PM Peak
20. 88th Street and Campus Drive		*Signalized*			*Signalized*		*Signalized*		*Signalized*			*Not Applicable*	
Eastbound Left	150'	59'	155'	*Widen 88th (4 lanes) n/o Campus Dr & add 2nd NBT; PM: +2s on WBL & -2 on NBT/SBT*	55'	151'	37'	26'	37'	26'			
Eastbound Through+Right	-	76'	169'		60'	165'	24'	55'	24'	55'			
Westbound Left	240'	365'	202'		370'	188'	365'	183'	476'	183'			
Westbound Through+Right	-	190'	0'		173'	0'	26'	36'	25'	36'			
Northbound Left	190'	123'	11'		115'	12'	19'	17'	20'	18'			
Northbound Through	-	210'	197'		93'	98'	91'	112'	99'	129'			
Northbound Right	)' (Ex); 500' (20	26'	8'		13'	8'	0'	8'	0'	7'			
Southbound Left	400'	195'	30'		177'	31'	165'	32'	167'	33'			
Southbound Through	-	188'	377'		183'	410'	187'	445'	227'	480'			
Southbound Right	215'	10'	0'		0'	0'	0'	0'	0'	0'			
22. 88th Street and Rockcress Drive		*Future Intersection*		*Not Applicable*			*Stop-Controlled*		*Stop-Controlled*		*Not Applicable*		
Westbound Left+Right	-						3'	8'	3'	13'			
Northbound Through+Right	-						0'	0'	0'	0'			
Southbound Left	100'						3'	0'	5'	0'			
Southbound Through	-						0'	0'	0'	0'			
23. 96th Street and Campus Drive		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	450'	136'	128'				142'	181'	153'	202'			
Eastbound Right	-	32'	115'				24'	36'	26'	38'			
Northbound Left	650'	101'	41'				73'	44'	80'	48'			
Northbound Through	-	115'	82'				147'	112'	155'	120'			
Southbound Through	-	250'	322'				281'	407'	301'	453'			
Southbound Right	450'	39'	28'				127'	37'	161'	38'			
25. Northwest Parkway & 96th Street/Via Varra		*Signalized*			*Signalized*		*Signalized*		*Signalized*			*Not Applicable*	
Eastbound Left - 96th Street	370'	51'	75'	*Widen 96th (4 lanes) n/o NWP & add 3rd NBL & no SBR accel but add overlap phase*	50'	75'	43'	89'	46'	97'			
Eastbound Through - 96th Street	-	87'	111'		86'	111'	70'	113'	75'	119'			
Eastbound Right - 96th Street	400'	362'	0'		0'	0'	0'	0'	0'	0'			
Westbound Left - Via Varra	265'	47'	18'		47'	18'	38'	19'	40'	24'			
Westbound Through - Via Varra	-	133'	88'		133'	88'	106'	89'	111'	93'			
Westbound Right - Via Varra	250'	0'	0'		0'	0'	0'	0'	0'	0'			
Northbound Left - NWP	725'	568'	232'		313'	151'	184'	159'	212'	185'			
Northbound Through - NWP	-	57'	98'		104'	104'	47'	134'	37'	80'			
Northbound Right - NWP	320'	0'	0'		0'	0'	0'	0'	0'	0'			
Southbound Left - NWP	500'	35'	22'		35'	22'	28'	22'	34'	26'			
Southbound Through - NWP	-	291'	163'		292'	163'	356'	189'	375'	194'			
Southbound Right - NWP	500'	**0'**	0'		69'	0'	68'	6'	73'	9'			

Table A.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Improvements)			Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Improvements)		
		AM Peak	PM Peak	Imprv.	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	Imprv.	AM Peak	PM Peak
30. Northwest Parkway & Rockcress Drive/Via Varra		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Signalized*		
Eastbound Left	130'	26'	39'				13'	40'	14'	45'	Add 3rd SBT lane & increase NBL green time	14'	45'
Eastbound Through	-	14'	13'				10'	13'	4'	13'		4'	13'
Eastbound Right	200'	0'	176'				0'	671'	0'	0'		0'	0'
Westbound Left	520'	125'	102'				104'	104'	110'	110'		110'	110'
Westbound Through	-	13'	14'				9'	13'	9'	13'		9'	13'
Westbound Right	520'	0'	0'				0'	0'	0'	0'		0'	0'
Northbound Left	450'	124'	38'				389'	86'	**467'**	92'		425'	89'
Northbound Through	-	371'	355'				338'	413'	352'	464'		352'	464'
Northbound Right	200'	29'	9'				5'	15'	5'	16'		5'	**16'**
Southbound Left	660'	41'	20'				28'	21'	41'	20'		41'	20'
Southbound Through	-	471'	522'				590'	672'	736'	736'		413'	430'
Southbound Right	600'	0'	0'				0'	0'	0'	0'		0'	0'
35. Northwest Parkway & US 36 North Ramps (WB)		*Signalized*		*Not Applicable*			*Signalized*		*Signalized*		*Not Applicable*		
Westbound Left	325'	104'	112'				106'	114'	115'	120'			
Westbound Left+Through	-	96'	45'				98'	46'	116'	117'			
Westbound Right	1700'	0'	0'				0'	0'	120'	0'			
Northbound Left	200'	**62'**	165'				190'	186'	205'	184'			
Northbound Through	-	108'	121'				92'	198'	115'	306'			
Southbound Through	-	205'	106'				102'	175'	113'	173'			
Southbound Right	250'	28'	13'				1'	11'	5'	4'			
40. Northwest Parkway & US 36 South Ramps (EB)		*Signalized*		*Signalized*			*Signalized*		*Signalized*		*Not Applicable*		
Eastbound Left	370'	151'	195'	PM: +6s on SBL & -6s on NBT		195'	188'	211'	204'	236'			
Eastbound Left+Through	-	105'	100'			100'	130'	109'	203'	233'			
Eastbound Right	190'	0'	0'			0'	0'	0'	0'	0'			
Northbound Through	-	246'	297'			333'	264'	336'	290'	377'			
Northbound Right	300'	5'	17'			19'	12'	17'	16'	34'			
Southbound Left	515'	187'	423'			351'	170'	692'	190'	786'			
Southbound Through	-	77'	76'			76'	80'	80'	78'	83'			
45. 88th Street and Rock Creek Parkway		*Roundabout*		*Not Applicable*			*Roundabout*		*Roundabout*		*Not Applicable*		
Eastbound Left+Through	825'	50'	25'				50'	25'	25'	25'			
Eastbound Through	-	25'	25'				25'	25'	0'	25'			
Westbound Through	-	25'	0'				25'	25'	25'	25'			
Westbound Through+Right	400'	75'	25'				50'	25'	50'	25'			
Southbound Left	-	25'	50'				25'	25'	25'	25'			
Southbound Right	60'	25'	25'				0'	25'	0'	25'			

Note: Under conditions with improvements, queues are only provided for intersections with recommended improvements.

Table A.5 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Roundabout Controlled												
102. Sorrel Avenue and Campus Drive	**7**	**A**	**5**	**A**	**8**	**A**	**6**	**A**	**8**	**A**	**8**	**A**
Eastbound Left+Right	*8*	*A*	*6*	*A*	*12*	*B*	*7*	*A*	*12*	*B*	*12*	*B*
Westbound Left	*4*	*A*	*3*	*A*	*5*	*A*	*3*	*A*	*5*	*A*	*5*	*A*
Westbound Through+ Right	*7*	*A*	*4*	*A*	*7*	*A*	*5*	*A*	*8*	*A*	*8*	*A*
Southbound Left	*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*	*4*	*A*
Southbound Through+Right	*5*	*A*	*6*	*A*	*5*	*A*	*8*	*A*	*5*	*A*	*5*	*A*
105. Sorrel Avenue and Rockcress Drive	**4**	**A**	**4**	**A**	**5**	**A**	**7**	**A**	**6**	**A**	**6**	**A**
Eastbound Left+Through	*3*	*A*	*4*	*A*	*4*	*A*	*7*	*A*	*4*	*A*	*4*	*A*
Eastbound Through+Right	*3*	*A*	*4*	*A*	*4*	*A*	*6*	*A*	*4*	*A*	*4*	*A*
Westbound Left+Through	*3*	*A*	*3*	*A*	*4*	*A*	*3*	*A*	*5*	*A*	*5*	*A*
Westbound Right	*4*	*A*	*3*	*A*	*6*	*A*	*4*	*A*	*6*	*A*	*6*	*A*
Northbound Left+Through+Right	*3*	*A*	*3*	*A*	*3*	*A*	*7*	*A*	*3*	*A*	*3*	*A*
Southbound Left+Through+Right	*3*	*A*	*4*	*A*	*5*	*A*	*9*	*A*	*6*	*A*	*6*	*A*
Stop-Controlled												
101. Campus Drive at N-S Internal Roadway	**2**	**A**	**3**	**A**	**2**	**A**	**4**	**A**	**2**	**A**	**4**	**A**
Eastbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Westbound Left	*9*	*A*	*8*	*A*	*9*	*A*	*8*	*A*	*9*	*A*	*8*	*A*
Westbound Through	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Northbound Left+Right	*15*	*B*	*12*	*B*	*14*	*B*	*11*	*B*	*15*	*B*	*12*	*B*
103. Rockress Drive at N-S Internal Roadway / PUD 8 Access A	**2**	**A**	**7**	**A**	**3**	**A**	**7**	**A**	**6**	**A**	**9**	**A**
Eastbound Left+Through+Right	*0*	*A*	*0*	*A*	*8*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Westbound Left+Through+Right	*0*	*A*	*0*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Northbound Left+Through+Right					*9*	*A*	*9*	*A*	*10*	*B*	*10*	*B*
Southbound Left+Through+Right	*9*	*A*	*9*	*A*	*10*	*B*	*11*	*B*	*13*	*B*	*13*	*B*
104. Rockress Drive at E-W Internal Roadway (South)	**1**	**A**	**2**	**A**	**0**	**A**	**1**	**A**	**2**	**A**	**3**	**A**
Eastbound Left	*7*	*A*	*7*	*A*	*8*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Eastbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Westbound Left	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*8*	*A*	*8*	*A*
Westbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Northbound Left+Through+Right					*0*	*A*	*0*	*A*	*10*	*A*	*10*	*B*
Southbound Left+Through+Right	*9*	*A*	*9*	*A*	*10*	*A*	*11*	*B*	*13*	*B*	*13*	*B*

Table A.5 - Peak Hour Intersection Level of Service Summary (With Project Conditions)

Intersection and Lanes Groups	Year 2025 Bkgrd+Project				Year 2030 Bkgrd+Project				Year 2040 Bkgrd+Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
106. Sorrel Avenue at E-W Internal Roadway (South)	**3**	**A**	**4**	**A**	**14**	**B**	**19**	**C**	**14**	**B**	**14**	**B**
Eastbound Left+Through+Right	*10*	*A*	*10*	*B*	*9*	*A*	*12*	*B*	*9*	*A*	*9*	*A*
Westbound Left+Through+Right					*10*	*A*	*19*	*C*	*10*	*A*	*10*	*A*
Northbound Left	*8*	*A*	*8*	*A*	*9*	*A*	*11*	*B*	*9*	*A*	*9*	*A*
Northbound Through+Right	*0*	*A*	*0*	*A*	*17*	*C*	*16*	*C*	*17*	*C*	*17*	*C*
Southbound Left	*0*	*A*	*0*	*A*	*10*	*A*	*11*	*B*	*10*	*A*	*10*	*A*
Southbound Through+Right	*0*	*A*	*0*	*A*	*10*	*A*	*25*	*C*	*10*	*A*	*10*	*A*
107. Sorrel Avenue at E-W Internal Roadway (North)/PUD 7A/6A Access	**8**	**A**	**8**	**A**	**10**	**A**	**13**	**B**	**10**	**A**	**10**	**A**
Eastbound Left+Through+Right	*8*	*A*	*8*	*A*	*9*	*A*	*11*	*B*	*9*	*A*	*9*	*A*
Westbound Left+Through+Right					*9*	*A*	*13*	*B*	*9*	*A*	*9*	*A*
Northbound Left	*9*	*A*	*9*	*A*	*10*	*A*	*10*	*A*	*10*	*A*	*10*	*A*
Northbound Through+Right	*8*	*A*	*8*	*A*	*10*	*B*	*15*	*B*	*10*	*B*	*10*	*B*
Southbound Left					*9*	*A*	*10*	*B*	*9*	*A*	*9*	*A*
Southbound Through+Right	*8*	*A*	*8*	*A*	*10*	*B*	*11*	*B*	*10*	*B*	*10*	*B*
108. N-S Internal Roadway at E-W Internal Roadway (North)/PUD 3C Access	**7**	**A**	**7**	**A**	**7**	**A**	**8**	**A**	**8**	**A**	**8**	**A**
Eastbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*
Westbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*7*	*A*
Northbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*8*	*A*	*8*	*A*
Southbound Left+Through+Right	*7*	*A*	*7*	*A*	*7*	*A*	*7*	*A*	*8*	*A*	*8*	*A*
205. Sorrel Ave at PUD 2 Access E	**2**	**A**	**4**	**A**	**1**	**A**	**2**	**A**	**1**	**A**	**2**	**A**
Eastbound Left+Right	*10*	*A*	*10*	*A*	*12*	*B*	*12*	*B*	*12*	*B*	*12*	*B*
Northbound Left	*8*	*A*	*7*	*A*	*8*	*A*	*8*	*A*	*8*	*A*	*8*	*A*
Northbound Through	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*
Southbound Through+Right	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*	*0*	*A*

Note: Delay represented in average seconds per vehicle.

Note: Under conditions with improvements, level of service results are only provided for intersections with recommended improvements.

Table A.6 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
101. Campus Drive at N-S Internal Roadway		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Through+Right	-	0'	0'	0'	0'	0'	0'
Westbound Left	50'	10'	3'	13'	3'	20'	5'
Westbound Through	-	0'	0'	0'	0'	0'	0'
Northbound Left+Right	-	8'	20'	8'	25'	13'	35'
102. Sorrel Avenue and Campus Drive		*Roundabout*		*Roundabout*		*Roundabout*	
Eastbound Left+Right	-	50'	50'	100'	50'	100'	50'
Westbound Left	75'	0'	0'	25'	0'	25'	0'
Westbound Through+ Right	-	75'	25'	50'	25'	75'	25'
Southbound Left	75'	0'	0'	0'	0'	0'	0'
Southbound Through+Right	-	0'	25'	0'	50'	0'	50'
103. Rockress Drive at N-S Internal Roadway / PUD 8 Access A		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	0'	0'	0'	0'	0'	0'
Westbound Left+Through+Right	-	0'	0'	3'	0'	5'	0'
Northbound Left+Through+Right	-	0'	0'	0'	0'	3'	20'
Southbound Left+Through+Right	-	3'	8'	5'	15'	15'	23'
104. Rockress Drive at E-W Internal Roadway (South)		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left	100'	0'	0'	0'	0'	0'	0'
Eastbound Through+Right	-	0'	0'	0'	0'	0'	0'
Westbound Left	100'	0'	0'	0'	0'	5'	0'
Westbound Through+Right	-	0'	0'	0'	0'	0'	0'
Northbound Left+Through+Right	-	0'	0'	0'	0'	3'	13'
Southbound Left+Through+Right	-	0'	3'	0'	5'	3'	5'
105. Sorrel Avenue and Rockcress Drive		*Roundabout*		*Roundabout*		*Roundabout*	
Eastbound Left+Through	100'	0'	0'	0'	25'	0'	25'
Eastbound Through+Right	-	0'	0'	0'	25'	0'	25'
Westbound Left+Through	-	0'	0'	25'	0'	25'	0'
Westbound Right	150'	25'	0'	50'	25'	50'	25'
Northbound Left+Through+Right	-	0'	0'	0'	0'	0'	25'
Southbound Left+Through+Right	-	0'	25'	25'	75'	25'	100'

Table A.6 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage Length	Year 2025 Bkgrd+Project		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
106. Sorrel Avenue at E-W Internal Roadway (South)		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	3'	15'	5'	25'	5'	25'
Westbound Left+Through+Right	-	0'	0'	13'	100'	13'	103'
Northbound Left	100'	5'	3'	10'	5'	10'	5'
Northbound Through+Right	-	0'	0'	128'	63'	128'	63'
Southbound Left	100'	0'	0'	13'	5'	13'	5'
Southbound Through+Right	-	0'	0'	23'	145'	23'	145'
107. Sorrel Avenue at E-W Internal Roadway (North)/PUD 7A/6A Access		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	5'	18'	5'	28'	5'	28'
Westbound Left+Through+Right	-			10'	53'	10'	53'
Northbound Left	100'	13'	5'	15'	5'	15'	5'
Northbound Through+Right	-	5'	8'	45'	73'	45'	73'
Southbound Left	100'			10'	5'	13'	5'
Southbound Through+Right	-	13'	8'	38'	20'	35'	18'
108. N-S Internal Roadway at E-W Internal Roadway (North)/PUD 3C Access		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Through+Right	-	0'	5'	0'	5'	3'	5'
Westbound Left+Through+Right	-	3'	3'	3'	3'	3'	3'
Northbound Left+Through+Right	-	5'	3'	5'	8'	5'	13'
Southbound Left+Through+Right	-	5'	3'	8'	5'	13'	5'
205. Sorrel Ave at PUD 2 Access E		*Stop-Controlled*		*Stop-Controlled*		*Stop-Controlled*	
Eastbound Left+Right	-	3'	10'	3'	13'	3'	13'
Northbound Left	50'	3'	0'	3'	0'	3'	0'
Northbound Through	-	0'	0'	0'	0'	0'	0'
Southbound Through+Right	-	0'	0'	0'	0'	0'	0'

Note: Under conditions with improvements, queues are only provided for intersections with recommended improvements.

Appendix B – Previous Studies

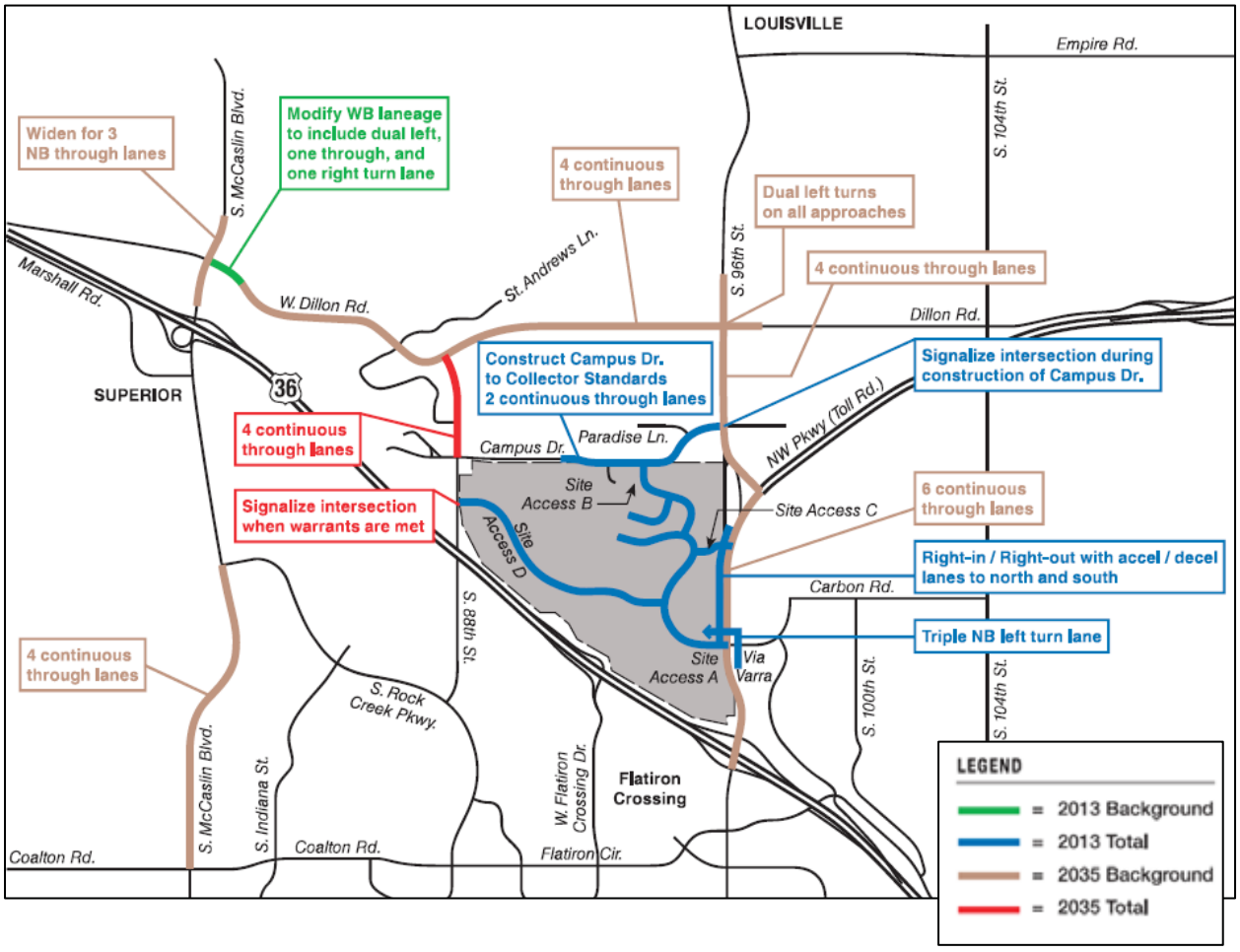
ConocoPhillips Campus Traffic Impact Study

In 2010 ConocoPhillips proposed to build a new research, training, and office development on the former Storage Tek site. At build out, the total development was not to exceed 2,500,000 square feet of building area and was anticipated to generate approximately 17,500 daily, 2,660 AM peak hour, and 2,455 PM peak hour vehicle trips. The site proposed to have four access points, a full movement access at the signalized west approach of the Northwest Parkway/Rockcress Drive/Via Varra intersection; a right-in/right-out access along Northwest Parkway between S. 96th Street and Rockcress Drive/Via Varra; a full-movement access along Campus Drive (Campus Drive was proposed to extend to the east to connect with S. 96th Street where Paradise Lane currently intersects); and an access along S. 88th Street where Rockcress Drive intersects.

The study evaluated Year 2013 and Year 2035 with and without the project site trips. Recommendations were identified under the background and with project trip scenarios. Those improvements were illustrated in Figure ES-1 in the Traffic Impact Study (TIS) and are also shown in **Figure A.1**. Notable recommended improvements include extending Campus Drive to S. 96th Street, expanding Northwest Parkway to a six-lane facility between S. 96th Street and US 36; expanding Dillon Road, S. 96th Street, and S. 88th Street to four-lane facilities, and constructing dual left-turn lanes on all approaches of the Dillon Road/S. 96th Street intersection.

Key Considerations for Redtail Ridge: The ConocoPhillips study evaluated the same project area that is being evaluated for the Redtail Ridge study. Although the project was approved by the City of Louisville in 2010, ConocoPhillips did not move forward with the project and most of the recommended improvements identified in the study have not been built. In addition to infrastructure improvements, Transportation Demand Management strategies, bicycle infrastructure improvements, and transit improvements were also recommended to reduce vehicular traffic to/from the site.

Figure B.1 Summary of Roadway Improvements (ConocoPhillips Campus TIS)



Parkway Circle South Retail Development Traffic Impact Study

The Parkway Circle South Retail Development (Land Rover Dealership) TIS is the most recent TIS to be completed for the Parkway Circle development area and is dated December 2016. A master traffic study for the development was completed in Year 2001. The Parkway Circle development area is located east of Northwest Parkway, west of the railroad tracks, and expands to the north and south of Via Varra in Broomfield, CO.

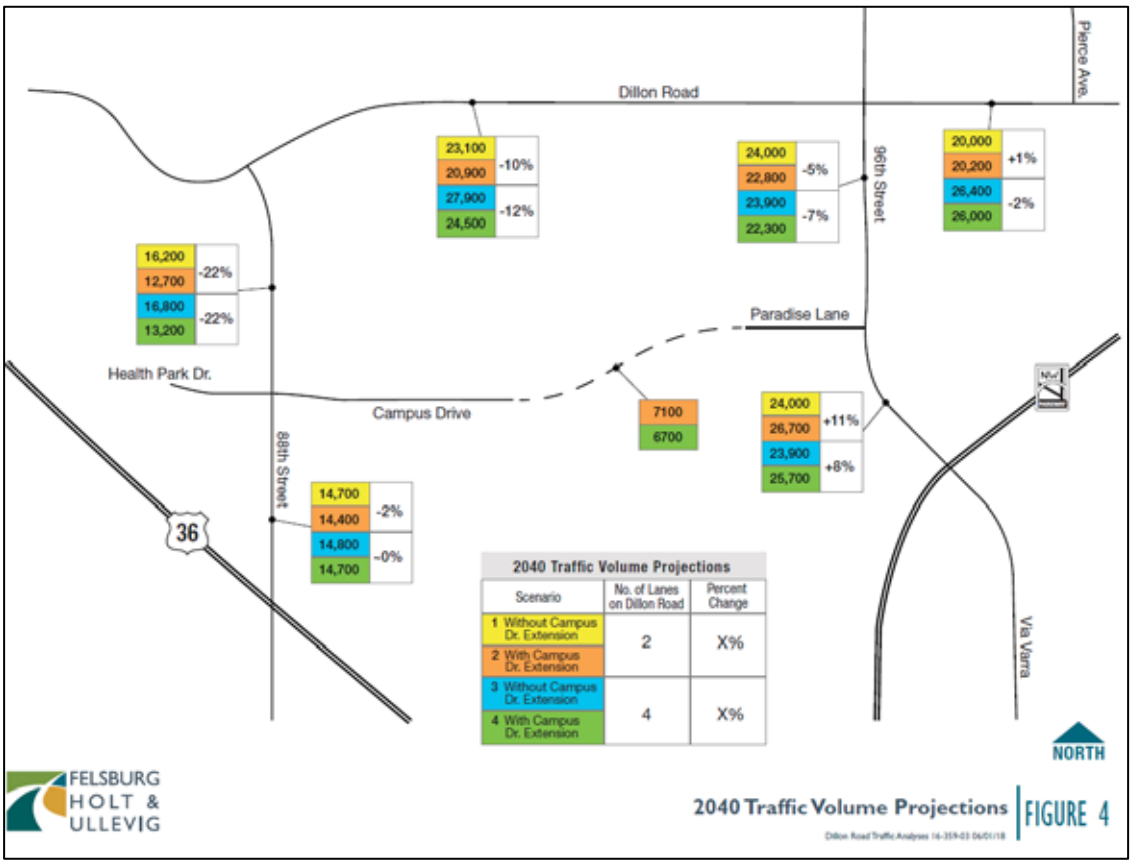
Key Considerations for Redtail Ridge: The Parkway Circle development area is located adjacent to the Redtail Ridge study area. Two of the primary entrances/exits to/from the Parkway Circle development are shared study intersections with the Redtail Ridge traffic study (the accesses located along Northwest Parkway at the S. 96th Street/Via Varra and Rockcress Drive/Via Varra).

88th Street/Campus Drive Traffic Evaluation (May 2018, FHU)

Summary: The Town of Superior conducted a traffic analysis along S. 88th Street and for the potential extension of Campus Drive to S. 96th Street for the. Based on field observations completed for the study, it was noted that there is congestion along S. 88th Street at Campus Drive prior to the Monarch schools starting. While queues entering Monarch school campus (southbound left-turn and northbound right-turn) along S. 88th Street do extend beyond the available turn lane storage consistently near the start of school, the queues were observed to occur for a relatively short amount of time and were slow rolling queues. This is typical for school traffic patterns and flows.

Recommendations from Study: To address the existing congestion issues, the study recommended the extension of Campus Drive to the east to connect at S. 96th Street. This extension is expected to reduce congestion along S. 88th Street for the school. The Campus Drive extension was projected to serve up to 7,100 vpd by Year 2040 as shown in **Figure A.2**; therefore, a two-lane roadway was anticipated to operate acceptably. At the S. 96th Street/Campus Drive intersection, dual northbound left-turn lanes on S. 96th Street and a free-flow right turn deceleration lane on southbound S. 96th Street were recommended.

Figure B.2. 2040 Traffic Volume Projections (88th Street/Campus Drive and Dillon Road Studies)



Key Considerations for Redtail Ridge: Redtail Ridge shares study roadways and intersections with the S. 88th Street/Campus Drive Traffic Evaluation study. The Redtail Ridge project assumes that the Campus Drive extension will be constructed with the first phase of development (by Year 2025). However, the S. 88th Street/Campus Drive Traffic Evaluation did not have the land use forecasts that are outlined in this study for the Redtail Ridge project.

Dillon Road Corridor Study (June 2018, FHU)

Summary: This corridor study was completed for the City of Louisville and evaluated Dillon Road between S. 88th Street and 104th Street. The purpose of this study was to understand existing travel constraints and to plan for improvements as growth occurs along the corridor.

The study included the Campus Drive extension, and it's impacts to Dillon Road and S. 88th Street (see **Figure A.2** above). The analysis estimated that the Campus Drive extension would reduce daily traffic volumes on Dillon Road by 10-12% and on 88th Street by approximately 22%. The findings determined that the projected 20,900 vpd on Dillon Road in Year 2040 was likely to continue to function acceptably as a two-lane roadway and would help restrict the level of motorists it attracts.

Key Considerations for Redtail Ridge: Redtail Ridge shares study roadways and intersections with the Dillon Road Corridor Study. This study also recommends the extension of Campus Drive to S. 96th Street to reduce traffic volumes on S. 88th Street north of Campus Drive and along Dillon Road east of S. 88th Street. It should be noted that the Dillon Road Corridor Study did not have the land use forecasts that are outlined in this study for the Redtail Ridge project.

While this study suggests that Dillon Road will operate acceptably in Year 2040 as a two-lane roadway, it also notes that there is unserved vehicle demand due to the very limited capacity available today during peak periods and is currently using alternative routes. The study also notes the poor lane utilization for through movement at the Dillon Road/S. 96th Street intersection, due to the short segment of expanding from one-through lane to two-through lanes through the intersection. If/when Dillon Road is expanded to a four-lane roadway, this would resolve the poor lane utilization at this intersection.

96th and Dillon Commercial Development (January 2020, LSC)

Summary: In January 2020, LSC Transportation Consultants prepared the *Louisville Industrial Park Traffic Impact Analysis* for the current proposed land uses for the development area north of Dillon Road and east of S. 96th Street. This is an update to the *St. Louis Parish Traffic Impact Analysis* study completed in September 2001. The development has built two accesses on S. 96th Street.

The trip generation for the site build-out in the traffic impact study was added to the background volumes for Redtail Ridge. Per a site visit in February 2023, the gas station and convenience store are already open and much of the industrial use is built out but not operating. The additional traffic volume attributed to

this development was assumed from the traffic impact study, and trips associated with the gas station and convenience store were removed as those trips are already accounted for in the collected count data.

Key Considerations for Redtail Ridge: This development is located near the Dillon Road/S. 96th Street study intersection. The traffic generated by this development was accounted for using the traffic impact study without the gas station and convenience store that is already operating. Traffic associated with all other uses was added to the background for the Redtail Ridge analysis.

Morgan Ranch – Downtown Superior Traffic Impact Analysis

Summary: A traffic impact analysis was prepared for the proposed Morgan Ranch – DTS mixed-use development; the study is dated November 2019. The site is located east of McCaslin Boulevard in the center of Downtown Superior. The project includes approximately 352 apartment units, 64 townhome units, 33,900 square feet of restaurant, 39,430 square feet of retail space and 7,564 square feet of civic center. As part of the development, a new roadway connection is proposed to connect with S. 88th Street just south of the US 36 overpass bridge via Promenade Boulevard. The study found that the S. 88th Street / Promenade Boulevard intersection will likely require a traffic signal or roundabout in the future.

Key Considerations for Redtail Ridge: This development is proposing to construct a new access onto S. 88th Street. The traffic generated by this development was accounted for in the background traffic growth assumed for the Redtail Ridge analysis.

Level 1 Traffic and Revenue Study Jefferson Parkway

This study was completed for the Jefferson Parkway Public Highway Authority (JPPHA) and finalized in April 2018. The purpose of the study was to provide forecasts of traffic and revenue for the proposed Jefferson Parkway. The proposed Jefferson Parkway is a 9.2-mile toll road running along the northwestern perimeter of the Denver Metro area. The future roadway will be a limited access expressway with two lanes of travel in each direction from SH 128 (south of US 36) to SH 93 (south of SH 72).

One of the scenarios considered was the "Northwest Parkway Extension" due to the project's proximity to the study corridor. The assumed roadway configuration for this scenario was described on page 4-8 in the study and is provided below:

> *The assumed configuration was based on the latest project information provided by the Northwest Parkway Toll Authority. The Northwest Parkway Extension will be a two-lane limited-access facility constructed between S. 96th Street and SH 128. Access to US 36 from S. 96th Street and Flatiron Crossing Drive will be provided via free local frontage roadways. Additional interchanges will be constructed at S. 96th Street, Interlocken Boulevard and El Dorado Boulevard. Local access to Flatiron Boulevard and Environmental Way will be retained. Due to the relative importance of the project, traffic assignments with and without the proposed Northwest Parkway Extension were conducted in order to estimate the potential traffic and revenue impact to the Jefferson Parkway.*

Key Considerations for Redtail Ridge: The Northwest Parkway Extension segment in the Jefferson Parkway study, includes four of the study intersections along Northwest Parkway for the Redtail Ridge traffic Study (S. 96th Street/Via Varra, Rockcress Drive/Via Varra, US 36 North Ramps, and US 36 South Ramps). As noted above, the Northwest Parkway Extension would impact the study corridor with proposed "local frontage roadways" to maintain free local access and an interchange at S. 96th Street. No concepts were provided to illustrate the proposed frontage road or interchange configuration. The *Level 1 Study* indicated that the revenues generated from the Jefferson Parkway project would cover the cost of the frontage road and interchange improvements.

City of Louisville Transportation Master Plan (Adopted October 2019)

The City of Louisville Transportation Master Plan (TMP) is the first effort conducted by the City to look comprehensively at transportation conditions and options throughout Louisville and the region for all modes of transportation. The TMP represents a long-range planning effort that describes baseline conditions of the City's transportation network, establishes eight overarching transportation Goals, and specific transportation Policies, Programs and Projects. The City developed the plan with extensive community outreach, input from the City's advisory boards and commissions, regional partners, and City staff. It is important to note that the plan reflects a moment in time. The TMP provides guidance, but City priorities may change over time and transportation decisions will need to reflect these updated community needs, opportunities, and priorities.

Key Considerations for Redtail Ridge: The TMP acknowledges that the development of the former Storage Tek campus provides additional opportunity to leverage transit (page 4-11, 4-31) with a potential new local route to connect the Redtail Ridge project area with other development areas and regional transportation stations in the study area. The TMP notes future corridor improvements including expanding SH 42/S. 96th Street to a four or five lane cross-section (page 4-14) and increasing capacity at the Dillon Road/S. 96th Street intersection (page 4-16). The City will need to partner with landowners (CTC, BNSF and BVSD) on the planned improvements; and as the former Storage Tek site develops and connects into the existing transportation network. The City will need to evaluate the capacity constraints of the surrounding road and trail network and ensure adequate improvements are made (page 4-16). The TMP recommends transit route connections from the former Storage Tek site to destinations within Louisville (page 4-31) and bike share stations that would be connected to other stations at McCaslin Station, Avista Hospital, the Colorado Technology Center (CTC), Downtown, DELO, and Kestrel (page 4-38).

Boulder County Transportation Master Plan

The Boulder County TMP establishes a vision for a sustainable and inclusive transportation network by working together to prioritize transportation investments, explore new funding options, and plan for the future. The county's TMP provides a blueprint for Boulder County's transportation system for the next 25 years. The TMP provides a clear direction to the Boulder County Transportation Department to secure funding as it becomes available for transportation projects in the coming decades.

Key Considerations for Redtail Ridge: The Boulder County TMP identified the S. 96th Street/ Highway 42 as a key regional corridor (see Figure 2). The key regional corridors will expand and enhance affordable and equitable mobility options for older adults, people with disabilities, individuals with low income, and others living with mobility limitations while also increasing bike-to-transit programs to provide transportation options and make bus travel more accessible. S. 96th Street/Highway 42 is also identified as a conceptual corridor for Bus Rapid Transit (BRT) service in the TMP (see Figure 5). The BRT service would connect to a county-wide system of BRT routes that connect to regional destinations. The BRT system would include infrastructure investments and programs to reduce vehicle miles traveled and provide service to underserved communities. A component of the BRT vision is to expand and supplement existing Boulder County Eco Pass programs with the goal of a countywide community pass for all county residents and employees. See **Section 9** for possible future scenario if this and other mobility plans in this section are completed in the future.

DRCOG Active Transportation Plan

In 2017, the Denver Regional Council of Governments (DRCOG) initiated the development of the Denver region's first active transportation plan. The purpose of the plan is to establish a common vision for bicycling and walking in the region and to provide inspiration and tools for local agencies to implement projects in their respective jurisdictions. The Denver Regional Active Transportation Plan (ATP) supports DRCOG's Metro Vision plan and will foster collaboration among local agencies across boundaries. DRCOG worked with partners throughout the region to develop a regional active transportation vision, tools, and products to support the development of a robust active transportation network in the Denver region. The ATP envisions a safe, comfortable, and connected network and highlights opportunities and implementation strategies to improve active transportation across the Denver region.

Key Considerations for Redtail Ridge: The ATP identified regional active transportation corridors to allow safe and comfortable access to existing and future regional destinations for people of all ages, incomes, and abilities. Development of these corridors supports Metro Vision outcomes related to creating a connected multimodal region and a vibrant regional economy. The regional network can facilitate cross-jurisdictional collaboration toward a common vision for a regional active transportation network. Local facilities that connect to the regional network are critical to connect residents to the regional network and are an important component of the network as well. The S. 96th Street/State Highway 42 corridor from Broomfield to Longmont is identified as a regional active transportation corridor. This plan will be implemented over the next two decades as part of DRCOG's regional Transportation Improvement Plan (TIP). See **Section 9** for possible future scenario if this and other mobility plans in this section are completed in the future.

Mobility Choice Blueprint

The way we travel in the Denver metro area is rapidly changing. Advanced technology and internet connectivity are providing new options every day. To maintain the economic competitiveness and livability of our communities, we must identify and anticipate how technological advances like driverless

vehicles, mobility apps and streamlined fare payment could dramatically change our transportation systems. The region's major multi-modal agencies have agreed to develop a Mobility Choice Blueprint (MCB). This is a coordinated strategy for how we enable more accessible and effective transportation mobility choices to enhance the quality of our social, cultural, and economic life now and in the future. The metropolitan agencies are collaborating, in partnership with community, nonprofit, and private sector leaders, to carefully consider a range of effective and efficient solutions to the challenges and opportunities presented by emerging mobility technologies.

Key Considerations for Redtail Ridge: The MCB recommended implementation of transit priority on all major bus corridors, implementation of smart traffic signal control technology on all major regional arterial corridors, developing incentives to improve ride hailing and ridesharing operations, and encouraging shared use of driverless automated vehicles.

RTD First and Last Mile Strategic Plan

Transit is only effective when riders can access it. First and Last Mile (FLM) is the problem of getting to transit (first mile) and getting to your final destination (last mile). Not all trips are the same, and first mile trips often differ from last mile trips in length, mode of travel, and purpose. Similarly, trips to access transit are not necessarily limited by a one-mile radius but can differ depending on the mode of travel used to access the transit service. RTD First and Last Mile Strategic Plan (FFM Plan) covers FLM strategies for multiple types of transit stations and stops in a variety of settings. This Plan is not intended to be a prescriptive guide to implementing FLM strategies and recommendations. It provides a framework from which to select a tailored set of FLM strategies to improve transit access. The FFM Plan aims to improve transit accessibility by empowering local jurisdictions, transportation management associations (TMAs), and other partners to understand the range of FLM solutions that are available and then apply those solutions to specific station areas. As FLM strategies and recommendations often span across jurisdictional boundaries, partnerships are identified as key toward implementation.

Key Considerations for Redtail Ridge: The FFM Plan identifies strategies for reusing existing infrastructure, building new connections, transportation demand management and new transportation services on the Redtail Ridge project site (Figure 4.1). It also identified how the strategies could be applicable to different transit rider groups who will want to access local and regional transit services in and near Redtail Ridge (Figure 4.1). The strategies in this plan can be implemented over the next two decades as part of the Transportation Demand Management (TDM) program for the project.

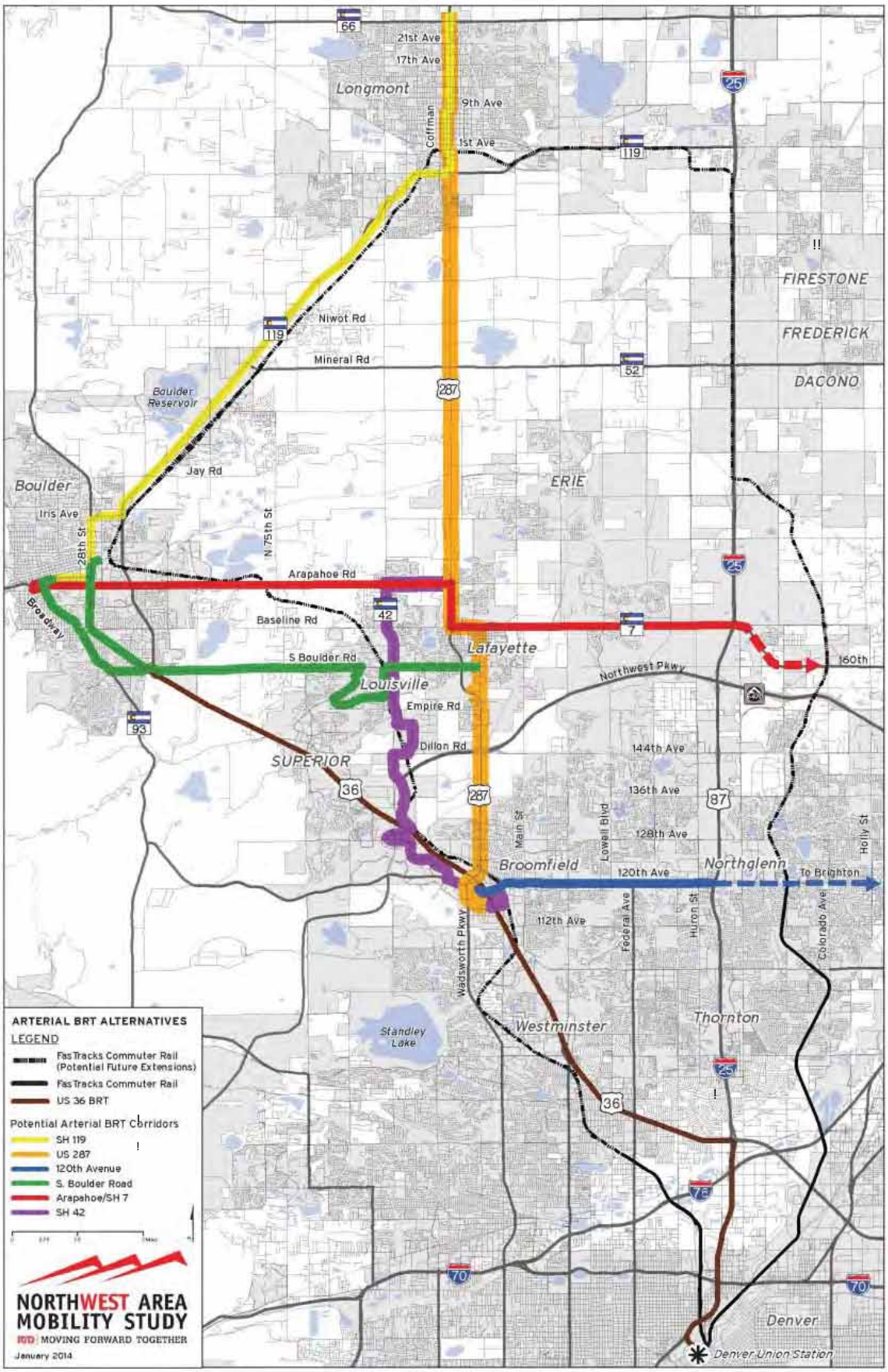
RTD Northwest Area Mobility Study

The Northwest Area Mobility Study (NAMS) was a 13-month effort to develop a prioritized list of mobility improvements for the Northwest area of the Regional Transportation District's (RTD) service area. The study focused on five key areas: Phased Construction of Northwest Rail, Feasibility of Extending North Metro Rail Line to Longmont, Finalizing the US 36 Bus Rapid Transit (BRT) Commitments identified for Year 2035, Feasibility of New Arterial BRT Lines, and Analysis of the Reverse-Commute between Denver Union

Station (DUS) and US 36. RTD staff and Board of Directors initiated the study in response to the significant cost increases associated with building and operating commuter rail in the 41-mile Northwest corridor. The goal of the study was to collaborate with corridor stakeholders to determine if there is a more cost-effective way to approach improving mobility in the area that could be implemented sooner. The result was multi-agency consensus on a prioritized list of agreed-upon mobility improvements for the Northwest RTD region.

The SH 42 corridor was recently identified as a Priority 3 corridor in the RTD Regional Bus Rapid Transit Study, the Metro Mayors Caucus is reviewing a ballot initiative to fund this corridor as part of regional ballot initiative, and the City of Louisville has applied for a grant to further study this service as part of a revised Highway 42 corridor study (see below). A Year 2040 scenario is provided in this study that assumes this service is in place.

Key Considerations for Redtail Ridge: NAMS identified the S. 96th Street/Highway 42 as one of the six candidate Arterial Bus Rapid Transit corridor (see Figure 6.1 in the study and **Figure 5** below). All corridors were evaluated, and recommendations were made for transit priority elements such as transit signal priority, queue jump lanes and headway-based scheduling. Operations and maintenance costs for the corridors were also prepared. The NAMS Policy Advisory Committee (PAC) recommended that all six arterial BRT projects be implemented with system-wide service improvements.



FOX TUTTLE
TRANSPORTATION GROUP

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

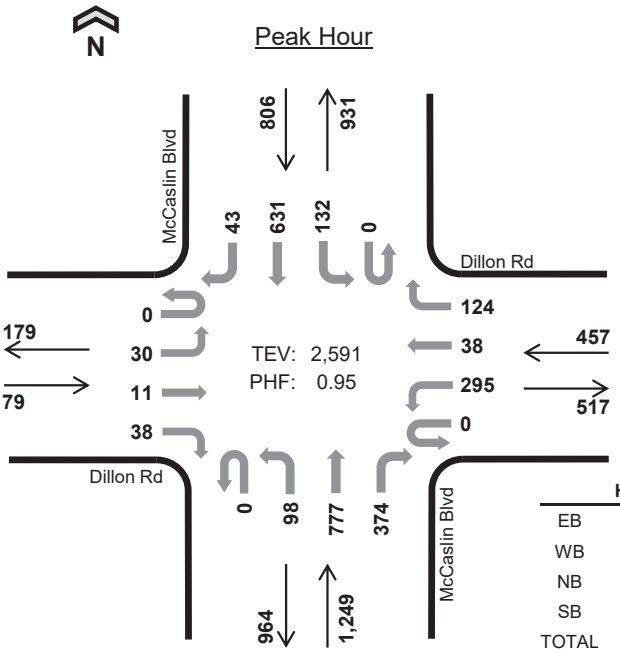
ARTERIAL BRT CORRIDOR CANDIDATES (RTD NAMS)

FT Project #	19055	Original Scale	NTS	Date	1/24/20	Drawn by	EJK	Figure #	5

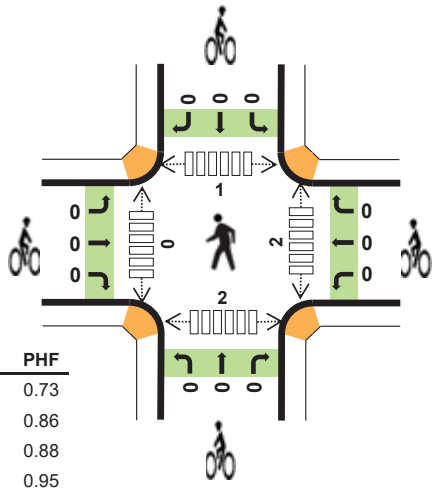
Appendix C - Existing Traffic Data

McCaslin Blvd
Dillon Rd

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	0.0%	0.73
WB	3.1%	0.86
NB	1.8%	0.88
SB	2.4%	0.95
TOTAL	2.1%	0.95



Two-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	1	5	0	39	3	18	0	8	83	48	0	7	88	1	302	0
7:15 AM	0	3	3	5	0	66	3	15	0	10	115	80	0	12	92	5	409	0
7:30 AM	0	0	2	6	0	74	7	24	0	14	161	63	0	20	133	6	510	0
7:45 AM	**0**	**6**	**4**	**7**	**0**	**85**	**8**	**32**	**0**	**20**	**222**	**114**	**0**	**22**	**148**	**11**	**679**	1,900
8:00 AM	**0**	**4**	**1**	**12**	**0**	**89**	**9**	**35**	**0**	**22**	**165**	**96**	**0**	**45**	**158**	**10**	**646**	2,244
8:15 AM	**0**	**8**	**4**	**6**	**0**	**57**	**10**	**20**	**0**	**31**	**185**	**81**	**0**	**37**	**160**	**4**	**603**	2,438
8:30 AM	**0**	**12**	**2**	**13**	**0**	**64**	**11**	**37**	**0**	**25**	**205**	**83**	**0**	**28**	**165**	**18**	**663**	**2,591**
8:45 AM	0	3	7	12	1	95	22	47	0	25	181	78	0	18	123	12	624	2,536
Count Total	0	37	24	66	1	569	73	228	0	155	1,317	643	0	189	1,067	67	4,436	0
Peak Hour All	**0**	**30**	**11**	**38**	**0**	**295**	**38**	**124**	**0**	**98**	**777**	**374**	**0**	**132**	**631**	**43**	**2,591**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**4**	**0**	**0**	**16**	**6**	**0**	**6**	**12**	**1**	**55**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**0%**	**-**	**3%**	**3%**	**3%**	**-**	**0%**	**2%**	**2%**	**-**	**5%**	**2%**	**2%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	4	1	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	8	2	*11*	0	0	0	0	*0*	1	1	1	0	*3*
7:30 AM	0	2	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**4**	**8**	**4**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	*1*
8:00 AM	**0**	**3**	**3**	**6**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
8:15 AM	**0**	**2**	**2**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**5**	**9**	**5**	***19***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**1**	***3***
8:45 AM	2	3	8	1	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	2	21	43	25	*91*	0	0	0	0	*0*	3	1	2	2	*8*
Peak Hour	**0**	**14**	**22**	**19**	***55***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**2**	***5***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	1	0	0	0	0	2	2	0	0	1	0	6	0
7:15 AM	0	0	0	0	0	1	0	0	0	1	6	1	0	0	2	0	11	0
7:30 AM	0	0	0	0	0	1	0	1	0	0	1	0	0	1	1	0	5	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**0**	**0**	**0**	**7**	**1**	**0**	**0**	**4**	**0**	**16**	38
8:00 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**4**	**2**	**0**	**12**	44
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**2**	**2**	**0**	**8**	41
8:30 AM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**2**	**0**	**0**	**5**	**4**	**0**	**0**	**4**	**1**	**19**	**55**
8:45 AM	0	0	1	1	0	2	0	1	0	2	4	2	0	0	1	0	14	53
Count Total	0	0	1	1	0	14	1	6	0	3	29	11	0	7	17	1	91	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**4**	**0**	**0**	**16**	**6**	**0**	**6**	**12**	**1**	**55**	**0**

Two-Hour Count Summaries - Bikes

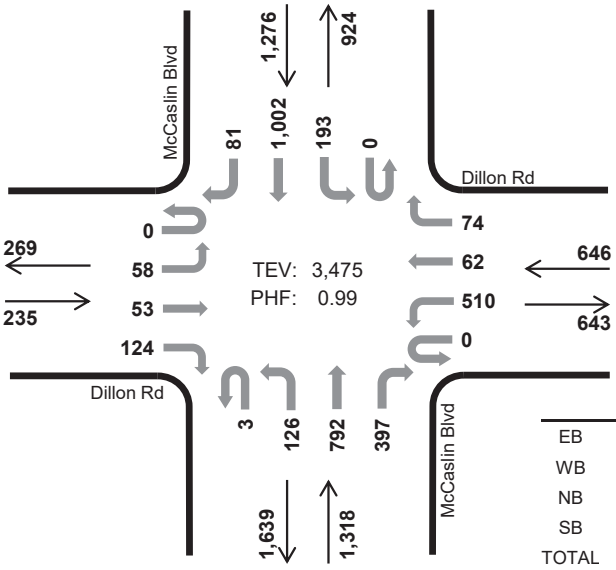
Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			McCaslin Blvd Northbound			McCaslin Blvd Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

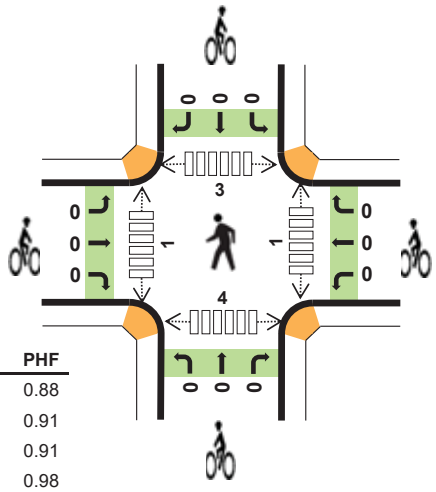
McCaslin Blvd
Dillon Rd

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM

Peak Hour



	HV %:	PHF
EB	0.4%	0.88
WB	1.1%	0.91
NB	1.1%	0.91
SB	1.1%	0.98
TOTAL	1.0%	0.99



Three-and-a-Half-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	11	8	28	0	115	12	20	1	36	213	114	0	43	253	16	870	0
4:45 PM		0	16	11	30	0	130	22	15	1	30	203	95	0	45	270	12	880	0
5:00 PM		0	13	18	33	0	123	15	17	0	31	200	93	0	52	253	17	865	0
5:15 PM		0	18	16	33	0	142	13	22	1	29	176	95	0	53	226	36	860	3,475
Peak Hour	All	0	58	53	124	0	510	62	74	3	126	792	397	0	193	1,002	81	3,475	0
	HV	0	0	0	1	0	7	0	0	0	1	9	4	0	1	12	1	36	0
	HV%	-	0%	0%	1%	-	1%	0%	0%	0%	1%	1%	1%	-	1%	1%	1%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	3	6	5	*14*	0	0	0	0	*0*	0	0	0	1	*1*
4:45 PM	1	3	2	5	*11*	0	0	0	0	*0*	0	0	0	1	*1*
5:00 PM	0	0	3	1	*4*	0	0	0	0	*0*	1	1	2	2	*6*
5:15 PM	0	1	3	3	*7*	0	0	0	0	*0*	0	0	1	0	*1*
Peak Hour	1	7	14	14	*36*	0	0	0	0	*0*	1	1	3	4	*9*

Three-and-a-Half-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	11	13	29	0	109	14	22	2	17	163	90	0	26	140	18	654	0
2:45 PM	0	12	8	16	0	92	13	23	2	26	137	87	0	41	170	14	641	0
3:00 PM	0	16	12	42	1	95	10	40	5	18	150	92	1	31	182	13	708	0
3:15 PM	0	17	4	22	0	127	8	24	1	27	157	86	0	23	177	8	681	2,684
3:30 PM	0	5	12	24	1	97	8	21	1	21	183	97	0	35	211	18	734	2,764
3:45 PM	0	13	12	23	0	107	15	20	0	27	183	114	0	47	172	16	749	2,872
4:00 PM	0	16	14	26	0	131	14	46	0	27	180	91	0	33	185	10	773	2,937
4:15 PM	0	6	14	30	0	121	8	42	0	37	175	102	0	53	196	11	795	3,051
4:30 PM	**0**	**11**	**8**	**28**	**0**	**115**	**12**	**20**	**1**	**36**	**213**	**114**	**0**	**43**	**253**	**16**	**870**	3,187
4:45 PM	**0**	**16**	**11**	**30**	**0**	**130**	**22**	**15**	**1**	**30**	**203**	**95**	**0**	**45**	**270**	**12**	**880**	3,318
5:00 PM	**0**	**13**	**18**	**33**	**0**	**123**	**15**	**17**	**0**	**31**	**200**	**93**	**0**	**52**	**253**	**17**	**865**	3,410
5:15 PM	**0**	**18**	**16**	**33**	**0**	**142**	**13**	**22**	**1**	**29**	**176**	**95**	**0**	**53**	**226**	**36**	**860**	**3,475**
5:30 PM	0	12	9	38	0	105	9	12	0	38	168	97	0	38	215	14	755	3,360
5:45 PM	0	11	14	37	0	97	14	23	2	29	189	76	0	36	208	18	754	3,234
Count Total	0	177	165	411	2	1,591	175	347	16	393	2,477	1,329	1	556	2,858	221	10,719	0
Peak Hour All	**0**	**58**	**53**	**124**	**0**	**510**	**62**	**74**	**3**	**126**	**792**	**397**	**0**	**193**	**1,002**	**81**	**3,475**	**0**
Peak Hour HV	**0**	**0**	**0**	**1**	**0**	**7**	**0**	**0**	**0**	**1**	**9**	**4**	**0**	**1**	**12**	**1**	**36**	**0**
Peak Hour HV%	**-**	**0%**	**0%**	**1%**	**-**	**1%**	**0%**	**0%**	**0%**	**1%**	**1%**	**1%**	**-**	**1%**	**1%**	**1%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	1	4	6	5	*16*	0	0	0	0	*0*	0	0	1	1	*2*
2:45 PM	1	1	4	7	*13*	0	0	0	0	*0*	1	0	0	0	*1*
3:00 PM	2	2	10	6	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	3	6	2	6	*17*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	1	2	5	8	*16*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	0	1	7	4	*12*	0	0	0	0	*0*	0	1	0	1	*2*
4:00 PM	0	0	6	2	*8*	0	0	0	0	*0*	0	2	0	1	*3*
4:15 PM	0	2	2	6	*10*	0	0	0	0	*0*	1	0	3	0	*4*
4:30 PM	**0**	**3**	**6**	**5**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:45 PM	**1**	**3**	**2**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
5:00 PM	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**2**	**2**	*6*
5:15 PM	**0**	**1**	**3**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**1**	**0**	***1***
5:30 PM	1	1	2	3	*7*	0	0	0	0	*0*	0	0	1	1	*2*
5:45 PM	0	1	0	2	*3*	0	0	0	0	*0*	1	0	0	0	*1*
Count Total	10	27	58	63	*158*	0	0	0	0	*0*	4	4	8	8	*24*
Peak Hour	**1**	**7**	**14**	**14**	***36***	**0**	**0**	**0**	**0**	***0***	**1**	**1**	**3**	**4**	***9***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				McCaslin Blvd Northbound				McCaslin Blvd Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	1	0	0	2	1	1	0	1	2	3	0	2	3	0	16	0
2:45 PM	0	0	0	1	0	1	0	0	0	1	2	1	0	2	5	0	13	0
3:00 PM	0	0	1	1	0	2	0	0	0	3	5	2	0	2	3	1	20	0
3:15 PM	0	1	1	1	0	5	0	1	0	1	1	0	0	1	5	0	17	66
3:30 PM	0	0	1	0	0	1	1	0	0	0	4	1	0	2	6	0	16	66
3:45 PM	0	0	0	0	0	1	0	0	0	0	3	4	0	0	4	0	12	65
4:00 PM	0	0	0	0	0	0	0	0	0	1	2	3	0	0	2	0	8	53
4:15 PM	0	0	0	0	0	0	2	0	0	0	0	2	0	3	3	0	10	46
4:30 PM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**1**	**3**	**1**	**14**	44
4:45 PM	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**5**	**0**	**11**	43
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**0**	**4**	39
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**3**	**0**	**7**	**36**
5:30 PM	0	1	0	0	0	1	0	0	0	0	2	0	0	1	2	0	7	29
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3	21
Count Total	0	2	4	4	0	21	4	2	0	8	30	20	0	14	47	2	158	0
Peak Hour	**0**	**0**	**0**	**1**	**0**	**7**	**0**	**0**	**0**	**1**	**9**	**4**	**0**	**1**	**12**	**1**	**36**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			McCaslin Blvd Northbound			McCaslin Blvd Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

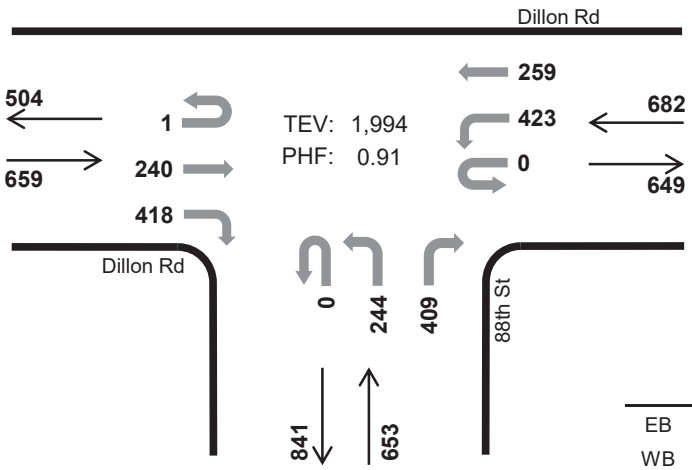
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

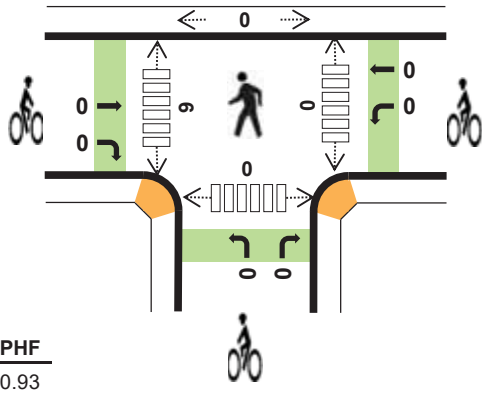
88th St
Dillon Rd

N

Peak Hour

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.9%	0.93
WB	2.6%	0.76
NB	2.6%	0.76
SB	-	-
TOTAL	2.7%	0.91

Two-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	0	39	19	0	51	40	0	0	3	0	35	0	0	0	0	187	0
7:15 AM		0	0	61	38	0	66	65	0	0	7	0	69	0	0	0	0	306	0
7:30 AM		0	0	50	51	0	110	81	0	0	25	0	77	0	0	0	0	394	0
7:45 AM		**0**	**0**	**58**	**100**	**0**	**133**	**90**	**0**	**0**	**44**	**0**	**107**	**0**	**0**	**0**	**0**	**532**	1,419
8:00 AM		**0**	**0**	**70**	**107**	**0**	**103**	**55**	**0**	**0**	**98**	**0**	**117**	**0**	**0**	**0**	**0**	**550**	1,782
8:15 AM		**0**	**0**	**60**	**118**	**0**	**81**	**40**	**0**	**0**	**32**	**0**	**100**	**0**	**0**	**0**	**0**	**431**	1,907
8:30 AM		**1**	**0**	**52**	**93**	**0**	**106**	**74**	**0**	**0**	**70**	**0**	**85**	**0**	**0**	**0**	**0**	**481**	**1,994**
8:45 AM		0	0	69	37	0	104	116	0	0	49	0	85	0	0	0	0	460	1,922
Count Total		1	0	459	563	0	754	561	0	0	328	0	675	0	0	0	0	3,341	0
Peak Hour	**All**	**1**	**0**	**240**	**418**	**0**	**423**	**259**	**0**	**0**	**244**	**0**	**409**	**0**	**0**	**0**	**0**	**1,994**	**0**
	HV	**0**	**0**	**6**	**13**	**0**	**6**	**12**	**0**	**0**	**7**	**0**	**10**	**0**	**0**	**0**	**0**	**54**	**0**
	HV%	**0%**	**-**	**3%**	**3%**	**-**	**1%**	**5%**	**-**	**-**	**3%**	**-**	**2%**	**-**	**-**	**-**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	0	0	0	*2*	0	0	0	0	*0*	0	1	0	0	*1*
7:30 AM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**5**	**7**	**4**	**0**	***16***	**0**	**0**	**0**	**0**	***0***	**0**	**4**	**0**	**0**	*4*
8:00 AM	**2**	**3**	**4**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	*1*
8:15 AM	**5**	**3**	**1**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
8:30 AM	**7**	**5**	**8**	**0**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
8:45 AM	5	5	3	0	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	27	27	20	0	*74*	0	0	0	0	*0*	0	10	0	0	*10*
Peak Hr	**19**	**18**	**17**	**0**	***54***	**0**	**0**	**0**	**0**	***0***	**0**	**9**	**0**	**0**	***9***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd				Dillon Rd				88th St				N/A				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	4	0
7:45 AM	**0**	**0**	**0**	**5**	**0**	**2**	**5**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**16**	23
8:00 AM	**0**	**0**	**2**	**0**	**0**	**1**	**2**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**9**	31
8:15 AM	**0**	**0**	**1**	**4**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**9**	38
8:30 AM	**0**	**0**	**3**	**4**	**0**	**2**	**3**	**0**	**0**	**5**	**0**	**3**	**0**	**0**	**0**	**0**	**20**	**54**
8:45 AM	0	0	3	2	0	3	2	0	0	1	0	2	0	0	0	0	13	51
Count Total	0	0	12	15	0	12	15	0	0	8	0	12	0	0	0	0	74	0
Peak Hour	**0**	**0**	**6**	**13**	**0**	**6**	**12**	**0**	**0**	**7**	**0**	**10**	**0**	**0**	**0**	**0**	**54**	**0**

Two-Hour Count Summaries - Bikes

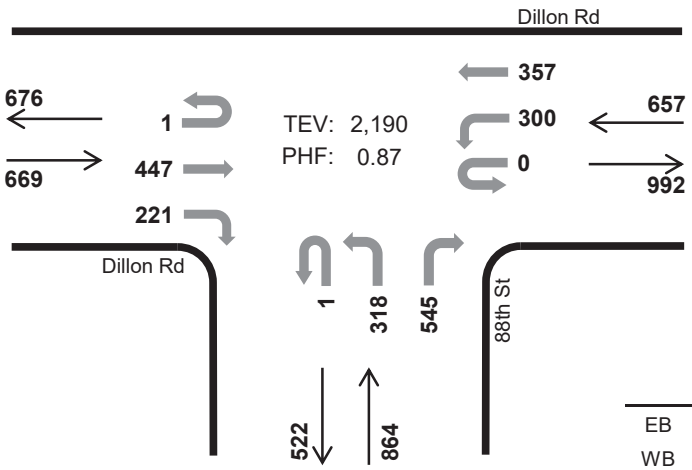
Interval Start	Dillon Rd			Dillon Rd			88th St			N/A			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

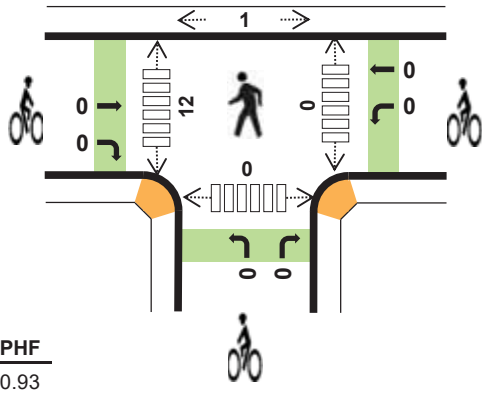
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Dillon Rd

Peak Hour

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 3:45 PM to 4:45 PM





	HV %:	PHF
EB	2.7%	0.93
WB	1.4%	0.93
NB	1.4%	0.75
SB	-	-
TOTAL	1.8%	0.87

Three-and-a-Half-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM		1	0	104	73	0	86	74	0	1	67	0	117	0	0	0	0	523	0
4:00 PM		0	0	109	57	0	75	101	0	0	121	0	166	0	0	0	0	629	0
4:15 PM		0	0	101	44	0	63	92	0	0	93	0	129	0	0	0	0	522	0
4:30 PM		0	0	133	47	0	76	90	0	0	37	0	133	0	0	0	0	516	2,190
Peak Hour	All	1	0	447	221	0	300	357	0	1	318	0	545	0	0	0	0	2,190	0
	HV	0	0	14	4	0	2	7	0	0	4	0	8	0	0	0	0	39	0
	HV%	0%	-	3%	2%	-	1%	2%	-	0%	1%	-	1%	-	-	-	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	4	2	3	0	*9*	0	0	0	0	*0*	0	3	0	0	*3*
4:00 PM	4	1	4	0	*9*	0	0	0	0	*0*	0	5	1	0	*6*
4:15 PM	6	5	3	0	*14*	0	0	0	0	*0*	0	3	0	0	*3*
4:30 PM	4	1	2	0	*7*	0	0	0	0	*0*	0	1	0	0	*1*
Peak Hour	18	9	12	0	*39*	0	0	0	0	*0*	0	12	1	0	*13*

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Three-and-a-Half-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				88th St Northbound				N/A Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	75	60	0	78	67	0	0	35	0	62	0	0	0	0	377	0
2:45 PM	0	0	75	60	0	92	75	0	0	29	0	76	0	0	0	0	407	0
3:00 PM	0	0	94	60	0	66	62	0	0	87	0	151	0	0	0	0	520	0
3:15 PM	0	0	76	42	0	64	69	0	0	88	0	145	0	0	0	0	484	1,788
3:30 PM	1	0	104	44	0	70	80	0	0	52	0	92	0	0	0	0	443	1,854
3:45 PM	**1**	**0**	**104**	**73**	**0**	**86**	**74**	**0**	**1**	**67**	**0**	**117**	**0**	**0**	**0**	**0**	**523**	1,970
4:00 PM	**0**	**0**	**109**	**57**	**0**	**75**	**101**	**0**	**0**	**121**	**0**	**166**	**0**	**0**	**0**	**0**	**629**	2,079
4:15 PM	**0**	**0**	**101**	**44**	**0**	**63**	**92**	**0**	**0**	**93**	**0**	**129**	**0**	**0**	**0**	**0**	**522**	2,117
4:30 PM	**0**	**0**	**133**	**47**	**0**	**76**	**90**	**0**	**0**	**37**	**0**	**133**	**0**	**0**	**0**	**0**	**516**	**2,190**
4:45 PM	0	0	104	69	0	69	134	0	0	38	0	35	0	0	0	0	449	2,116
5:00 PM	0	0	130	43	0	69	108	0	0	38	0	102	0	0	0	0	490	1,977
5:15 PM	0	0	119	56	0	56	97	0	0	35	0	91	0	0	0	0	454	1,909
5:30 PM	0	0	111	46	0	78	79	0	0	46	0	69	0	0	0	0	429	1,822
5:45 PM	0	0	96	32	0	58	72	0	0	39	0	90	0	0	0	0	387	1,760
Count Total	2	0	1,431	733	0	1,000	1,200	0	1	805	0	1,458	0	0	0	0	6,630	0
Peak Hour All	**1**	**0**	**447**	**221**	**0**	**300**	**357**	**0**	**1**	**318**	**0**	**545**	**0**	**0**	**0**	**0**	**2,190**	**0**
Peak Hour HV	**0**	**0**	**14**	**4**	**0**	**2**	**7**	**0**	**0**	**4**	**0**	**8**	**0**	**0**	**0**	**0**	**39**	**0**
Peak Hour HV%	**0%**	**-**	**3%**	**2%**	**-**	**1%**	**2%**	**-**	**0%**	**1%**	**-**	**1%**	**-**	**-**	**-**	**-**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	6	6	5	0	*17*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	3	6	1	0	*10*	0	0	0	0	*0*	0	1	0	0	*1*
3:00 PM	9	0	4	0	*13*	0	0	0	0	*0*	0	1	0	0	*1*
3:15 PM	3	6	4	0	*13*	0	0	0	0	*0*	0	10	1	0	*11*
3:30 PM	4	4	2	0	*10*	0	0	0	0	*0*	0	1	0	0	*1*
3:45 PM	**4**	**2**	**3**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
4:00 PM	**4**	**1**	**4**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**5**	**1**	**0**	*6*
4:15 PM	**6**	**5**	**3**	**0**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**0**	*3*
4:30 PM	**4**	**1**	**2**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
4:45 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	0	1	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	45	35	29	0	*109*	0	0	0	0	*0*	0	25	2	0	*27*
Peak Hr	**18**	**9**	**12**	**0**	***39***	**0**	**0**	**0**	**0**	***0***	**0**	**12**	**1**	**0**	***13***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd				Dillon Rd				88th St				N/A				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	3	3	0	3	3	0	0	1	0	4	0	0	0	0	17	0
2:45 PM	0	0	1	2	0	5	1	0	0	0	0	1	0	0	0	0	10	0
3:00 PM	0	0	4	5	0	0	0	0	0	3	0	1	0	0	0	0	13	0
3:15 PM	0	0	1	2	0	4	2	0	0	3	0	1	0	0	0	0	13	53
3:30 PM	0	0	3	1	0	2	2	0	0	0	0	2	0	0	0	0	10	46
3:45 PM	**0**	**0**	**3**	**1**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**9**	45
4:00 PM	**0**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**9**	41
4:15 PM	**0**	**0**	**5**	**1**	**0**	**2**	**3**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**14**	42
4:30 PM	**0**	**0**	**2**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**7**	**39**
4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	32
5:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	25
5:15 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2	13
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	0	27	18	0	17	18	0	0	12	0	17	0	0	0	0	109	0
Peak Hour	**0**	**0**	**14**	**4**	**0**	**2**	**7**	**0**	**0**	**4**	**0**	**8**	**0**	**0**	**0**	**0**	**39**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

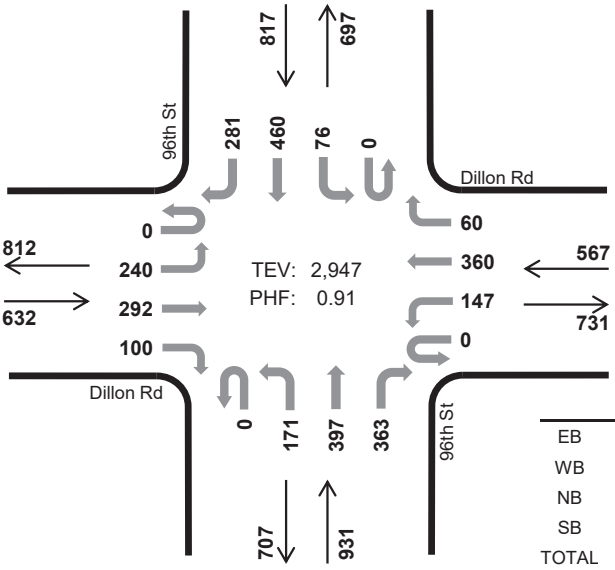
Interval Start	Dillon Rd			Dillon Rd			88th St			N/A			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

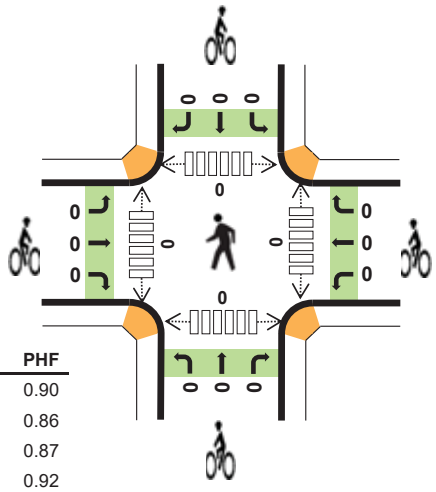
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Dillon Rd

Peak Hour

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM





	HV %:	PHF
EB	1.4%	0.90
WB	3.5%	0.86
NB	1.5%	0.87
SB	0.9%	0.92
TOTAL	1.7%	0.91

Two-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	36	4	0	21	34	8	0	34	48	74	0	17	86	29	416	0
7:15 AM	0	64	44	7	0	31	71	3	0	31	81	80	0	23	81	40	556	0
7:30 AM	**0**	**48**	**66**	**17**	**0**	**28**	**111**	**13**	**0**	**52**	**70**	**73**	**0**	**26**	**92**	**55**	**651**	0
7:45 AM	**0**	**60**	**72**	**25**	**0**	**37**	**111**	**16**	**0**	**56**	**112**	**99**	**0**	**16**	**115**	**92**	**811**	2,434
8:00 AM	**0**	**66**	**85**	**24**	**0**	**33**	**86**	**10**	**0**	**38**	**107**	**99**	**0**	**14**	**119**	**90**	**771**	2,789
8:15 AM	**0**	**66**	**69**	**34**	**0**	**49**	**52**	**21**	**0**	**25**	**108**	**92**	**0**	**20**	**134**	**44**	**714**	**2,947**
8:30 AM	0	55	55	28	0	44	58	21	1	19	96	71	2	17	108	44	619	2,915
8:45 AM	0	56	79	17	0	38	68	11	0	33	122	92	0	16	106	49	687	2,791
Count Total	0	440	506	156	0	281	591	103	1	288	744	680	2	149	841	443	5,225	0
Peak Hour All	**0**	**240**	**292**	**100**	**0**	**147**	**360**	**60**	**0**	**171**	**397**	**363**	**0**	**76**	**460**	**281**	**2,947**	**0**
Peak Hour HV	**0**	**5**	**3**	**1**	**0**	**7**	**12**	**1**	**0**	**3**	**8**	**3**	**0**	**0**	**5**	**2**	**50**	**0**
Peak Hour HV%	**-**	**2%**	**1%**	**1%**	**-**	**5%**	**3%**	**2%**	**-**	**2%**	**2%**	**1%**	**-**	**0%**	**1%**	**1%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	2	1	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	2	4	1	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	**1**	**8**	**3**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
7:45 AM	**2**	**7**	**1**	**1**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**4**	**1**	**4**	**2**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**2**	**4**	**6**	**1**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:30 AM	6	12	4	2	*24*	0	0	0	0	*0*	0	0	0	0	*0*
8:45 AM	7	7	8	3	*25*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	27	45	28	13	*113*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**9**	**20**	**14**	**7**	***50***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	2	0	0	0	0	1	0	0	0	0	0	6	0
7:15 AM	0	2	0	0	0	3	1	0	0	0	1	0	0	0	0	1	8	0
7:30 AM	**0**	**0**	**1**	**0**	**0**	**2**	**6**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**1**	**2**	**15**	0
7:45 AM	**0**	**2**	**0**	**0**	**0**	**3**	**4**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**11**	40
8:00 AM	**0**	**3**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**2**	**0**	**11**	45
8:15 AM	**0**	**0**	**1**	**1**	**0**	**1**	**2**	**1**	**0**	**3**	**2**	**1**	**0**	**0**	**1**	**0**	**13**	**50**
8:30 AM	0	0	5	1	0	7	3	2	0	1	2	1	0	0	1	1	24	59
8:45 AM	0	1	6	0	0	3	2	2	0	0	5	3	0	1	0	2	25	73
Count Total	0	8	17	2	0	22	18	5	0	4	17	7	0	1	6	6	113	0
Peak Hour	**0**	**5**	**3**	**1**	**0**	**7**	**12**	**1**	**0**	**3**	**8**	**3**	**0**	**0**	**5**	**2**	**50**	**0**

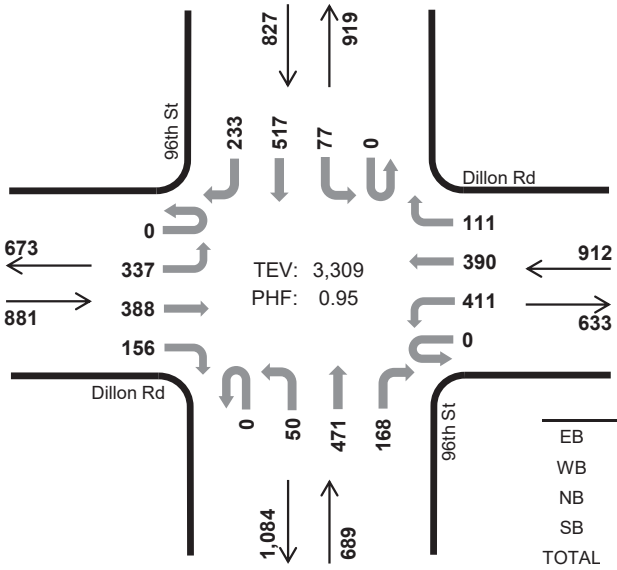
Two-Hour Count Summaries - Bikes

Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			96th St Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

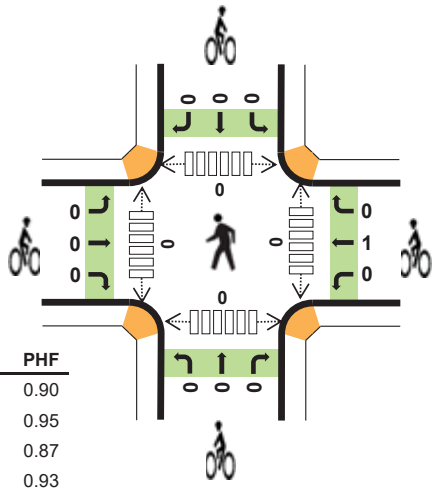
96th St
Dillon Rd

Peak Hour



	HV %:	PHF
EB	1.6%	0.90
WB	1.6%	0.95
NB	1.0%	0.87
SB	1.6%	0.93
TOTAL	1.5%	0.95

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



Three-and-a-Half-Hour Count Summaries

Interval Start		Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	100	99	47	0	110	93	36	0	13	99	51	0	33	126	64	871	0
4:15 PM		0	95	100	43	0	110	95	18	0	12	121	38	0	16	120	52	820	0
4:30 PM		0	88	94	32	0	88	89	32	0	9	106	42	0	15	145	59	799	0
4:45 PM		0	54	95	34	0	103	113	25	0	16	145	37	0	13	126	58	819	3,309
Peak Hour	All	0	337	388	156	0	411	390	111	0	50	471	168	0	77	517	233	3,309	0
	HV	0	4	8	2	0	10	5	0	0	0	2	5	0	1	8	4	49	0
	HV%	-	1%	2%	1%	-	2%	1%	0%	-	0%	0%	3%	-	1%	2%	2%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	2	4	3	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	7	6	3	5	*21*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	3	4	0	2	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	3	0	3	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	14	15	7	13	*49*	0	1	0	0	*1*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	54	48	26	0	45	77	23	0	11	73	41	0	13	78	52	541	0
2:45 PM	0	52	64	30	0	37	66	15	0	28	107	42	0	20	82	70	613	0
3:00 PM	0	89	74	45	0	88	61	27	0	14	69	31	0	15	70	51	634	0
3:15 PM	0	83	85	47	0	53	62	11	0	10	83	36	0	26	130	54	680	2,468
3:30 PM	0	72	73	40	0	97	75	18	0	15	124	38	0	14	84	64	714	2,641
3:45 PM	0	81	98	26	0	67	72	20	0	17	110	45	0	29	112	69	746	2,774
4:00 PM	**0**	**100**	**99**	**47**	**0**	**110**	**93**	**36**	**0**	**13**	**99**	**51**	**0**	**33**	**126**	**64**	**871**	3,011
4:15 PM	**0**	**95**	**100**	**43**	**0**	**110**	**95**	**18**	**0**	**12**	**121**	**38**	**0**	**16**	**120**	**52**	**820**	3,151
4:30 PM	**0**	**88**	**94**	**32**	**0**	**88**	**89**	**32**	**0**	**9**	**106**	**42**	**0**	**15**	**145**	**59**	**799**	3,236
4:45 PM	**0**	**54**	**95**	**34**	**0**	**103**	**113**	**25**	**0**	**16**	**145**	**37**	**0**	**13**	**126**	**58**	**819**	**3,309**
5:00 PM	0	76	92	44	0	99	115	32	0	10	120	46	0	14	116	56	820	3,258
5:15 PM	0	68	98	34	0	89	78	13	0	9	145	42	0	20	131	61	788	3,226
5:30 PM	0	50	95	26	0	57	96	10	0	9	155	32	0	17	131	52	730	3,157
5:45 PM	0	49	73	31	0	52	90	20	1	16	121	29	0	15	139	37	673	3,011
Count Total	0	1,011	1,188	505	0	1,095	1,182	300	1	189	1,578	550	0	260	1,590	799	10,248	0
Peak Hour All	**0**	**337**	**388**	**156**	**0**	**411**	**390**	**111**	**0**	**50**	**471**	**168**	**0**	**77**	**517**	**233**	**3,309**	**0**
Peak Hour HV	**0**	**4**	**8**	**2**	**0**	**10**	**5**	**0**	**0**	**0**	**2**	**5**	**0**	**1**	**8**	**4**	**49**	**0**
Peak Hour HV%	**-**	**1%**	**2%**	**1%**	**-**	**2%**	**1%**	**0%**	**-**	**0%**	**0%**	**3%**	**-**	**1%**	**2%**	**2%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	8	9	4	2	*23*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	3	6	5	6	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	5	4	2	1	*12*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	3	6	7	10	*26*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	3	3	3	1	*10*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	6	1	2	3	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	**4**	**2**	**4**	**3**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**7**	**6**	**3**	**5**	***21***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**3**	**4**	**0**	**2**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**3**	**0**	**3**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:00 PM	0	2	1	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	2	1	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	2	0	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	0	1	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	44	50	33	42	*169*	0	1	0	0	*1*	0	0	0	0	*0*
Peak Hour	**14**	**15**	**7**	**13**	***49***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Dillon Rd Eastbound				Dillon Rd Westbound				96th St Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	2	3	3	0	2	6	1	0	0	2	2	0	0	2	0	23	0
2:45 PM	0	0	2	1	0	1	5	0	0	2	1	2	0	1	3	2	20	0
3:00 PM	0	2	2	1	0	2	1	1	0	0	0	2	0	0	1	0	12	0
3:15 PM	0	1	0	2	0	3	3	0	0	1	1	5	0	1	7	2	26	81
3:30 PM	0	1	1	1	0	2	1	0	0	2	1	0	0	0	0	1	10	68
3:45 PM	0	1	3	2	0	1	0	0	0	0	0	2	0	0	2	1	12	60
4:00 PM	**0**	**2**	**1**	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**2**	**0**	**0**	**2**	**1**	**13**	61
4:15 PM	**0**	**0**	**6**	**1**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**2**	**2**	**21**	56
4:30 PM	**0**	**2**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**9**	55
4:45 PM	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**6**	**49**
5:00 PM	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	0	4	40
5:15 PM	0	0	1	0	0	2	0	0	0	0	1	0	0	0	1	0	5	24
5:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	0	4	19
5:45 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	4	17
Count Total	0	11	21	12	0	24	23	3	0	5	9	19	0	3	29	10	169	0
Peak Hour	**0**	**4**	**8**	**2**	**0**	**10**	**5**	**0**	**0**	**0**	**2**	**5**	**0**	**1**	**8**	**4**	**49**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

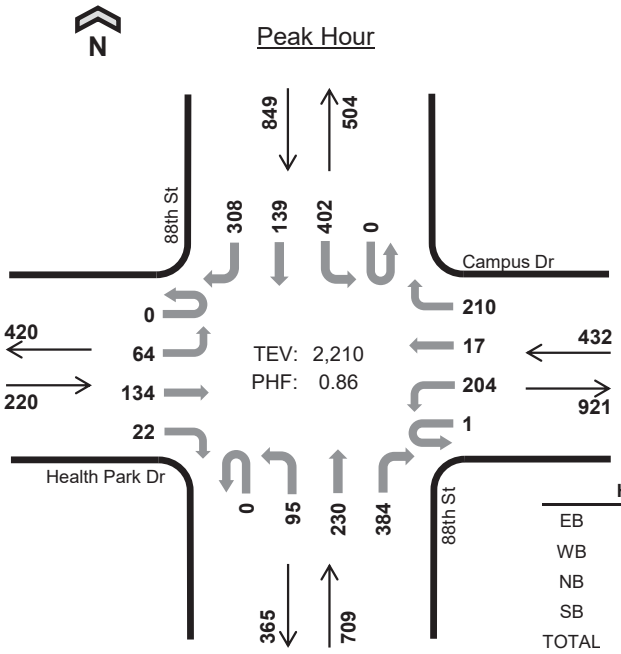
Interval Start	Dillon Rd Eastbound			Dillon Rd Westbound			96th St Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

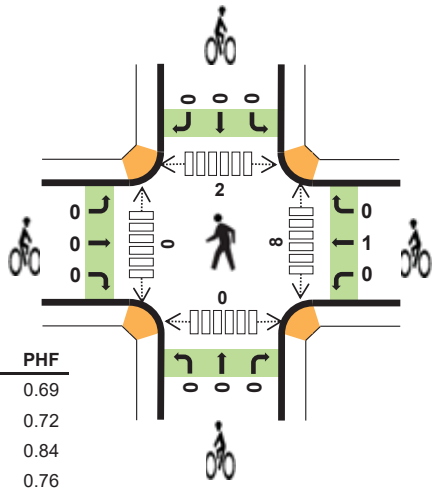
88th St
Campus Dr

Peak Hour

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.4%	0.69
WB	5.6%	0.72
NB	1.7%	0.84
SB	2.4%	0.76
TOTAL	2.7%	0.86



Two-Hour Count Summaries

Interval Start		Health Park Dr Eastbound				Campus Dr Westbound				88th St Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	7	0	8	0	0	0	2	0	12	29	1	0	11	43	40	153	0
7:15 AM		0	18	0	2	0	2	0	8	0	6	62	18	0	37	47	40	240	0
7:30 AM		0	28	0	5	0	5	0	7	0	14	58	41	0	68	48	47	321	0
7:45 AM		**0**	**16**	**4**	**4**	**1**	**39**	**5**	**19**	**0**	**22**	**77**	**63**	**0**	**75**	**44**	**46**	**415**	1,129
8:00 AM		**0**	**17**	**21**	**6**	**0**	**53**	**11**	**51**	**0**	**23**	**50**	**124**	**0**	**94**	**47**	**65**	**562**	1,538
8:15 AM		**0**	**18**	**47**	**7**	**0**	**54**	**0**	**50**	**0**	**28**	**56**	**128**	**0**	**103**	**6**	**90**	**587**	1,885
8:30 AM		**0**	**13**	**62**	**5**	**0**	**58**	**1**	**90**	**0**	**22**	**47**	**69**	**0**	**130**	**42**	**107**	**646**	**2,210**
8:45 AM		0	21	1	9	0	45	2	49	0	17	49	14	0	52	26	73	358	2,153
Count Total		0	138	135	46	1	256	19	276	0	144	428	458	0	570	303	508	3,282	0
Peak Hour	**All**	**0**	**64**	**134**	**22**	**1**	**204**	**17**	**210**	**0**	**95**	**230**	**384**	**0**	**402**	**139**	**308**	**2,210**	**0**
	HV	**0**	**3**	**0**	**0**	**0**	**11**	**0**	**13**	**0**	**1**	**3**	**8**	**0**	**12**	**4**	**4**	**59**	**0**
	HV%	**-**	**5%**	**0%**	**0%**	**0%**	**5%**	**0%**	**6%**	**-**	**1%**	**1%**	**2%**	**-**	**3%**	**3%**	**1%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	5	1	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	1	0	2	*3*	0	0	0	0	*0*	1	0	0	0	*1*
7:45 AM	**1**	**6**	**3**	**6**	***16***	**0**	**1**	**0**	**0**	***1***	**2**	**0**	**0**	**0**	*2*
8:00 AM	**1**	**7**	**4**	**0**	***12***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	*3*
8:15 AM	**0**	**1**	**3**	**8**	***12***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**1**	**0**	*4*
8:30 AM	**1**	**10**	**2**	**6**	***19***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	***1***
8:45 AM	1	3	1	6	*11*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	9	30	13	28	*80*	0	1	0	0	*1*	9	0	2	0	*11*
Peak Hour	**3**	**24**	**12**	**20**	***59***	**0**	**1**	**0**	**0**	***1***	**8**	**0**	**2**	**0**	***10***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Health Park Dr				Campus Dr				88th St				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	4	0	0	0	1	0	0	0	0	0	0	0	0	6	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	3	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**1**	**2**	**0**	**4**	**0**	**2**	**16**	26
8:00 AM	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**0**	**12**	32
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**3**	**4**	**1**	**12**	43
8:30 AM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**6**	**0**	**0**	**2**	**0**	**0**	**5**	**0**	**1**	**19**	**59**
8:45 AM	0	1	0	0	0	0	0	3	0	0	1	0	0	1	2	3	11	54
Count Total	0	5	0	4	0	11	0	19	0	1	4	8	0	13	8	7	80	0
Peak Hour	**0**	**3**	**0**	**0**	**0**	**11**	**0**	**13**	**0**	**1**	**3**	**8**	**0**	**12**	**4**	**4**	**59**	**0**

Two-Hour Count Summaries - Bikes

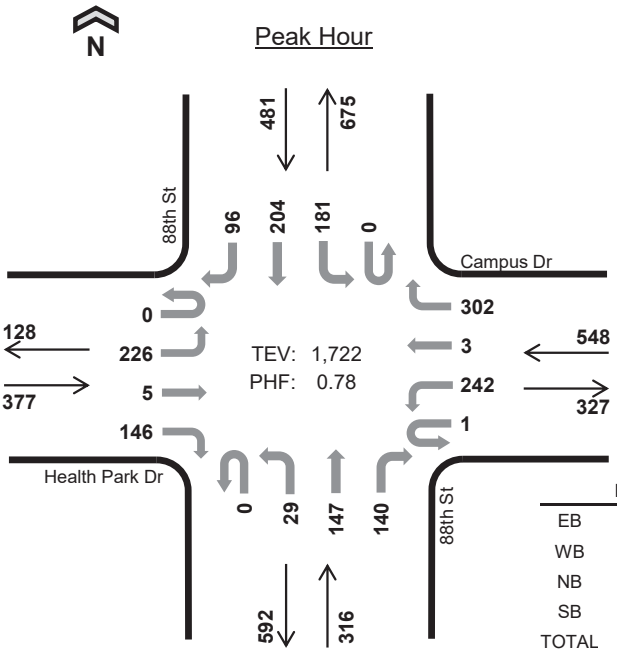
Interval Start	Health Park Dr			Campus Dr			88th St			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

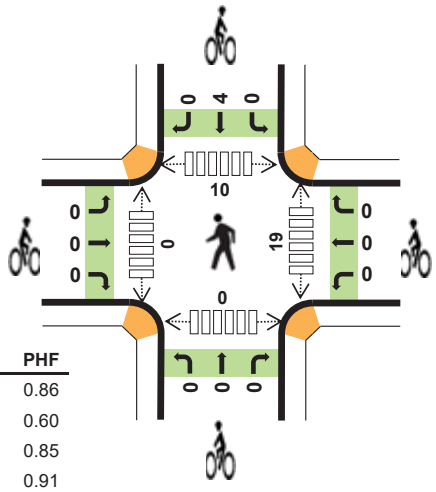
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Campus Dr

Peak Hour

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 3:15 PM to 4:15 PM





	HV %:	PHF
EB	2.1%	0.86
WB	2.9%	0.60
NB	1.6%	0.85
SB	2.7%	0.91
TOTAL	2.4%	0.78

Three-and-a-Half-Hour Count Summaries

Interval Start		Health Park Dr Eastbound				Campus Dr Westbound				88th St Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:15 PM		0	54	4	43	0	61	3	50	0	11	32	24	0	38	48	26	394	0
3:30 PM		0	62	1	47	0	43	0	27	0	9	36	29	0	45	35	27	361	0
3:45 PM		0	49	0	8	0	42	0	92	0	3	35	55	0	58	47	27	416	0
4:00 PM		0	61	0	48	1	96	0	133	0	6	44	32	0	40	74	16	551	1,722
Peak Hour	All	0	226	5	146	1	242	3	302	0	29	147	140	0	181	204	96	1,722	0
	HV	0	4	0	4	0	10	0	6	0	0	2	3	0	6	4	3	42	0
	HV%	-	2%	0%	3%	0%	4%	0%	2%	-	0%	1%	2%	-	3%	2%	3%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:15 PM	2	3	1	8	*14*	0	0	0	0	*0*	2	0	1	0	*3*
3:30 PM	1	0	3	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	1	6	0	1	*8*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	4	7	1	0	*12*	0	0	0	4	*4*	17	0	9	0	*26*
Peak Hour	8	16	5	13	*42*	0	0	0	4	*4*	19	0	10	0	*29*

Three-and-a-Half-Hour Count Summaries

Interval Start	Health Park Dr				Campus Dr				88th St				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	31	0	9	1	2	1	18	0	5	37	22	0	47	50	34	257	0
2:45 PM	0	39	0	43	0	9	1	19	0	3	42	30	0	51	32	39	308	0
3:00 PM	0	44	2	7	2	96	1	139	0	5	41	17	0	29	44	28	455	0
3:15 PM	**0**	**54**	**4**	**43**	**0**	**61**	**3**	**50**	**0**	**11**	**32**	**24**	**0**	**38**	**48**	**26**	**394**	1,414
3:30 PM	**0**	**62**	**1**	**47**	**0**	**43**	**0**	**27**	**0**	**9**	**36**	**29**	**0**	**45**	**35**	**27**	**361**	1,518
3:45 PM	**0**	**49**	**0**	**8**	**0**	**42**	**0**	**92**	**0**	**3**	**35**	**55**	**0**	**58**	**47**	**27**	**416**	1,626
4:00 PM	**0**	**61**	**0**	**48**	**1**	**96**	**0**	**133**	**0**	**6**	**44**	**32**	**0**	**40**	**74**	**16**	**551**	**1,722**
4:15 PM	0	41	0	44	0	47	0	83	0	0	59	10	0	26	63	13	386	1,714
4:30 PM	0	47	1	43	0	49	1	32	0	1	61	11	0	20	80	15	361	1,714
4:45 PM	0	39	0	9	0	40	0	17	0	1	40	7	0	20	64	15	252	1,550
5:00 PM	0	76	0	25	0	9	0	18	0	2	38	6	0	21	77	13	285	1,284
5:15 PM	0	41	1	42	0	42	0	28	0	0	46	5	0	18	90	4	317	1,215
5:30 PM	0	30	0	7	0	49	0	34	0	4	49	17	0	26	94	10	320	1,174
5:45 PM	0	41	0	7	0	22	0	14	0	3	69	8	0	12	65	11	252	1,174
Count Total	0	655	9	382	4	607	7	704	0	53	629	273	0	451	863	278	4,915	0
Peak Hour All	**0**	**226**	**5**	**146**	**1**	**242**	**3**	**302**	**0**	**29**	**147**	**140**	**0**	**181**	**204**	**96**	**1,722**	**0**
Peak Hour HV	**0**	**4**	**0**	**4**	**0**	**10**	**0**	**6**	**0**	**0**	**2**	**3**	**0**	**6**	**4**	**3**	**42**	**0**
Peak Hour HV%	**-**	**2%**	**0%**	**3%**	**0%**	**4%**	**0%**	**2%**	**-**	**0%**	**1%**	**2%**	**-**	**3%**	**2%**	**3%**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	1	0	2	8	*11*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	2	1	0	5	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	1	8	1	8	*18*	0	0	0	0	*0*	2	0	1	0	*3*
3:15 PM	**2**	**3**	**1**	**8**	***14***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**0**	*3*
3:30 PM	**1**	**0**	**3**	**4**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
3:45 PM	**1**	**6**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:00 PM	**4**	**7**	**1**	**0**	***12***	**0**	**0**	**0**	**4**	***4***	**17**	**0**	**9**	**0**	***26***
4:15 PM	1	0	3	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	1	3	*4*	0	0	0	4	*4*	0	0	0	0	*0*
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	12	0	0	0	*12*
5:00 PM	0	0	0	5	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	1	0	*1*
Count Total	14	26	12	47	*99*	0	0	0	8	*8*	33	0	12	0	*45*
Peak Hour	**8**	**16**	**5**	**13**	***42***	**0**	**0**	**0**	**4**	***4***	**19**	**0**	**10**	**0**	***29***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Health Park Dr				Campus Dr				88th St				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	1	0	0	0	0	0	0	0	0	2	0	0	3	2	3	11	0
2:45 PM	0	2	0	0	0	0	0	1	0	0	0	0	0	5	0	0	8	0
3:00 PM	0	1	0	0	0	2	0	6	0	0	1	0	0	3	4	1	18	0
3:15 PM	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**3**	**4**	**1**	**14**	51
3:30 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**2**	**0**	**2**	**8**	48
3:45 PM	**0**	**1**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	48
4:00 PM	**0**	**0**	**0**	**4**	**0**	**4**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**12**	**42**
4:15 PM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	4	1	9	37
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	4	33
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	5	18
5:15 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	11
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Count Total	0	9	1	4	0	12	0	14	0	0	9	3	0	18	20	9	99	0
Peak Hour	**0**	**4**	**0**	**4**	**0**	**10**	**0**	**6**	**0**	**0**	**2**	**3**	**0**	**6**	**4**	**3**	**42**	**0**

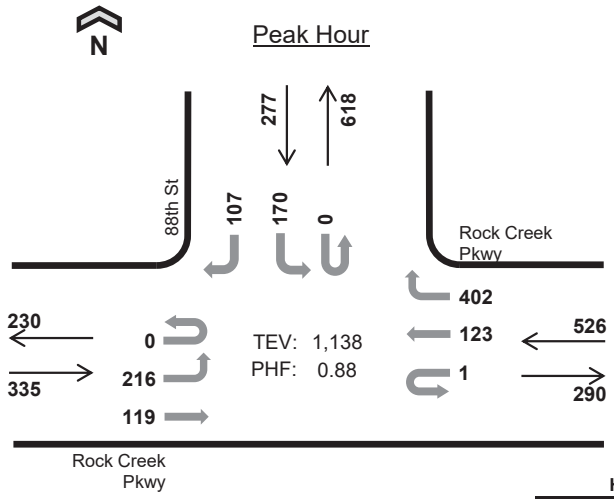
Three-and-a-Half-Hour Count Summaries - Bikes

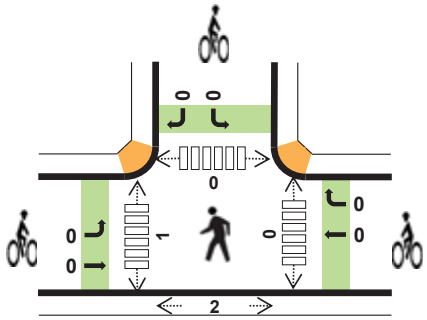
Interval Start	Health Park Dr			Campus Dr			88th St			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**4**
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	4	8
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	8
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	8	0	8	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**4**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Rock Creek Pkwy

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	0.6%	0.81
WB	2.3%	0.91
NB	-	-
SB	2.2%	0.90
TOTAL	1.8%	0.88

Two-Hour Count Summaries

Interval Start		Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		1	13	10	0	0	0	22	37	0	0	0	0	0	13	0	9	105	0
7:15 AM		0	19	13	0	0	0	23	63	0	0	0	0	0	13	0	12	143	0
7:30 AM		0	37	20	0	0	0	29	96	0	0	0	0	0	13	0	25	220	0
7:45 AM		**0**	**59**	**45**	**0**	**0**	**0**	**34**	**102**	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**15**	**288**	756
8:00 AM		**0**	**62**	**31**	**0**	**0**	**0**	**21**	**112**	**0**	**0**	**0**	**0**	**0**	**48**	**0**	**28**	**302**	953
8:15 AM		**0**	**82**	**22**	**0**	**0**	**0**	**39**	**105**	**0**	**0**	**0**	**0**	**0**	**44**	**0**	**32**	**324**	1,134
8:30 AM		**0**	**13**	**21**	**0**	**1**	**0**	**29**	**83**	**0**	**0**	**0**	**0**	**0**	**45**	**0**	**32**	**224**	**1,138**
8:45 AM		0	26	24	0	0	0	39	45	0	0	0	0	0	37	0	18	189	1,039
Count Total		1	311	186	0	1	0	236	643	0	0	0	0	0	246	0	171	1,795	0
Peak Hour	**All**	**0**	**216**	**119**	**0**	**1**	**0**	**123**	**402**	**0**	**0**	**0**	**0**	**0**	**170**	**0**	**107**	**1,138**	**0**
	HV	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**20**	**0**
	HV%	**-**	**0%**	**2%**	**-**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**-**	**-**	**-**	**1%**	**-**	**4%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals EB	WB	NB	SB	Total	Bicycles EB	WB	NB	SB	Total	Pedestrians (Crossing Leg) East	West	North	South	Total
7:00 AM	1	2	0	0	*3*	0	0	0	0	*0*	0	1	0	2	*3*
7:15 AM	0	2	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	1	1	0	2	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**4**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***
8:00 AM	**0**	**2**	**0**	**3**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	***1***
8:15 AM	**0**	**3**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
8:30 AM	**2**	**3**	**0**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	0	2	*3*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	18	0	10	*32*	0	0	0	0	*0*	0	2	0	4	*6*
Peak Hr	**2**	**12**	**0**	**6**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**2**	***3***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Rock Creek Pkwy				Rock Creek Pkwy				N/A				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	2	0	0	4	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**	15
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**5**	17
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	18
8:30 AM	**0**	**0**	**2**	**0**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**6**	**20**
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	1	3	17
Count Total	0	0	4	0	0	0	7	11	0	0	0	0	0	5	0	5	32	0
Peak Hour	**0**	**0**	**2**	**0**	**0**	**0**	**3**	**9**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**4**	**20**	**0**

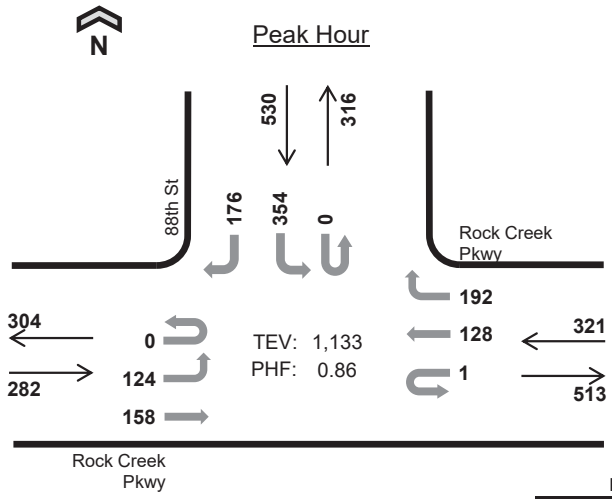
Two-Hour Count Summaries - Bikes

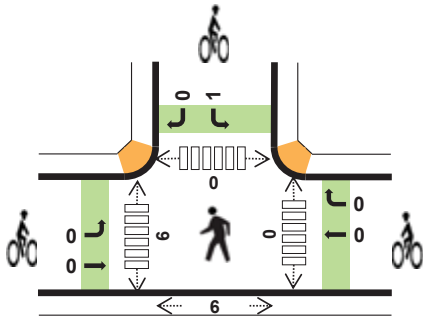
Interval Start	Rock Creek Pkwy			Rock Creek Pkwy			N/A			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

88th St
Rock Creek Pkwy

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 3:45 PM to 4:45 PM





	HV %:	PHF
EB	1.8%	0.82
WB	1.6%	0.92
NB	-	-
SB	1.5%	0.78
TOTAL	1.6%	0.86

Three-and-a-Half-Hour Count Summaries

Interval Start		Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
3:45 PM		0	45	41	0	1	0	28	56	0	0	0	0	0	82	0	39	292	0
4:00 PM		0	30	43	0	0	0	36	51	0	0	0	0	0	112	0	58	330	0
4:15 PM		0	28	34	0	0	0	37	41	0	0	0	0	0	93	0	41	274	0
4:30 PM		0	21	40	0	0	0	27	44	0	0	0	0	0	67	0	38	237	1,133
Peak Hour	All	0	124	158	0	1	0	128	192	0	0	0	0	0	354	0	176	1,133	0
	HV	0	2	3	0	0	0	2	3	0	0	0	0	0	6	0	2	18	0
	HV%	-	2%	2%	-	0%	-	2%	2%	-	-	-	-	-	2%	-	1%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
3:45 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	0	0	1	*1*
4:00 PM	1	1	0	4	*6*	0	0	0	0	*0*	0	3	0	4	*7*
4:15 PM	2	2	0	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	1	1	0	2	*4*	0	0	0	1	*1*	0	3	0	1	*4*
Peak Hour	5	5	0	8	*18*	0	0	0	1	*1*	0	6	0	6	*12*

Three-and-a-Half-Hour Count Summaries

Interval Start	Rock Creek Pkwy Eastbound				Rock Creek Pkwy Westbound				N/A Northbound				88th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	16	20	0	0	0	32	48	0	0	0	0	0	35	0	24	175	0
2:45 PM	0	46	35	0	0	0	24	49	0	0	0	0	0	30	0	25	209	0
3:00 PM	0	34	29	0	0	0	30	32	0	0	0	0	0	91	0	45	261	0
3:15 PM	0	9	31	0	0	0	19	44	0	0	0	0	0	70	0	40	213	858
3:30 PM	0	30	28	0	0	0	25	45	0	0	0	0	0	49	0	25	202	885
3:45 PM	**0**	**45**	**41**	**0**	**1**	**0**	**28**	**56**	**0**	**0**	**0**	**0**	**0**	**82**	**0**	**39**	**292**	968
4:00 PM	**0**	**30**	**43**	**0**	**0**	**0**	**36**	**51**	**0**	**0**	**0**	**0**	**0**	**112**	**0**	**58**	**330**	1,037
4:15 PM	**0**	**28**	**34**	**0**	**0**	**0**	**37**	**41**	**0**	**0**	**0**	**0**	**0**	**93**	**0**	**41**	**274**	1,098
4:30 PM	**0**	**21**	**40**	**0**	**0**	**0**	**27**	**44**	**0**	**0**	**0**	**0**	**0**	**67**	**0**	**38**	**237**	**1,133**
4:45 PM	0	19	47	0	0	0	37	37	0	0	0	0	0	53	0	28	221	1,062
5:00 PM	0	19	52	0	0	0	40	34	0	0	0	0	0	81	0	23	249	981
5:15 PM	0	20	54	0	0	0	32	41	0	0	0	0	0	85	0	30	262	969
5:30 PM	0	21	63	0	0	0	40	46	0	0	0	0	0	92	0	31	293	1,025
5:45 PM	0	19	58	0	0	0	42	59	0	0	0	0	0	57	0	35	270	1,074
Count Total	0	357	575	0	1	0	449	627	0	0	0	0	0	997	0	482	3,488	0
Peak Hour All	**0**	**124**	**158**	**0**	**1**	**0**	**128**	**192**	**0**	**0**	**0**	**0**	**0**	**354**	**0**	**176**	**1,133**	**0**
Peak Hour HV	**0**	**2**	**3**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**2**	**18**	**0**
Peak Hour HV%	**-**	**2%**	**2%**	**-**	**0%**	**-**	**2%**	**2%**	**-**	**-**	**-**	**-**	**-**	**2%**	**-**	**1%**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	2	2	0	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	1	0	0	2	*3*	0	0	0	0	*0*	0	0	0	4	*4*
3:15 PM	0	4	0	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	3	1	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	**1**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	*1*
4:00 PM	**1**	**1**	**0**	**4**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**4**	*7*
4:15 PM	**2**	**2**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**1**	**1**	**0**	**2**	***4***	**0**	**0**	**0**	**1**	***1***	**0**	**3**	**0**	**1**	***4***
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	2	1	*3*
5:00 PM	0	1	0	1	*2*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	1	*1*
5:30 PM	1	1	0	0	*2*	0	0	0	0	*0*	0	1	0	1	*2*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	1	*1*
Count Total	12	15	0	16	*43*	0	0	0	1	*1*	0	7	2	14	*23*
Peak Hr	**5**	**5**	**0**	**8**	***18***	**0**	**0**	**0**	**1**	***1***	**0**	**6**	**0**	**6**	***12***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Rock Creek Pkwy				Rock Creek Pkwy				N/A				88th St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	5	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0
3:15 PM	0	0	0	0	0	0	3	1	0	0	0	0	0	3	0	1	8	16
3:30 PM	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	0	4	15
3:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	17
4:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**6**	20
4:15 PM	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**6**	18
4:30 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**4**	**18**
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	12
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	7
5:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	5	7	0	0	0	10	5	0	0	0	0	0	12	0	4	43	0
Peak Hour	**0**	**2**	**3**	**0**	**0**	**0**	**2**	**3**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**2**	**18**	**0**

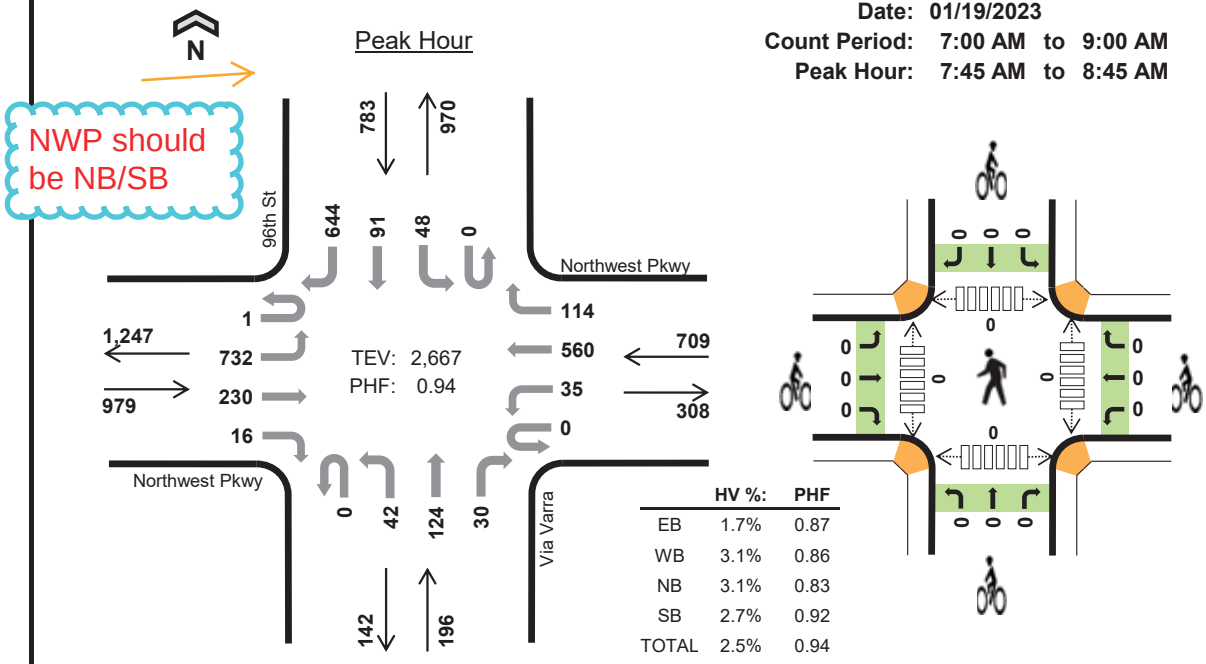
Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Rock Creek Pkwy			Rock Creek Pkwy			N/A			88th St			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**1**
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Northwest Pkwy

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	1.7%	0.87
WB	3.1%	0.86
NB	3.1%	0.83
SB	2.7%	0.92
TOTAL	2.5%	0.94

Two-Hour Count Summaries

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	111	47	2	0	4	61	26	0	9	28	0	0	7	14	93	402	0
7:15 AM	0	153	45	1	0	12	87	23	0	3	22	5	0	8	13	92	464	0
7:30 AM	0	152	70	2	0	5	109	35	0	6	28	6	0	9	17	121	560	0
7:45 AM	**0**	**207**	**69**	**4**	**0**	**10**	**124**	**35**	**0**	**17**	**37**	**5**	**0**	**19**	**13**	**140**	**680**	2,106
8:00 AM	**0**	**192**	**51**	**2**	**0**	**6**	**134**	**33**	**0**	**10**	**32**	**9**	**0**	**11**	**31**	**155**	**666**	2,370
8:15 AM	**0**	**184**	**63**	**2**	**0**	**9**	**171**	**25**	**0**	**4**	**27**	**11**	**0**	**11**	**22**	**179**	**708**	2,614
8:30 AM	**1**	**149**	**47**	**8**	**0**	**10**	**131**	**21**	**0**	**11**	**28**	**5**	**0**	**7**	**25**	**170**	**613**	**2,667**
8:45 AM	0	194	58	3	0	14	111	28	0	7	26	5	0	10	17	124	597	2,584
Count Total	1	1,342	450	24	0	70	928	226	0	67	228	46	0	82	152	1,074	4,690	0
Peak Hour All	**1**	**732**	**230**	**16**	**0**	**35**	**560**	**114**	**0**	**42**	**124**	**30**	**0**	**48**	**91**	**644**	**2,667**	**0**
Peak Hour HV	**0**	**14**	**3**	**0**	**0**	**1**	**16**	**5**	**0**	**1**	**0**	**5**	**0**	**1**	**2**	**18**	**66**	**0**
Peak Hour HV%	**0%**	**2%**	**1%**	**0%**	**-**	**3%**	**3%**	**4%**	**-**	**2%**	**0%**	**17%**	**-**	**2%**	**2%**	**3%**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	4	1	1	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	6	1	4	*12*	0	0	1	0	*1*	0	0	0	0	*0*
7:30 AM	2	4	0	3	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**3**	**6**	**1**	**4**	***14***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**7**	**5**	**2**	**3**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**5**	**4**	**3**	**3**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**2**	**7**	**0**	**11**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	9	7	1	3	*20*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	32	43	9	32	*116*	0	0	1	0	*1*	0	0	0	0	*0*
Peak Hour	**17**	**22**	**6**	**21**	***66***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	2	0	0	1	3	0	0	1	0	0	0	0	0	1	9	0
7:15 AM	0	1	0	0	0	0	6	0	0	0	0	1	0	0	1	3	12	0
7:30 AM	0	2	0	0	0	0	3	1	0	0	0	0	0	0	0	3	9	0
7:45 AM	**0**	**2**	**1**	**0**	**0**	**1**	**4**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**4**	**14**	44
8:00 AM	**0**	**5**	**2**	**0**	**0**	**0**	**2**	**3**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**3**	**17**	52
8:15 AM	**0**	**5**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**2**	**15**	55
8:30 AM	**0**	**2**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**9**	**20**	**66**
8:45 AM	0	7	2	0	0	1	6	0	0	0	0	1	0	0	0	3	20	72
Count Total	0	25	7	0	0	3	34	6	0	2	0	7	0	1	3	28	116	0
Peak Hour	**0**	**14**	**3**	**0**	**0**	**1**	**16**	**5**	**0**	**1**	**0**	**5**	**0**	**1**	**2**	**18**	**66**	**0**

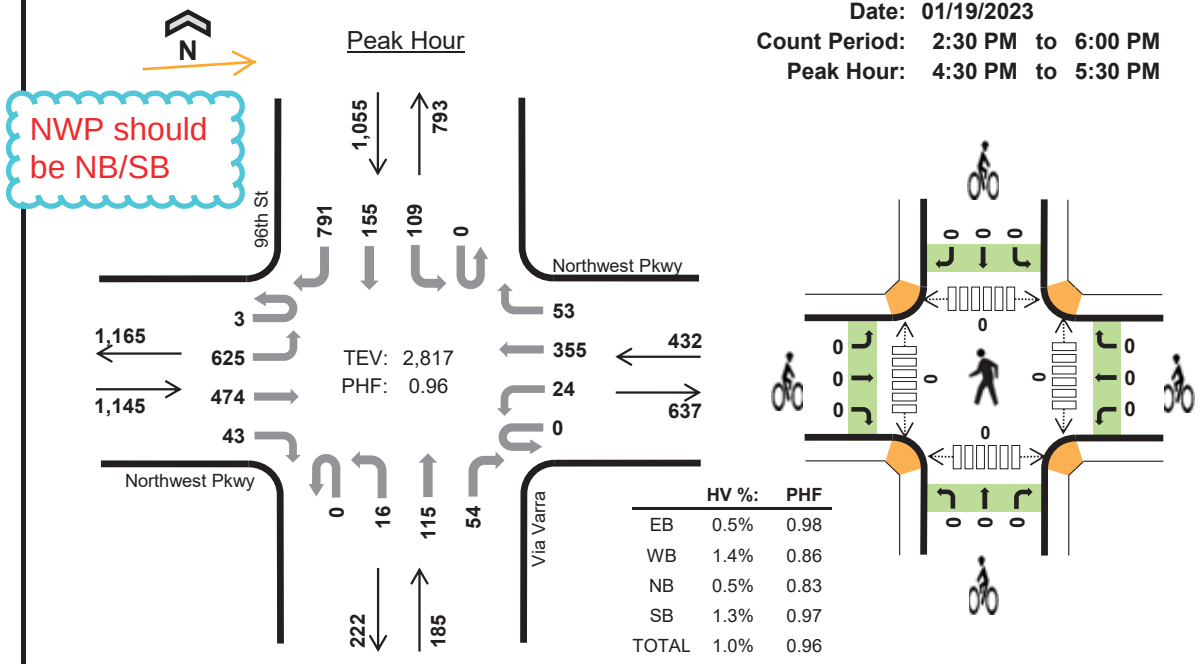
Two-Hour Count Summaries - Bikes

Interval Start	Northwest Pkwy Eastbound			Northwest Pkwy Westbound			Via Varra Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	1	0	0	0	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

96th St
Northwest Pkwy

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.5%	0.98
WB	1.4%	0.86
NB	0.5%	0.83
SB	1.3%	0.97
TOTAL	1.0%	0.96

Three-and-a-Half-Hour Count Summaries

Interval Start		Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	158	110	13	0	3	77	7	0	0	24	10	0	22	37	208	669	0
4:45 PM		1	153	119	10	0	6	82	17	0	6	17	20	0	20	47	204	702	0
5:00 PM		2	157	120	11	0	5	95	14	0	8	40	8	0	32	30	188	710	0
5:15 PM		0	157	125	9	0	10	101	15	0	2	34	16	0	35	41	191	736	2,817
Peak Hour	All	3	625	474	43	0	24	355	53	0	16	115	54	0	109	155	791	2,817	0
	HV	0	2	4	0	0	1	5	0	0	0	0	1	0	2	0	12	27	0
	HV%	0%	0%	1%	0%	-	4%	1%	0%	-	0%	0%	2%	-	2%	0%	2%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	2	0	0	7	*9*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	1	3	0	2	*6*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	2	2	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	1	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	6	6	1	14	*27*	0	0	0	0	*0*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	110	89	8	0	0	41	7	0	5	19	2	0	16	18	120	435	0
2:45 PM	0	123	64	7	0	3	52	19	0	6	37	8	0	21	18	116	474	0
3:00 PM	0	92	91	6	0	6	53	6	0	0	20	9	0	19	19	162	483	0
3:15 PM	1	127	69	6	0	2	66	11	0	6	14	9	0	29	27	162	529	1,921
3:30 PM	1	135	90	7	0	6	68	12	0	5	21	12	0	21	26	171	575	2,061
3:45 PM	0	154	100	8	0	4	76	12	0	4	27	6	0	17	20	171	599	2,186
4:00 PM	1	139	111	12	0	3	87	7	0	8	27	9	0	30	42	214	690	2,393
4:15 PM	0	160	136	11	1	7	78	14	0	5	21	4	1	27	36	214	715	2,579
4:30 PM	**0**	**158**	**110**	**13**	**0**	**3**	**77**	**7**	**0**	**0**	**24**	**10**	**0**	**22**	**37**	**208**	**669**	2,673
4:45 PM	**1**	**153**	**119**	**10**	**0**	**6**	**82**	**17**	**0**	**6**	**17**	**20**	**0**	**20**	**47**	**204**	**702**	2,776
5:00 PM	**2**	**157**	**120**	**11**	**0**	**5**	**95**	**14**	**0**	**8**	**40**	**8**	**0**	**32**	**30**	**188**	**710**	2,796
5:15 PM	**0**	**157**	**125**	**9**	**0**	**10**	**101**	**15**	**0**	**2**	**34**	**16**	**0**	**35**	**41**	**191**	**736**	**2,817**
5:30 PM	0	161	101	7	0	7	107	10	0	2	27	15	0	26	26	176	665	2,813
5:45 PM	0	143	85	11	0	10	70	21	0	5	18	7	0	29	45	152	596	2,707
Count Total	6	1,969	1,410	126	1	72	1,053	172	0	62	346	135	1	344	432	2,449	8,578	0
Peak Hour All	**3**	**625**	**474**	**43**	**0**	**24**	**355**	**53**	**0**	**16**	**115**	**54**	**0**	**109**	**155**	**791**	**2,817**	**0**
Peak Hour HV	**0**	**2**	**4**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**12**	**27**	**0**
Peak Hour HV%	**0%**	**0%**	**1%**	**0%**	**-**	**4%**	**1%**	**0%**	**-**	**0%**	**0%**	**2%**	**-**	**2%**	**0%**	**2%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	4	3	1	8	*16*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	8	4	2	5	*19*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	3	0	1	4	*8*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	11	1	0	9	*21*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	3	2	0	2	*7*	0	0	0	1	*1*	0	0	0	0	*0*
3:45 PM	7	6	0	4	*17*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	8	3	1	6	*18*	0	0	0	0	*0*	0	0	0	1	*1*
4:15 PM	5	0	2	6	*13*	0	0	0	0	*0*	0	0	0	1	*1*
4:30 PM	**2**	**0**	**0**	**7**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**1**	**3**	**0**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**2**	**2**	**0**	**3**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**1**	**1**	**1**	**2**	***5***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	1	3	0	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	1	1	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	57	29	9	65	*160*	0	0	0	1	*1*	0	0	0	2	*2*
Peak Hour	**6**	**6**	**1**	**14**	***27***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Northwest Pkwy Eastbound				Northwest Pkwy Westbound				Via Varra Northbound				96th St Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	3	1	0	0	0	3	0	0	0	1	0	0	2	0	6	16	0
2:45 PM	0	5	3	0	0	1	2	1	0	1	1	0	0	0	0	5	19	0
3:00 PM	0	2	1	0	0	0	0	0	0	0	0	1	0	0	1	3	8	0
3:15 PM	0	8	3	0	0	0	1	0	0	0	0	0	0	4	1	4	21	64
3:30 PM	0	1	2	0	0	0	1	1	0	0	0	0	0	0	0	2	7	55
3:45 PM	0	4	3	0	0	2	4	0	0	0	0	0	0	1	1	2	17	53
4:00 PM	0	4	4	0	0	0	3	0	0	0	0	1	0	1	0	5	18	63
4:15 PM	0	4	1	0	0	0	0	0	0	0	1	1	0	3	0	3	13	55
4:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**9**	57
4:45 PM	**0**	**0**	**1**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**6**	46
5:00 PM	**0**	**2**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**7**	35
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**5**	**27**
5:30 PM	0	1	0	0	0	0	3	0	0	0	0	0	0	1	0	2	7	25
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	1	0	1	0	3	7	26
Count Total	0	35	22	0	0	5	22	2	0	1	3	5	0	15	3	47	160	0
Peak Hour	**0**	**2**	**4**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**12**	**27**	**0**

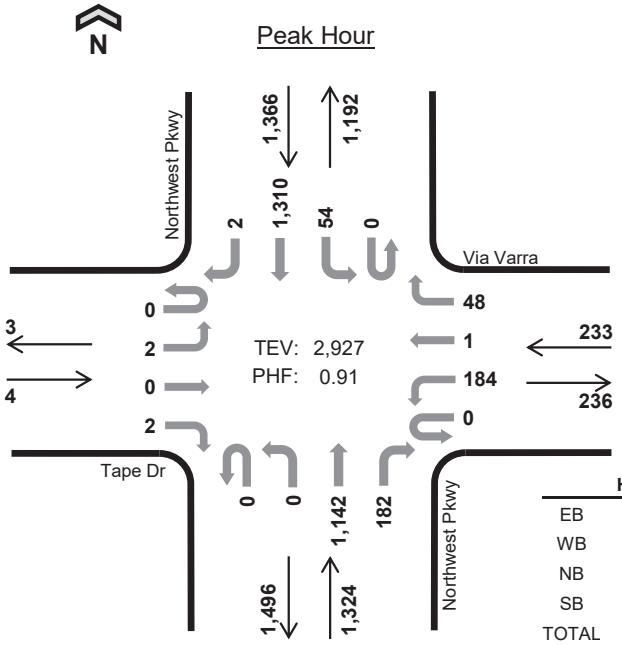
Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Northwest Pkwy Eastbound			Northwest Pkwy Westbound			Via Varra Northbound			96th St Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	1	0	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

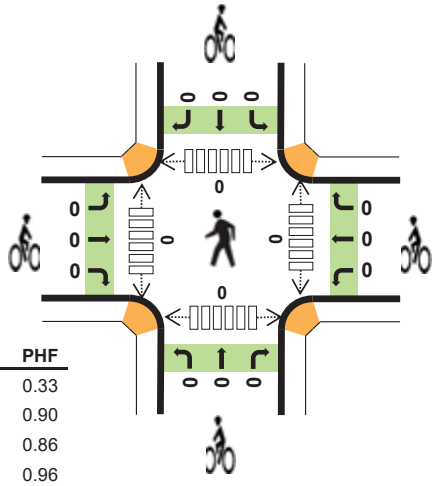
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Northwest Pkwy
Via Varra

Date: 01/24/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	0.0%	0.33
WB	2.6%	0.90
NB	2.6%	0.86
SB	3.4%	0.96
TOTAL	3.0%	0.91



Two-Hour Count Summaries

Interval Start	Tape Dr Eastbound				Via Varra Westbound				Northwest Pkwy Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	19	0	10	0	0	180	15	1	8	172	0	405	0
7:15 AM	0	0	0	0	0	24	0	15	0	0	191	32	0	9	214	0	485	0
7:30 AM	0	0	0	1	0	42	0	13	0	0	249	36	0	15	252	1	609	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**49**	**0**	**8**	**0**	**0**	**341**	**46**	**0**	**17**	**339**	**1**	**802**	2,301
8:00 AM	**0**	**0**	**0**	**0**	**0**	**46**	**0**	**19**	**0**	**0**	**260**	**43**	**0**	**17**	**320**	**0**	**705**	2,601
8:15 AM	**0**	**1**	**0**	**2**	**0**	**48**	**1**	**12**	**0**	**0**	**288**	**45**	**0**	**11**	**338**	**1**	**747**	2,863
8:30 AM	**0**	**0**	**0**	**0**	**0**	**41**	**0**	**9**	**0**	**0**	**253**	**48**	**0**	**9**	**313**	**0**	**673**	**2,927**
8:45 AM	0	0	0	0	0	47	0	10	0	0	259	42	0	13	257	0	628	2,753
Count Total	0	2	0	3	0	316	1	96	0	0	2,021	307	1	99	2,205	3	5,054	0
Peak Hour All	**0**	**2**	**0**	**2**	**0**	**184**	**1**	**48**	**0**	**0**	**1,142**	**182**	**0**	**54**	**1,310**	**2**	**2,927**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**30**	**5**	**0**	**2**	**45**	**0**	**88**	**0**
Peak Hour HV%	**-**	**0%**	**-**	**0%**	**-**	**2%**	**0%**	**4%**	**-**	**-**	**3%**	**3%**	**-**	**4%**	**3%**	**0%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	4	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	0	5	6	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	0	10	10	*20*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**3**	**7**	**10**	***20***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**0**	**10**	**12**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**3**	**11**	**11**	***25***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**0**	**7**	**14**	***21***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	1	2	9	*12*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	7	56	77	*140*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**6**	**35**	**47**	***88***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Tape Dr				Via Varra				Northwest Pkwy				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	5	0	9	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	6	0	11	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	7	3	0	0	10	0	20	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**5**	**2**	**0**	**1**	**9**	**0**	**20**	60
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**1**	**0**	**1**	**11**	**0**	**22**	73
8:15 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**10**	**1**	**0**	**0**	**11**	**0**	**25**	87
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**0**	**0**	**14**	**0**	**21**	**88**
8:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	1	8	0	12	80
Count Total	0	0	0	0	0	5	0	2	0	0	45	11	0	3	74	0	140	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**0**	**0**	**30**	**5**	**0**	**2**	**45**	**0**	**88**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	Tape Dr			Via Varra			Northwest Pkwy			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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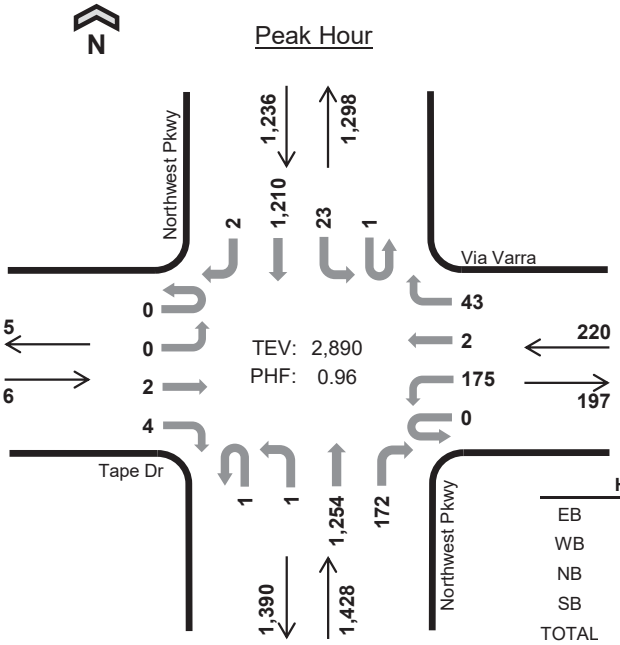
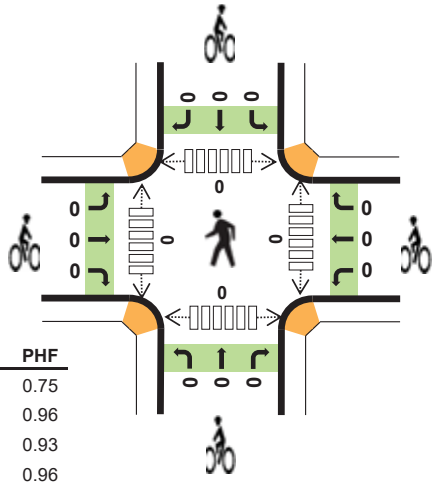
Northwest Pkwy
Via Varra

Date: 01/24/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.0%	0.75
WB	1.4%	0.96
NB	1.4%	0.93
SB	1.6%	0.96
TOTAL	1.5%	0.96



Three-and-a-Half-Hour Count Summaries

Interval Start		Tape Dr Eastbound				Via Varra Westbound				Northwest Pkwy Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:30 PM		0	0	0	1	0	42	0	11	0	0	289	40	0	10	312	0	705	0
4:45 PM		0	0	0	1	0	42	1	13	0	0	303	37	0	6	290	0	693	0
5:00 PM		0	0	1	1	0	42	1	11	0	1	326	48	1	5	298	1	736	0
5:15 PM		0	0	1	1	0	49	0	8	1	0	336	47	0	2	310	1	756	2,890
Peak Hour	All	0	0	2	4	0	175	2	43	1	1	1,254	172	1	23	1,210	2	2,890	0
	HV	0	0	0	0	0	1	0	2	0	0	18	2	0	1	19	0	43	0
	HV%	-	-	0%	0%	-	1%	0%	5%	0%	0%	1%	1%	0%	4%	2%	0%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	1	7	4	*12*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	2	4	7	*13*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	0	6	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	0	0	3	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	20	20	*43*	0	0	0	0	*0*	0	0	0	0	*0*

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Three-and-a-Half-Hour Count Summaries

Interval Start	Tape Dr Eastbound				Via Varra Westbound				Northwest Pkwy Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	1	27	0	4	0	0	200	33	0	7	183	0	455	0
2:45 PM	0	0	0	1	0	31	0	10	0	0	184	26	0	8	189	0	449	0
3:00 PM	0	0	0	0	0	34	0	10	0	0	197	32	0	5	186	0	464	0
3:15 PM	0	0	1	0	0	23	0	10	0	0	219	35	0	3	229	1	521	1,889
3:30 PM	0	1	0	0	0	27	0	6	0	0	231	31	0	4	265	0	565	1,999
3:45 PM	0	0	0	0	0	25	0	6	0	0	255	35	0	9	236	0	566	2,116
4:00 PM	0	0	0	0	0	28	0	9	0	0	308	33	0	7	270	0	655	2,307
4:15 PM	0	0	0	0	1	34	0	2	0	0	290	47	0	9	275	0	658	2,444
4:30 PM	**0**	**0**	**0**	**1**	**0**	**42**	**0**	**11**	**0**	**0**	**289**	**40**	**0**	**10**	**312**	**0**	**705**	2,584
4:45 PM	**0**	**0**	**0**	**1**	**0**	**42**	**1**	**13**	**0**	**0**	**303**	**37**	**0**	**6**	**290**	**0**	**693**	2,711
5:00 PM	**0**	**0**	**1**	**1**	**0**	**42**	**1**	**11**	**0**	**1**	**326**	**48**	**1**	**5**	**298**	**1**	**736**	2,792
5:15 PM	**0**	**0**	**1**	**1**	**0**	**49**	**0**	**8**	**1**	**0**	**336**	**47**	**0**	**2**	**310**	**1**	**756**	**2,890**
5:30 PM	0	0	0	0	0	27	0	12	0	0	294	44	0	6	245	0	628	2,813
5:45 PM	0	0	0	1	3	30	0	4	0	0	229	52	0	2	218	1	540	2,660
Count Total	0	1	3	6	5	461	2	116	1	1	3,661	540	1	83	3,506	4	8,391	0
Peak Hour All	**0**	**0**	**2**	**4**	**0**	**175**	**2**	**43**	**1**	**1**	**1,254**	**172**	**1**	**23**	**1,210**	**2**	**2,890**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**18**	**2**	**0**	**1**	**19**	**0**	**43**	**0**
Peak Hour HV%	**-**	**-**	**0%**	**0%**	**-**	**1%**	**0%**	**5%**	**0%**	**0%**	**1%**	**1%**	**0%**	**4%**	**2%**	**0%**	**1%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	0	1	10	9	*20*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	4	10	10	*24*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	0	9	6	*15*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	0	0	9	5	*14*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	0	2	10	9	*21*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	0	3	7	8	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	0	1	6	8	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	0	14	4	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	**0**	**1**	**7**	**4**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**2**	**4**	**7**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**6**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:15 PM	**0**	**0**	**3**	**4**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:30 PM	0	0	5	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	1	2	1	*4*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	15	102	82	*199*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**3**	**20**	**20**	***43***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

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Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	Tape Dr				Via Varra				Northwest Pkwy				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	0	1	0	0	0	0	9	1	0	0	9	0	20	0
2:45 PM	0	0	0	0	0	4	0	0	0	0	10	0	0	1	9	0	24	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	8	1	0	1	5	0	15	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	5	0	14	73
3:30 PM	0	0	0	0	0	1	0	1	0	0	9	1	0	0	9	0	21	74
3:45 PM	0	0	0	0	0	2	0	1	0	0	7	0	0	0	8	0	18	68
4:00 PM	0	0	0	0	0	1	0	0	0	0	5	1	0	1	7	0	15	68
4:15 PM	0	0	0	0	0	0	0	0	0	0	12	2	0	0	4	0	18	72
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**7**	**0**	**0**	**1**	**3**	**0**	**12**	63
4:45 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**4**	**0**	**0**	**0**	**7**	**0**	**13**	58
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**0**	**5**	**0**	**11**	54
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**7**	**43**
5:30 PM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	2	0	7	38
5:45 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	1	0	4	29
Count Total	0	0	0	0	0	11	0	4	0	0	93	9	0	4	78	0	199	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**2**	**0**	**0**	**18**	**2**	**0**	**1**	**19**	**0**	**43**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	Tape Dr			Via Varra			Northwest Pkwy			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

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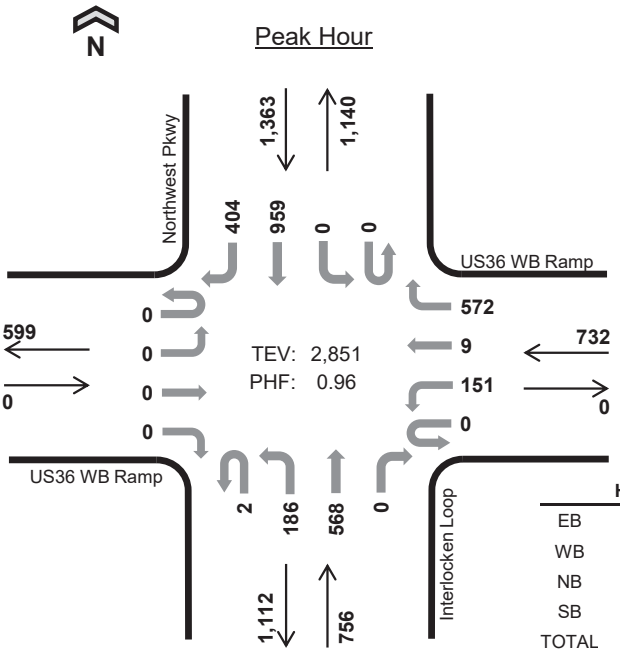
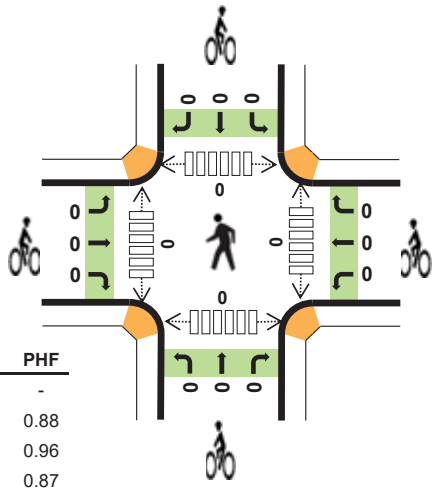
Interlocken Loop
US36 WB Ramp

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	2.6%	0.88
NB	2.2%	0.96
SB	2.9%	0.87
TOTAL	2.6%	0.96



Two-Hour Count Summaries

Interval Start	US36 WB Ramp Eastbound				US36 WB Ramp Westbound				Interlocken Loop Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	14	0	81	0	17	94	0	0	0	151	35	392	0
7:15 AM	0	0	0	0	0	27	2	109	1	53	126	0	0	0	143	59	520	0
7:30 AM	0	0	0	0	0	22	1	123	0	40	143	0	0	0	208	80	617	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**44**	**3**	**161**	**1**	**50**	**146**	**0**	**0**	**0**	**235**	**90**	**730**	2,259
8:00 AM	**0**	**0**	**0**	**0**	**0**	**46**	**2**	**154**	**0**	**40**	**146**	**0**	**0**	**0**	**223**	**76**	**687**	2,554
8:15 AM	**0**	**0**	**0**	**0**	**0**	**30**	**1**	**127**	**0**	**43**	**153**	**0**	**0**	**0**	**269**	**121**	**744**	2,778
8:30 AM	**0**	**0**	**0**	**0**	**0**	**31**	**3**	**130**	**1**	**53**	**123**	**0**	**0**	**0**	**232**	**117**	**690**	**2,851**
8:45 AM	0	0	0	0	0	36	2	153	0	36	142	0	0	0	219	76	664	2,785
Count Total	0	0	0	0	0	250	14	1,038	3	332	1,073	0	0	0	1,680	654	5,044	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**151**	**9**	**572**	**2**	**186**	**568**	**0**	**0**	**0**	**959**	**404**	**2,851**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**14**	**0**	**7**	**10**	**0**	**0**	**0**	**26**	**13**	**75**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**1%**	**44%**	**2%**	**0%**	**4%**	**2%**	**-**	**-**	**-**	**3%**	**3%**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	2	4	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	4	1	10	*15*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	0	4	2	6	*12*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**0**	**2**	**6**	**9**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**0**	**6**	**5**	**7**	***18***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**5**	**3**	**9**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**6**	**3**	**14**	***23***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	0	10	9	13	*32*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	39	33	73	*145*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**19**	**17**	**39**	***75***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 WB Ramp				US36 WB Ramp				Interlocken Loop				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	2	0	0	4	0	0	0	3	2	11	0
7:15 AM	0	0	0	0	0	0	2	2	0	0	1	0	0	0	8	2	15	0
7:30 AM	0	0	0	0	0	0	1	3	0	1	1	0	0	0	4	2	12	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**3**	**3**	**0**	**0**	**0**	**7**	**2**	**17**	55
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**1**	**4**	**0**	**0**	**0**	**4**	**3**	**18**	62
8:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**3**	**0**	**1**	**2**	**0**	**0**	**0**	**5**	**4**	**17**	64
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**2**	**1**	**0**	**0**	**0**	**10**	**4**	**23**	**75**
8:45 AM	0	0	0	0	0	1	1	8	0	4	5	0	0	0	8	5	32	90
Count Total	0	0	0	0	0	2	8	29	0	12	21	0	0	0	49	24	145	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**14**	**0**	**7**	**10**	**0**	**0**	**0**	**26**	**13**	**75**	**0**

Two-Hour Count Summaries - Bikes

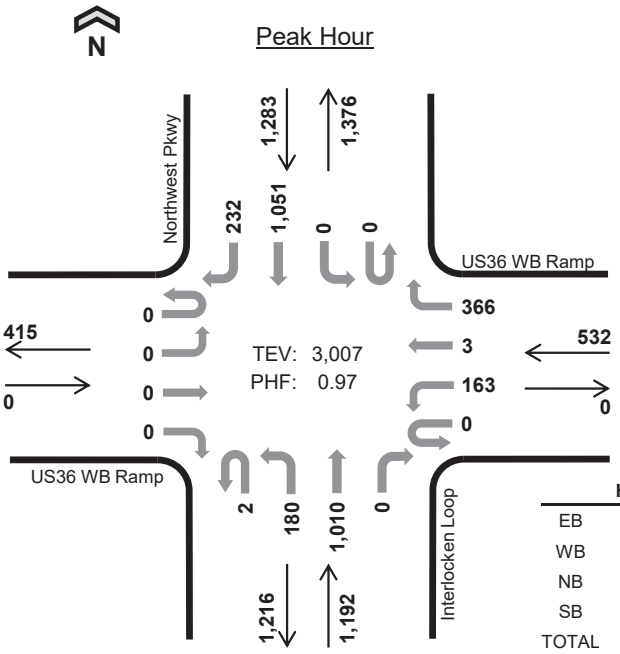
Interval Start	US36 WB Ramp			US36 WB Ramp			Interlocken Loop			Northwest Pkwy			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

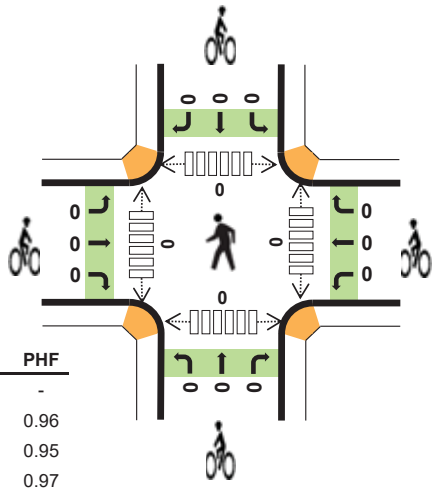
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Interlocken Loop
US36 WB Ramp

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM

Peak Hour





	HV %:	PHF
EB	-	-
WB	0.6%	0.96
NB	1.9%	0.95
SB	1.8%	0.97
TOTAL	1.6%	0.97

Three-and-a-Half-Hour Count Summaries

Interval Start		US36 WB Ramp Eastbound				US36 WB Ramp Westbound				Interlocken Loop Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	0	0	0	0	43	2	80	0	42	272	0	0	0	270	49	758	0
4:30 PM		0	0	0	0	0	44	0	94	0	45	224	0	0	0	247	61	715	0
4:45 PM		0	0	0	0	0	45	1	90	1	40	254	0	0	0	260	66	757	0
5:00 PM		0	0	0	0	0	31	0	102	1	53	260	0	0	0	274	56	777	3,007
Peak Hour	All	0	0	0	0	0	163	3	366	2	180	1,010	0	0	0	1,051	232	3,007	0
	HV	0	0	0	0	0	0	2	1	0	2	21	0	0	0	18	5	49	0
	HV%	-	-	-	-	-	0%	67%	0%	0%	1%	2%	-	-	-	2%	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	0	2	5	6	*13*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	0	6	5	*11*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	1	6	5	*12*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	0	0	6	7	*13*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	0	3	23	23	*49*	0	0	0	0	*0*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	US36 WB Ramp				US36 WB Ramp				Interlocken Loop				Northwest Pkwy				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	0	31	1	69	0	37	169	0	0	0	139	34	480	0
2:45 PM	0	0	0	0	0	31	1	72	0	35	148	0	0	0	143	48	478	0
3:00 PM	0	0	0	0	0	29	1	58	0	32	153	0	0	0	200	43	516	0
3:15 PM	0	0	0	0	0	28	1	72	1	34	163	0	0	0	204	55	558	2,032
3:30 PM	0	0	0	0	0	29	2	74	0	32	212	0	0	0	203	46	598	2,150
3:45 PM	0	0	0	0	0	39	2	85	0	39	202	0	0	0	224	48	639	2,311
4:00 PM	0	0	0	0	0	37	2	66	0	35	251	0	0	0	279	52	722	2,517
4:15 PM	**0**	**0**	**0**	**0**	**0**	**43**	**2**	**80**	**0**	**42**	**272**	**0**	**0**	**0**	**270**	**49**	**758**	2,717
4:30 PM	**0**	**0**	**0**	**0**	**0**	**44**	**0**	**94**	**0**	**45**	**224**	**0**	**0**	**0**	**247**	**61**	**715**	2,834
4:45 PM	**0**	**0**	**0**	**0**	**0**	**45**	**1**	**90**	**1**	**40**	**254**	**0**	**0**	**0**	**260**	**66**	**757**	2,952
5:00 PM	**0**	**0**	**0**	**0**	**0**	**31**	**0**	**102**	**1**	**53**	**260**	**0**	**0**	**0**	**274**	**56**	**777**	**3,007**
5:15 PM	0	0	0	0	0	40	1	96	2	51	245	0	0	0	256	57	748	2,997
5:30 PM	0	0	0	0	0	0	2	81	0	45	230	0	0	0	238	69	665	2,947
5:45 PM	0	0	0	0	0	35	1	76	0	30	195	0	0	0	203	55	595	2,785
Count Total	0	0	0	0	0	462	17	1,115	5	550	2,978	0	0	0	3,140	739	9,006	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**163**	**3**	**366**	**2**	**180**	**1,010**	**0**	**0**	**0**	**1,051**	**232**	**3,007**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**2**	**21**	**0**	**0**	**0**	**18**	**5**	**49**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**0%**	**67%**	**0%**	**0%**	**1%**	**2%**	**-**	**-**	**-**	**2%**	**2%**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	0	2	4	9	*15*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	0	4	5	11	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	0	5	3	7	*15*	0	0	0	0	*0*	0	0	0	0	*0*
3:15 PM	0	10	4	7	*21*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	0	4	4	3	*11*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	0	4	5	9	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	0	3	8	11	*22*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**0**	**2**	**5**	**6**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**0**	**0**	**6**	**5**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**1**	**6**	**5**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**0**	**0**	**6**	**7**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	0	2	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	0	2	2	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	1	3	3	*7*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	0	40	62	90	*192*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**0**	**3**	**23**	**23**	***49***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 WB Ramp Eastbound				US36 WB Ramp Westbound				Interlocken Loop Northbound				Northwest Pkwy Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	0	0	1	1	0	0	0	4	0	0	0	7	2	15	0
2:45 PM	0	0	0	0	0	0	1	3	0	0	5	0	0	0	8	3	20	0
3:00 PM	0	0	0	0	0	1	1	3	0	1	2	0	0	0	7	0	15	0
3:15 PM	0	0	0	0	0	3	1	6	0	0	4	0	0	0	6	1	21	71
3:30 PM	0	0	0	0	0	1	1	2	0	0	4	0	0	0	3	0	11	67
3:45 PM	0	0	0	0	0	0	1	3	0	0	5	0	0	0	7	2	18	65
4:00 PM	0	0	0	0	0	0	1	2	0	1	7	0	0	0	10	1	22	72
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**5**	**0**	**0**	**0**	**6**	**0**	**13**	64
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**4**	**0**	**0**	**0**	**5**	**0**	**11**	64
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**2**	**3**	**12**	58
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**5**	**2**	**13**	**49**
5:15 PM	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1	1	5	41
5:30 PM	0	0	0	0	0	0	2	0	0	0	2	0	0	0	5	0	9	39
5:45 PM	0	0	0	0	0	0	1	0	0	0	3	0	0	0	2	1	7	34
Count Total	0	0	0	0	0	6	13	21	0	4	58	0	0	0	74	16	192	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**2**	**21**	**0**	**0**	**0**	**18**	**5**	**49**	**0**

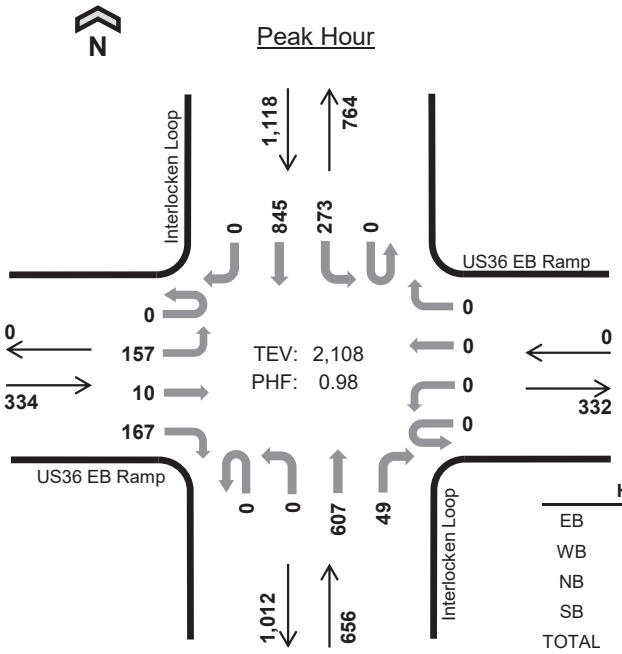
Three-and-a-Half-Hour Count Summaries - Bikes

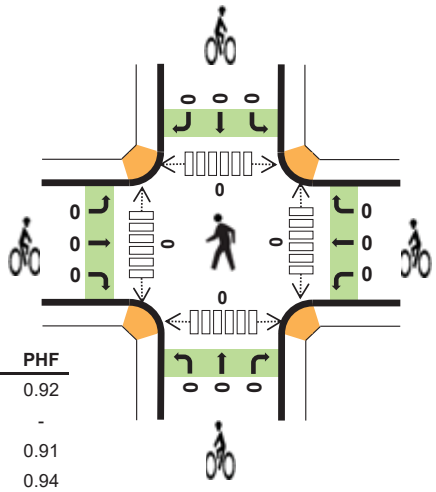
Interval Start	US36 WB Ramp Eastbound			US36 WB Ramp Westbound			Interlocken Loop Northbound			Northwest Pkwy Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Interlocken Loop
US36 EB Ramp

Date: 01/19/2023
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	3.6%	0.92
WB	-	-
NB	2.3%	0.91
SB	2.6%	0.94
TOTAL	2.7%	0.98

Two-Hour Count Summaries

Interval Start	US36 EB Ramp Eastbound				US36 EB Ramp Westbound				Interlocken Loop Northbound				Interlocken Loop Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	25	2	20	0	0	0	0	0	0	88	9	0	60	100	0	304	0
7:15 AM	0	40	1	17	0	0	0	0	0	0	137	6	0	56	115	0	372	0
7:30 AM	0	32	1	27	0	0	0	0	0	0	141	10	1	71	159	0	442	0
7:45 AM	**0**	**36**	**2**	**34**	**0**	**0**	**0**	**0**	**0**	**0**	**167**	**14**	**0**	**74**	**207**	**0**	**534**	1,652
8:00 AM	**0**	**45**	**4**	**42**	**0**	**0**	**0**	**0**	**0**	**0**	**145**	**15**	**0**	**61**	**214**	**0**	**526**	1,874
8:15 AM	**0**	**39**	**3**	**41**	**0**	**0**	**0**	**0**	**0**	**0**	**148**	**11**	**0**	**68**	**230**	**0**	**540**	2,042
8:30 AM	**0**	**37**	**1**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**147**	**9**	**0**	**70**	**194**	**0**	**508**	**2,108**
8:45 AM	0	44	1	44	0	0	0	0	0	0	138	10	0	66	189	0	492	2,066
Count Total	0	298	15	275	0	0	0	0	0	0	1,111	84	1	526	1,408	0	3,718	0
Peak Hour All	**0**	**157**	**10**	**167**	**0**	**0**	**0**	**0**	**0**	**0**	**607**	**49**	**0**	**273**	**845**	**0**	**2,108**	**0**
Peak Hour HV	**0**	**5**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**4**	**0**	**10**	**19**	**0**	**56**	**0**
Peak Hour HV%	**-**	**3%**	**40%**	**2%**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**8%**	**-**	**4%**	**2%**	**-**	**3%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	0	1	2	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	1	0	0	6	*7*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	3	0	1	5	*9*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**2**	**0**	**6**	**7**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:00 AM	**5**	**0**	**3**	**5**	***13***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**2**	**0**	**3**	**6**	***11***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**3**	**0**	**3**	**11**	***17***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
8:45 AM	3	0	9	10	*22*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	23	0	26	52	*101*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**12**	**0**	**15**	**29**	***56***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 EB Ramp				US36 EB Ramp				Interlocken Loop				Interlocken Loop				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	3	1	0	0	0	0	0	0	0	1	0	0	0	2	0	7	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	4	0	7	0
7:30 AM	0	2	1	0	0	0	0	0	0	0	1	0	0	4	1	0	9	0
7:45 AM	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**3**	**4**	**0**	**15**	38
8:00 AM	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**1**	**4**	**0**	**13**	44
8:15 AM	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**4**	**2**	**0**	**11**	48
8:30 AM	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**9**	**0**	**17**	**56**
8:45 AM	0	2	1	0	0	0	0	0	0	0	9	0	0	2	8	0	22	63
Count Total	0	12	8	3	0	0	0	0	0	0	22	4	0	18	34	0	101	0
Peak Hour	**0**	**5**	**4**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**4**	**0**	**10**	**19**	**0**	**56**	**0**

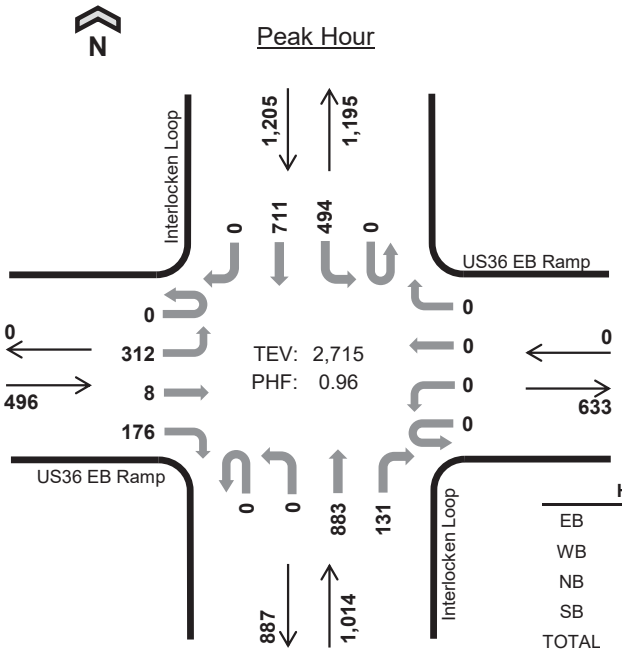
Two-Hour Count Summaries - Bikes

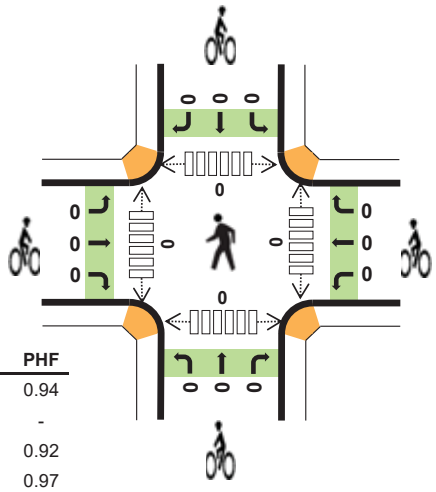
Interval Start	US36 EB Ramp			US36 EB Ramp			Interlocken Loop			Interlocken Loop			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Interlocken Loop
US36 EB Ramp

Date: 01/19/2023
Count Period: 2:30 PM to 6:00 PM
Peak Hour: 4:15 PM to 5:15 PM





	HV %:	PHF
EB	3.8%	0.94
WB	-	-
NB	1.7%	0.92
SB	1.5%	0.97
TOTAL	2.0%	0.96

Three-and-a-Half-Hour Count Summaries

Interval Start		US36 EB Ramp Eastbound				US36 EB Ramp Westbound				Interlocken Loop Northbound				Interlocken Loop Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:15 PM		0	88	4	40	0	0	0	0	0	0	231	32	0	125	185	0	705	0
4:30 PM		0	69	1	45	0	0	0	0	0	0	198	27	0	123	159	0	622	0
4:45 PM		0	74	0	56	0	0	0	0	0	0	223	27	0	126	186	0	692	0
5:00 PM		0	81	3	35	0	0	0	0	0	0	231	45	0	120	181	0	696	2,715
Peak Hour	All	0	312	8	176	0	0	0	0	0	0	883	131	0	494	711	0	2,715	0
	HV	0	8	3	8	0	0	0	0	0	0	14	3	0	13	5	0	54	0
	HV%	-	3%	38%	5%	-	-	-	-	-	-	2%	2%	-	3%	1%	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	4	0	6	5	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	3	0	6	6	*15*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	6	0	3	3	*12*	0	0	0	0	*0*	0	0	0	0	*0*
5:00 PM	6	0	2	4	*12*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	19	0	17	18	*54*	0	0	0	0	*0*	0	0	0	0	*0*

Three-and-a-Half-Hour Count Summaries

Interval Start	US36 EB Ramp				US36 EB Ramp				Interlocken Loop				Interlocken Loop				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	59	1	30	0	0	0	0	0	0	150	22	0	71	100	0	433	0
2:45 PM	0	46	4	37	0	0	0	0	0	0	138	25	0	65	102	0	417	0
3:00 PM	0	49	2	31	0	0	0	0	0	0	133	24	0	97	121	0	457	0
3:15 PM	0	59	0	35	0	0	0	0	0	0	138	23	0	91	145	0	491	1,798
3:30 PM	0	59	1	37	0	0	0	0	0	0	183	23	0	105	131	0	539	1,904
3:45 PM	0	71	2	26	0	0	0	0	0	0	169	20	0	101	163	0	552	2,039
4:00 PM	0	83	0	43	0	0	0	0	0	0	212	27	0	124	177	0	666	2,248
4:15 PM	**0**	**88**	**4**	**40**	**0**	**0**	**0**	**0**	**0**	**0**	**231**	**32**	**0**	**125**	**185**	**0**	**705**	2,462
4:30 PM	**0**	**69**	**1**	**45**	**0**	**0**	**0**	**0**	**0**	**0**	**198**	**27**	**0**	**123**	**159**	**0**	**622**	2,545
4:45 PM	**0**	**74**	**0**	**56**	**0**	**0**	**0**	**0**	**0**	**0**	**223**	**27**	**0**	**126**	**186**	**0**	**692**	2,685
5:00 PM	**0**	**81**	**3**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**231**	**45**	**0**	**120**	**181**	**0**	**696**	**2,715**
5:15 PM	0	69	3	46	0	0	0	0	0	0	220	20	0	96	203	0	657	2,667
5:30 PM	0	63	1	58	0	0	0	0	0	0	214	25	0	96	174	0	631	2,676
5:45 PM	0	58	1	39	0	0	0	0	0	0	163	25	0	93	147	0	526	2,510
Count Total	0	928	23	558	0	0	0	0	0	0	2,603	365	0	1,433	2,174	0	8,084	0
Peak Hour All	**0**	**312**	**8**	**176**	**0**	**0**	**0**	**0**	**0**	**0**	**883**	**131**	**0**	**494**	**711**	**0**	**2,715**	**0**
Peak Hour HV	**0**	**8**	**3**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**3**	**0**	**13**	**5**	**0**	**54**	**0**
Peak Hour HV%	**-**	**3%**	**38%**	**5%**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	**2%**	**-**	**3%**	**1%**	**-**	**2%**	**0**

Note: Three-and-a-half-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
2:30 PM	2	0	3	8	*13*	0	0	0	0	*0*	0	0	0	0	*0*
2:45 PM	5	0	7	8	*20*	0	0	0	0	*0*	0	0	0	0	*0*
3:00 PM	4	0	0	6	*10*	0	0	0	0	*0*	0	1	0	1	*2*
3:15 PM	5	0	2	9	*16*	0	0	0	0	*0*	0	0	0	0	*0*
3:30 PM	5	0	3	5	*13*	0	0	0	0	*0*	0	0	0	0	*0*
3:45 PM	6	0	4	7	*17*	0	0	0	0	*0*	0	0	0	0	*0*
4:00 PM	3	0	7	8	*18*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	**4**	**0**	**6**	**5**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**3**	**0**	**6**	**6**	***15***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**6**	**0**	**3**	**3**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
5:00 PM	**6**	**0**	**2**	**4**	***12***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***
5:15 PM	2	0	1	2	*5*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	2	0	1	4	*7*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	3	0	1	1	*5*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	56	0	46	76	*178*	0	0	0	0	*0*	0	1	0	1	*2*
Peak Hour	**19**	**0**	**17**	**18**	***54***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	***0***

Three-and-a-Half-Hour Count Summaries - Heavy Vehicles

Interval Start	US36 EB Ramp				US36 EB Ramp				Interlocken Loop				Interlocken Loop				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
2:30 PM	0	0	0	2	0	0	0	0	0	0	3	0	0	4	4	0	13	0
2:45 PM	0	2	2	1	0	0	0	0	0	0	6	1	0	6	2	0	20	0
3:00 PM	0	1	1	2	0	0	0	0	0	0	0	0	0	4	2	0	10	0
3:15 PM	0	4	0	1	0	0	0	0	0	0	2	0	0	3	6	0	16	59
3:30 PM	0	2	1	2	0	0	0	0	0	0	3	0	0	2	3	0	13	59
3:45 PM	0	1	2	3	0	0	0	0	0	0	3	1	0	4	3	0	17	56
4:00 PM	0	3	0	0	0	0	0	0	0	0	6	1	0	2	6	0	18	64
4:15 PM	**0**	**0**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**0**	**4**	**1**	**0**	**15**	63
4:30 PM	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**2**	**0**	**4**	**2**	**0**	**15**	65
4:45 PM	**0**	**2**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**3**	**0**	**0**	**12**	60
5:00 PM	**0**	**4**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**2**	**0**	**12**	**54**
5:15 PM	0	0	1	1	0	0	0	0	0	0	1	0	0	1	1	0	5	44
5:30 PM	0	1	1	0	0	0	0	0	0	0	1	0	0	1	3	0	7	36
5:45 PM	0	2	1	0	0	0	0	0	0	0	1	0	0	0	1	0	5	29
Count Total	0	24	12	20	0	0	0	0	0	0	40	6	0	40	36	0	178	0
Peak Hour	**0**	**8**	**3**	**8**	**0**	**0**	**0**	**0**	**0**	**0**	**14**	**3**	**0**	**13**	**5**	**0**	**54**	**0**

Three-and-a-Half-Hour Count Summaries - Bikes

Interval Start	US36 EB Ramp			US36 EB Ramp			Interlocken Loop			Interlocken Loop			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Location: Dillon Rd E/O 96th St
Date: 01/19/2023
Site Code: 1

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	WB	EB	WB	EB	
0:00	4	7	1	0	36
0:15	5	2	0	0	
0:30	5	5	0	0	
0:45	0	6	1	0	
1:00	7	6	0	0	41
1:15	10	4	0	0	
1:30	7	6	0	0	
1:45	0	1	0	0	
2:00	1	2	0	0	22
2:15	4	3	0	0	
2:30	4	1	0	0	
2:45	5	2	0	0	
3:00	5	2	0	0	55
3:15	7	1	0	0	
3:30	9	8	0	0	
3:45	9	14	0	0	
4:00	13	10	0	0	87
4:15	11	7	0	1	
4:30	13	8	0	0	
4:45	8	16	0	0	
5:00	8	26	0	0	241
5:15	11	29	1	0	
5:30	14	50	0	1	
5:45	20	80	1	0	
6:00	31	45	5	0	515
6:15	51	61	3	0	
6:30	49	83	6	0	
6:45	77	104	0	0	
7:00	61	124	2	3	1110
7:15	101	147	4	0	
7:30	144	163	8	2	
7:45	157	186	7	1	
8:00	128	197	1	1	1200
8:15	118	179	4	2	
8:30	111	137	12	6	
8:45	110	177	7	10	
9:00	119	153	4	8	958
9:15	125	118	5	3	
9:30	111	92	5	8	
9:45	95	104	4	4	
10:00	98	81	7	3	759
10:15	97	90	5	0	
10:30	108	70	8	10	
10:45	85	91	3	3	
11:00	110	82	8	2	945
11:15	128	91	6	1	
11:30	132	92	4	8	
11:45	152	123	1	5	
12:00	142	115	4	7	1045
12:15	126	128	5	2	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	WB	EB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	1
5:15	0	0	
5:30	0	1	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	136	123	4	5	1045
12:45	131	110	2	5	
13:00	111	114	4	11	927
13:15	114	108	9	9	
13:30	99	114	5	4	
13:45	110	108	4	3	
14:00	100	114	5	10	945
14:15	103	108	7	7	
14:30	136	97	9	5	
14:45	112	121	6	5	
15:00	172	116	4	4	1215
15:15	120	141	6	6	
15:30	187	124	3	1	
15:45	158	167	1	5	
16:00	237	180	2	3	1545
16:15	217	144	6	10	
16:30	205	150	4	1	
16:45	238	145	3	0	
17:00	244	151	2	1	1324
17:15	178	159	2	1	
17:30	161	144	2	0	
17:45	162	116	0	1	
18:00	139	95	0	0	771
18:15	112	99	1	2	
18:30	102	73	2	1	
18:45	74	66	1	4	
19:00	64	76	0	0	476
19:15	73	59	2	0	
19:30	43	50	0	0	
19:45	44	64	0	1	
20:00	70	51	1	0	386
20:15	42	60	0	0	
20:30	30	49	0	1	
20:45	34	46	1	1	
21:00	33	32	0	1	251
21:15	31	35	0	1	
21:30	23	33	1	1	
21:45	21	38	0	1	
22:00	21	19	2	1	115
22:15	14	10	0	0	
22:30	14	12	1	0	
22:45	10	11	0	0	
23:00	11	7	0	0	68
23:15	6	8	0	1	
23:30	9	9	0	0	
23:45	11	5	1	0	
24-HOUR TOTAL	**7408**	**7190**	**235**	**204**	**15037**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	1
16:15	1	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**1**	**1**	**2**

Location: Dillon Rd W/O 96th St
Date: 01/19/2023
Site Code: 2

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	WB	EB	WB	EB	
0:00	4	14	0	1	48
0:15	4	10	0	0	
0:30	3	5	0	0	
0:45	2	5	0	0	
1:00	2	5	0	0	32
1:15	4	5	0	2	
1:30	5	4	0	0	
1:45	1	4	0	0	
2:00	0	3	0	0	20
2:15	3	4	0	0	
2:30	1	3	0	0	
2:45	5	1	0	0	
3:00	2	3	0	0	38
3:15	5	1	0	0	
3:30	11	7	0	0	
3:45	6	2	1	0	
4:00	3	6	0	0	48
4:15	3	2	0	1	
4:30	11	2	0	0	
4:45	10	9	1	0	
5:00	7	17	0	1	160
5:15	18	15	2	0	
5:30	22	22	0	1	
5:45	32	22	1	0	
6:00	36	13	3	0	397
6:15	50	27	1	0	
6:30	76	31	5	1	
6:45	106	48	0	0	
7:00	97	62	0	3	1184
7:15	140	113	2	2	
7:30	210	130	8	1	
7:45	255	155	4	2	
8:00	214	171	0	4	1240
8:15	116	167	5	2	
8:30	116	132	5	6	
8:45	146	145	4	7	
9:00	144	111	5	2	931
9:15	151	89	6	1	
9:30	122	93	4	6	
9:45	105	88	2	2	
10:00	131	87	5	1	851
10:15	116	100	6	2	
10:30	101	83	9	3	
10:45	100	97	5	5	
11:00	117	112	4	4	1037
11:15	145	124	4	3	
11:30	124	117	4	8	
11:45	141	126	0	4	
12:00	124	118	4	9	1054
12:15	123	139	3	7	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	WB	EB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	1
5:15	0	0	
5:30	0	1	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	125	133	5	2	1054
12:45	129	129	1	3	
13:00	134	116	3	4	1058
13:15	135	117	7	7	
13:30	127	130	4	2	
13:45	134	131	3	4	
14:00	103	156	3	4	1109
14:15	117	134	6	8	
14:30	134	120	6	8	
14:45	155	143	9	3	
15:00	125	203	1	5	1377
15:15	120	212	6	3	
15:30	150	182	4	3	
15:45	157	199	1	6	
16:00	169	242	1	4	1554
16:15	153	231	6	7	
16:30	157	211	0	3	
16:45	185	183	2	0	
17:00	180	212	1	0	1365
17:15	148	199	0	1	
17:30	156	171	1	0	
17:45	143	152	0	1	
18:00	136	136	0	3	963
18:15	135	137	1	3	
18:30	91	101	0	3	
18:45	109	107	0	1	
19:00	74	102	0	0	539
19:15	60	64	0	0	
19:30	48	74	0	0	
19:45	53	64	0	0	
20:00	77	54	1	0	466
20:15	51	59	0	0	
20:30	44	66	0	1	
20:45	44	69	0	0	
21:00	35	38	0	2	287
21:15	38	43	1	0	
21:30	33	30	1	0	
21:45	25	40	0	1	
22:00	21	25	1	0	139
22:15	18	18	0	1	
22:30	13	20	0	0	
22:45	12	10	0	0	
23:00	14	10	0	0	82
23:15	11	14	0	0	
23:30	7	13	0	0	
23:45	9	4	0	0	
24-HOUR TOTAL	**7764**	**7853**	**178**	**184**	**15979**

12:30	0	0	0
12:45	0	0	
13:00	0	0	1
13:15	0	0	
13:30	0	0	
13:45	0	1	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	1
16:15	1	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**1**	**2**	**3**

Location: 88th St S/O Dillon Rd
Date: 01/19/2023
Site Code: 3

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	SB	NB	SB	NB	
0:00	1	8	0	0	27
0:15	3	6	0	0	
0:30	2	2	0	0	
0:45	3	2	0	0	
1:00	0	4	0	0	20
1:15	3	2	0	0	
1:30	2	3	0	0	
1:45	3	3	0	0	
2:00	0	2	0	0	9
2:15	2	2	0	0	
2:30	0	1	0	0	
2:45	1	1	0	0	
3:00	2	0	0	0	14
3:15	4	0	0	0	
3:30	3	3	0	0	
3:45	0	0	2	0	
4:00	2	3	0	0	25
4:15	5	1	0	2	
4:30	3	2	0	0	
4:45	2	4	1	0	
5:00	4	10	0	1	102
5:15	11	13	1	0	
5:30	17	10	2	2	
5:45	20	11	0	0	
6:00	32	10	2	1	309
6:15	39	17	0	1	
6:30	54	19	3	1	
6:45	103	27	0	0	
7:00	70	38	0	0	935
7:15	104	76	0	0	
7:30	158	102	3	0	
7:45	226	147	7	4	
8:00	209	211	1	4	1385
8:15	194	131	5	1	
8:30	193	147	6	8	
8:45	136	131	5	3	
9:00	104	69	3	2	705
9:15	132	68	4	2	
9:30	80	72	4	1	
9:45	72	84	6	2	
10:00	83	74	2	0	615
10:15	78	68	1	3	
10:30	83	66	2	3	
10:45	78	69	4	1	
11:00	78	85	2	4	733
11:15	84	75	4	2	
11:30	74	142	1	4	
11:45	81	92	2	3	
12:00	93	83	3	3	733
12:15	67	86	1	5	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	SB	NB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	0
5:15	0	0	
5:30	0	0	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	90	97	1	2	733
12:45	128	73	0	1	
13:00	94	72	1	0	712
13:15	90	67	3	1	
13:30	108	76	1	1	
13:45	112	83	1	2	
14:00	68	123	0	1	877
14:15	86	101	4	2	
14:30	132	92	6	5	
14:45	145	104	7	1	
15:00	121	234	5	4	1306
15:15	100	229	6	4	
15:30	111	142	3	2	
15:45	159	182	1	3	
16:00	132	283	0	4	1252
16:15	104	219	3	3	
16:30	121	168	2	2	
16:45	138	73	0	0	
17:00	110	140	2	0	948
17:15	112	125	0	1	
17:30	124	115	0	0	
17:45	90	129	0	0	
18:00	85	99	0	2	647
18:15	114	78	0	1	
18:30	68	64	0	0	
18:45	78	57	1	0	
19:00	59	49	1	1	347
19:15	43	34	0	0	
19:30	36	45	0	0	
19:45	44	35	0	0	
20:00	53	31	0	0	305
20:15	33	35	0	0	
20:30	35	48	0	0	
20:45	29	41	0	0	
21:00	23	26	0	0	175
21:15	22	33	0	0	
21:30	17	20	1	0	
21:45	16	16	0	1	
22:00	17	12	0	0	92
22:15	8	15	0	1	
22:30	11	16	0	0	
22:45	7	5	0	0	
23:00	6	4	0	0	49
23:15	8	6	0	0	
23:30	7	11	0	0	
23:45	5	2	0	0	
24-HOUR TOTAL	**6097**	**5991**	**126**	**108**	**12322**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	0
16:15	0	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	1
20:15	0	0	
20:30	0	0	
20:45	1	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**1**	**0**	**1**

Location: 96th St S/O Dillon Rd
Date: 01/19/2023
Site Code: 4

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	SB	NB	SB	NB	
0:00	11	11	0	0	56
0:15	9	5	0	0	
0:30	7	7	0	0	
0:45	3	2	1	0	
1:00	7	4	0	0	38
1:15	8	3	0	0	
1:30	6	5	0	0	
1:45	5	0	0	0	
2:00	5	3	0	0	34
2:15	4	0	0	0	
2:30	9	4	0	1	
2:45	6	2	0	0	
3:00	5	4	1	0	65
3:15	6	4	0	1	
3:30	6	5	0	1	
3:45	18	13	0	1	
4:00	10	8	0	0	95
4:15	13	8	0	0	
4:30	13	12	0	0	
4:45	11	19	1	0	
5:00	20	20	0	0	272
5:15	11	34	0	1	
5:30	25	38	0	2	
5:45	33	86	0	2	
6:00	45	52	2	0	644
6:15	67	68	2	2	
6:30	61	118	4	1	
6:45	88	133	0	1	
7:00	109	155	2	1	1354
7:15	116	191	3	1	
7:30	134	192	3	3	
7:45	173	266	4	1	
8:00	173	240	3	4	1638
8:15	214	219	3	6	
8:30	172	183	9	4	
8:45	158	239	3	8	
9:00	112	166	3	11	1005
9:15	105	154	1	6	
9:30	97	116	1	7	
9:45	108	109	3	6	
10:00	101	105	2	5	850
10:15	96	91	2	4	
10:30	124	78	4	10	
10:45	105	115	4	4	
11:00	107	95	6	3	919
11:15	114	112	5	1	
11:30	120	101	1	5	
11:45	129	114	2	4	
12:00	140	122	4	7	1049
12:15	122	128	5	3	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	SB	NB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	0
5:15	0	0	
5:30	0	0	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	0
7:15	0	0	
7:30	0	0	
7:45	0	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	129	113	6	4	1049
12:45	133	125	4	4	
13:00	113	112	5	8	971
13:15	122	113	5	9	
13:30	101	115	7	6	
13:45	116	133	3	3	
14:00	143	98	8	2	1099
14:15	121	119	5	3	
14:30	142	121	7	4	
14:45	144	172	5	5	
15:00	199	112	4	2	1451
15:15	218	122	12	7	
15:30	218	174	3	3	
15:45	200	170	5	2	
16:00	278	159	5	4	1773
16:15	268	168	5	3	
16:30	259	157	6	0	
16:45	259	198	4	0	
17:00	257	175	2	1	1685
17:15	251	195	3	1	
17:30	212	196	2	0	
17:45	221	166	2	1	
18:00	171	121	1	3	989
18:15	130	130	2	2	
18:30	122	92	4	2	
18:45	98	107	1	3	
19:00	113	93	1	0	677
19:15	82	87	2	0	
19:30	86	75	0	0	
19:45	68	69	0	1	
20:00	77	60	0	0	491
20:15	63	75	0	0	
20:30	49	62	0	0	
20:45	52	51	2	0	
21:00	50	40	0	1	351
21:15	53	37	0	1	
21:30	40	64	0	2	
21:45	32	29	1	1	
22:00	27	38	1	2	182
22:15	20	27	1	0	
22:30	21	12	1	0	
22:45	15	17	0	0	
23:00	12	19	0	1	122
23:15	8	22	0	0	
23:30	21	13	0	1	
23:45	12	13	0	0	
24-HOUR TOTAL	**8867**	**8525**	**209**	**209**	**17810**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	0
16:15	0	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	0
19:15	0	0	
19:30	0	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**0**	**0**	**0**

Location: Campus Dr E/O 88th St
Date: 01/19/2023
Site Code: 6

Time	Thursday, January 19, 2023				
	Light Vehicles		Heavy Vehicles		Total
	Volume		Volume		
	WB	EB	WB	EB	
0:00	0	6	0	0	18
0:15	0	6	0	0	
0:30	0	4	0	0	
0:45	0	2	0	0	
1:00	0	3	0	0	9
1:15	0	2	0	0	
1:30	0	1	0	0	
1:45	0	3	0	0	
2:00	0	2	0	0	6
2:15	0	2	0	0	
2:30	0	1	0	0	
2:45	0	1	0	0	
3:00	0	0	0	0	3
3:15	0	2	0	0	
3:30	0	1	0	0	
3:45	0	0	0	0	
4:00	0	4	0	1	9
4:15	0	1	0	1	
4:30	0	2	0	0	
4:45	0	0	0	0	
5:00	0	1	0	1	9
5:15	0	4	0	0	
5:30	0	1	0	1	
5:45	0	1	0	0	
6:00	0	2	0	1	19
6:15	0	4	0	1	
6:30	0	1	0	1	
6:45	0	9	0	0	
7:00	1	12	1	0	407
7:15	9	55	1	0	
7:30	11	109	1	0	
7:45	58	137	6	6	
8:00	108	236	7	3	1309
8:15	103	272	1	6	
8:30	139	256	10	5	
8:45	93	66	3	1	
9:00	12	40	0	1	244
9:15	19	98	0	1	
9:30	31	17	0	2	
9:45	4	14	3	2	
10:00	11	17	1	0	147
10:15	10	29	4	2	
10:30	31	9	0	1	
10:45	6	24	0	2	
11:00	24	11	3	1	274
11:15	13	18	1	1	
11:30	118	15	1	0	
11:45	19	47	0	2	
12:00	27	50	1	1	305
12:15	39	17	1	0	

Time	Thursday, January 19, 2023		
	Bikes on Road		Total
	Volume		
	WB	EB	
0:00	0	0	0
0:15	0	0	
0:30	0	0	
0:45	0	0	
1:00	0	0	0
1:15	0	0	
1:30	0	0	
1:45	0	0	
2:00	0	0	0
2:15	0	0	
2:30	0	0	
2:45	0	0	
3:00	0	0	0
3:15	0	0	
3:30	0	0	
3:45	0	0	
4:00	0	0	0
4:15	0	0	
4:30	0	0	
4:45	0	0	
5:00	0	0	0
5:15	0	0	
5:30	0	0	
5:45	0	0	
6:00	0	0	0
6:15	0	0	
6:30	0	0	
6:45	0	0	
7:00	0	0	1
7:15	0	0	
7:30	0	0	
7:45	1	0	
8:00	0	0	0
8:15	0	0	
8:30	0	0	
8:45	0	0	
9:00	0	0	0
9:15	0	0	
9:30	0	0	
9:45	0	0	
10:00	0	0	0
10:15	0	0	
10:30	0	0	
10:45	0	0	
11:00	0	0	0
11:15	0	0	
11:30	0	0	
11:45	0	0	
12:00	0	0	0
12:15	0	0	

12:30	60	19	0	1	303
12:45	12	77	0	0	
13:00	16	43	0	0	159
13:15	7	10	1	1	
13:30	13	16	1	0	
13:45	11	40	0	0	
14:00	53	17	0	0	316
14:15	15	27	1	1	
14:30	22	67	0	3	
14:45	28	76	1	5	
15:00	230	47	8	3	860
15:15	111	62	3	4	
15:30	70	71	0	4	
15:45	128	112	6	1	
16:00	223	73	7	0	667
16:15	130	36	0	0	
16:30	82	31	0	1	
16:45	57	27	0	0	
17:00	27	27	0	0	330
17:15	69	23	1	1	
17:30	83	43	0	0	
17:45	36	20	0	0	
18:00	20	25	1	0	147
18:15	21	43	0	0	
18:30	9	18	0	0	
18:45	7	3	0	0	
19:00	7	3	1	1	42
19:15	2	1	0	0	
19:30	5	3	0	0	
19:45	9	10	0	0	
20:00	21	7	0	0	101
20:15	11	5	0	0	
20:30	35	3	0	0	
20:45	18	1	0	0	
21:00	18	0	0	0	44
21:15	10	1	0	0	
21:30	6	0	0	0	
21:45	9	0	0	0	
22:00	3	3	0	0	7
22:15	1	0	0	0	
22:30	0	0	0	0	
22:45	0	0	0	0	
23:00	0	0	0	0	4
23:15	1	0	0	0	
23:30	3	0	0	0	
23:45	0	0	0	0	
24-HOUR TOTAL	**2585**	**2705**	**76**	**70**	**5436**

12:30	0	0	0
12:45	0	0	
13:00	0	0	0
13:15	0	0	
13:30	0	0	
13:45	0	0	
14:00	0	0	0
14:15	0	0	
14:30	0	0	
14:45	0	0	
15:00	0	0	0
15:15	0	0	
15:30	0	0	
15:45	0	0	
16:00	0	0	0
16:15	0	0	
16:30	0	0	
16:45	0	0	
17:00	0	0	0
17:15	0	0	
17:30	0	0	
17:45	0	0	
18:00	0	0	0
18:15	0	0	
18:30	0	0	
18:45	0	0	
19:00	0	0	1
19:15	0	0	
19:30	1	0	
19:45	0	0	
20:00	0	0	0
20:15	0	0	
20:30	0	0	
20:45	0	0	
21:00	0	0	0
21:15	0	0	
21:30	0	0	
21:45	0	0	
22:00	0	0	0
22:15	0	0	
22:30	0	0	
22:45	0	0	
23:00	0	0	0
23:15	0	0	
23:30	0	0	
23:45	0	0	
24-HOUR TOTAL	**2**	**0**	**2**

Appendix D – Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, "Levels of Service" (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

Level of Service Rating	Delay in seconds per vehicle *(a)*		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.

(a) Delay ranges based on Highway Capacity Manual (6th Edition, 2016) criteria.

Appendix E –

Non-SOV References

Appendix: Trip Generation and Mode Share Peer Data

Commuter Travel Survey / Trip Rate Examples:

1. City of Louisville Transportation Master Plan (TMP), October 1, 2019
   https://www.louisvilleco.gov/home/showdocument?id=24728

   The TMP documented how commuters in Louisville and nearby communities travel to work. This data is based on US Census American Community Survey (https://www.census.gov/programs-surveys/acs). This data is commonly used by agencies across the Denver region as a baseline for TDM programs. The current data is shown in Figure 3.12 in the TMP on page 3-18 for year 2012 to 2016 estimates. Based on this data, approximately 28% of people who work in Louisville travel to work by non-SOV modes.

2. Trip Generation for Continuing Care Retirement Communities (CCRC); a Comparison of ITE Rates to Erickson Living Communities, 2007

   The Traffic Group, Inc. conducted trip generation studies in 2007 at four continuing care communities owned by Erickson Living. The trip rates were compared to ITE land use codes and found to generate at a consistent trip rate with the land use code #255 "Continuing Care Retirement Community" trip rate. The report also noted that shuttles to public transit and staggered work hours could further reduce the vehicular traffic generated by the site by up to 10-15%.

3. Commuting Solutions, 2016 Northwest Metro Region Mobility Report, July 2018
   https://commutingsolutions.org/wp-content/uploads/2016-Northwest-Region-Mobility-Report.pdf

   The mode share data bulleted on page 14 is based on employee commute survey data for employees who reside in Boulder, Louisville, Superior, Broomfield, and Westminster. The 2011-2015 five-year estimates indicate that approximately 22% of people who work in the US 36 corridor travel to work by non-SOV modes. Note that these statistics reflect data collected prior to the opening of the US 36 Express Lanes and the Flatiron Flyer BRT. Additional mode share on US 36 data for Louisville is provided in Table 2 on page 16, which indicates that approximately 26% of residents travel by non-SOV modes.

4. Environmental Performance Report 2014, National Renewable Energy Lab (NREL)
   https://www.nrel.gov/docs/fy15osti/64208.pdf

   NREL collected a lab-wide commuter survey and summarized the results in Table 8 on page 79 of the report. The 2014 mode survey found that approximately 29% of employees used non-SOV modes to travel to/from work (the telework employees, which make up 9%, were removed from the calculation).

5. Denver Tech Center (DTC) Trip Generation Summary, Fox Tuttle Transportation Group, January 2020 (attachment)

   Driveway count data collected at a mix of apartment, hotel, and office buildings in the South Denver Metro area were compared to the ITE trip generation estimates. As shown in Table 1 on page 2, in general this area generates trips at a lower rate than the ITE trip generation estimates. It should be noted that is unknown what level of TDM strategies (if any) are currently implemented at the buildings where counts were collected.

Trip Generation Analysis Studies:

The studies listed below indicate that baseline ITE trip rates generally overestimate trip generation estimates for mixed-use developments or developments near transit and/or with TDM programs.

1. National Cooperative Highway Research Program (NCHRP) 08-66: Trip-Generation Rates for Transportation Impact Analyses of Infill Developments

- https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=1616

2. National Cooperative Highway Research Program (NCHRP) NCHRP 08-51: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments

- https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=927

3. CDOT Traffic Analysis And Forecasting Guidelines "Locally Calibrated Trip Generation Rates or ITE trip rates"

- https://www.codot.gov/library/traffic/traffic-manuals-and-guidelines/traffic_analysis_forecasting_guidelines/traffic_analysis_forecasting_guidelines

4. Aspen Trip Generation and Methods

- http://www.apacolorado.org/article/nextgen-trip-reduction-mitigating-development-related-trips
- https://www.cityofaspen.com/DocumentCenter/View/2208/TIA-Guidelines

5. Mixed-Use Trip Generation Model, EPA Smart Growth, Fehr and Peers

- https://www.epa.gov/smartgrowth/mixed-use-trip-generation-model
- https://www.epa.gov/sites/production/files/2014-07/mxd_trip_generation_model.xlsx

6. Caltrans Project P359, Trip Generation Rates for Transportation Impact Analyses of Smart Growth Land Use Projects, Texas A&M Transportation Institute The Texas A&M University System, April 2017

- https://static.tti.tamu.edu/tti.tamu.edu/documents/TTI-2017-3.pdf

MEMORANDUM

To: Redtail Ridge Project Team

From: Bill Fox, PE and Emily Kotz, PE

Date: January 10, 2020

Subject: Denver Technology Center (DTC) Trip Generation Summary

Fox Tuttle Transportation Group collected trip generation data in September 2019 at a mix of office, residential, and hotel sites in the South Denver Metro Area. The sites were located within walking distance of the Belleview Station, Arapahoe at Village Center, or Lincoln Station. AM and PM peak period driveway counts were collected at apartments, hotels, and office buildings. This memorandum summarizes the data collected and was prepared for use in the Redtail Ridge project.

Locations where driveway count data was collected are listed below:

- Belleview Station
  - Extended Stay Hotel (158 rooms)
  - One Belleview Office Building (318,000 square feet) –*first floor retail*
  - Camden Belleview Station Apartments (270 dwelling units)
  - Cielo Apartments (201 dwelling units)
- Arapahoe at Village Center
  - Residence Inn (128 rooms)
  - 6312, 6363, 6399, 6501, 6340, 6360, 6380, and 6400 Fiddlers Green Offices (approximately 2,287,000 square feet of office)
- Lincoln Station
  - Camden Lincoln Station Apartments (267 dwelling units)

The actual observed rate was compared to the trip rates contained in the *Institute of Transportation Engineers (ITE) Trip Generation Manual* for land use #221 "Multifamily Housing (Mid-Rise)", #710 "General Office Building" and #312 "Business Hotel". Note that per the recommendations of the *ITE Handbook, 3rd Edition*, the office rate was calculated using the fitted curve for each building (R^2°value greater than 0.75) and the residential and hotel uses were calculated using the average rate (R^2°value less than 0.75).

A summary of the driveway counts and ITE trip generation estimates are provided in Table 1. It should be noted that it is unknown what level of Travel Demand Management (TDM) strategies (if any) are implemented at the buildings where driveway counts were collected.

Table 1 – Comparison of Driveway Counts and. ITE Trip Generation Estimates

Location (Land Use)	Size	AM Peak Hour Trips			PM Peak Hour Trips		
		Total (Counts)	Total (ITE)	% Diff.	Total (Counts)	Total (ITE)	% Diff.
Hotel	286 rooms	73	112	-35%	80	92	-13%
Multifamily Apartments	537 DU	182	266	-32%	247	324	-24%
Offices	2,605 KSF	2,650	2,676	-1%	2,443	2,808	-13%

Results of the trip generation comparison in Table 1 indicates that in general this area generates trips at a lower rate than the ITE trip generation estimates. The ITE rates are based primarily on studies that were performed in suburban centers where there is a lack of transit and alternative mode options. Therefore, it was expected that the driveway counts collected near the RTD stations would in general be less than the ITE trip rates, since those areas have access to transit and include a mix of uses within a high-density development.

Appendix F – Intersection Capacity Worksheets (Synchro) Existing

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	48	16	52	355	44	148	124	883	456	181	657	72
v/c Ratio	0.23	0.16	0.03	0.66	0.21	0.48	0.47	0.45	0.42	0.57	0.22	0.07
Control Delay	56.3	56.8	0.0	53.3	48.3	12.2	58.4	18.3	3.1	58.8	14.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	56.8	0.0	53.3	48.3	12.2	58.4	18.3	3.1	58.8	14.2	0.1
Queue Length 50th (ft)	18	12	0	131	33	0	48	186	0	70	79	0
Queue Length 95th (ft)	26	27	0	164	60	46	68	320	34	84	142	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	274	188	1579	864	507	532	357	1984	1074	368	2930	987
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.09	0.03	0.41	0.09	0.28	0.35	0.45	0.42	0.49	0.22	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	11	38	295	38	124	98	777	374	132	631	43
Future Volume (veh/h)	30	11	38	295	38	124	98	777	374	132	631	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	16	0	355	44	0	124	883	0	181	657	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	1	1	1	3	3	3	2	2	2	2	2	2
Cap, veh/h	203	84		427	205		198	2025		239	2971	
Arrive On Green	0.06	0.04	0.00	0.12	0.11	0.00	0.06	0.57	0.00	0.07	0.58	0.00
Sat Flow, veh/h	3483	1885	1598	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	48	16	0	355	44	0	124	883	0	181	657	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.6	1.0	0.0	12.1	2.6	0.0	4.2	17.1	0.0	6.2	7.4	0.0
Cycle Q Clear(g_c), s	1.6	1.0	0.0	12.1	2.6	0.0	4.2	17.1	0.0	6.2	7.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	84		427	205		198	2025		239	2971	
V/C Ratio(X)	0.24	0.19		0.83	0.21		0.63	0.44		0.76	0.22	
Avail Cap(c_a), veh/h	276	189		871	510		360	2025		360	2971	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	55.3	0.0	51.3	48.6	0.0	55.3	14.8	0.0	54.8	12.0	0.0
Incr Delay (d2), s/veh	0.4	1.1	0.0	3.2	0.5	0.0	2.4	0.7	0.0	3.7	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.5	0.0	5.3	1.2	0.0	1.9	6.8	0.0	2.8	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	56.3	0.0	54.5	49.1	0.0	57.7	15.4	0.0	58.6	12.2	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		64			399			1007			838	
Approach Delay, s/veh		54.9			53.9			20.7			22.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	74.4	20.5	11.3	12.4	75.8	12.5	19.3
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	8.2	19.1	14.1	3.0	6.2	9.4	3.6	4.6
Green Ext Time (p_c), s	0.2	11.0	0.8	0.0	0.1	9.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	280	470	529	406	394	470
v/c Ratio	0.34	0.40	0.69	0.17	0.72	0.30
Control Delay	27.7	2.2	15.0	8.1	56.3	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	2.2	15.0	8.1	56.3	0.5
Queue Length 50th (ft)	127	0	136	44	148	0
Queue Length 95th (ft)	286	35	305	88	142	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	822	1180	839	2406	549	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.40	0.63	0.17	0.72	0.30

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	241	418	423	292	244	409
Future Volume (vph)	241	418	423	292	244	409
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1752	3505	3400	1568
Flt Permitted	1.00	1.00	0.46	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	846	3505	3400	1568
Peak-hour factor, PHF	0.86	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	280	470	529	406	394	470
RTOR Reduction (vph)	0	200	0	0	0	0
Lane Group Flow (vph)	280	270	529	406	394	470
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	49.5	68.9	78.4	78.4	19.4	120.0
Effective Green, g (s)	49.5	68.9	78.4	78.4	19.4	120.0
Actuated g/C Ratio	0.41	0.57	0.65	0.65	0.16	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	761	900	733	2289	549	1568
v/s Ratio Prot	0.15	0.05	c0.14	0.12	c0.12	
v/s Ratio Perm		0.12	c0.33			c0.30
v/c Ratio	0.37	0.30	0.72	0.18	0.72	0.30
Uniform Delay, d1	24.4	13.1	11.5	8.2	47.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	3.0	0.2	3.7	0.5
Delay (s)	25.8	13.2	14.5	8.3	51.4	0.5
Level of Service	C	B	B	A	D	A
Approach Delay (s)	17.9			11.8	23.7	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	263	339	149	196	445	84	223	502	397	80	560	365
v/c Ratio	0.56	0.29	0.24	0.40	0.43	0.15	0.64	0.44	0.25	0.23	0.61	0.54
Control Delay	22.8	30.0	5.8	20.1	34.2	2.9	30.9	33.1	0.4	22.6	41.3	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	30.0	5.8	20.1	34.2	2.9	30.9	33.1	0.4	22.6	41.3	6.9
Queue Length 50th (ft)	115	97	0	82	139	0	105	155	0	34	193	0
Queue Length 95th (ft)	174	133	35	118	146	10	113	227	0	65	264	19
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	531	1167	622	602	1044	549	370	1153	1583	465	917	681
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.29	0.24	0.33	0.43	0.15	0.60	0.44	0.25	0.17	0.61	0.54

Intersection Summary

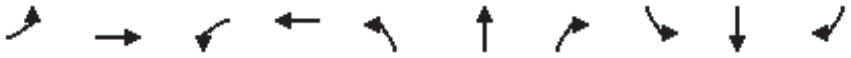
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	281	122	163	307	68	138	472	361	67	498	270
Future Volume (veh/h)	247	281	122	163	307	68	138	472	361	67	498	270
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	263	339	149	196	445	84	223	502	0	80	560	365
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.74
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	463	1196	533	468	1084	484	333	1153		342	947	422
Arrive On Green	0.12	0.33	0.33	0.09	0.31	0.31	0.11	0.32	0.00	0.05	0.26	0.26
Sat Flow, veh/h	1795	3582	1598	1753	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	263	339	149	196	445	84	223	502	0	80	560	365
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1753	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	10.8	7.6	7.5	8.2	11.0	4.3	9.6	12.2	0.0	3.5	14.9	23.9
Cycle Q Clear(g_c), s	10.8	7.6	7.5	8.2	11.0	4.3	9.6	12.2	0.0	3.5	14.9	23.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	463	1196	533	468	1084	484	333	1153		342	947	422
V/C Ratio(X)	0.57	0.28	0.28	0.42	0.41	0.17	0.67	0.44		0.23	0.59	0.86
Avail Cap(c_a), veh/h	578	1196	533	621	1084	484	387	1153		504	947	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	26.9	26.8	22.0	29.9	27.6	25.5	29.1	0.0	27.4	35.2	38.4
Incr Delay (d2), s/veh	0.4	0.6	1.3	0.2	1.2	0.8	2.4	1.2	0.0	0.1	2.7	20.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	3.3	3.0	3.3	4.7	1.7	4.1	5.2	0.0	1.5	6.7	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	27.5	28.1	22.2	31.1	28.4	27.8	30.3	0.0	27.5	37.9	58.8
LnGrp LOS	C	C	C	C	C	C	C	C		C	D	E
Approach Vol, veh/h		751			725			725			1005	
Approach Delay, s/veh		25.8			28.4			29.6			44.6	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	42.6	10.1	41.6	18.0	40.0	16.7	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	10.2	9.6	5.5	14.2	12.8	13.0	11.6	25.9
Green Ext Time (p_c), s	0.2	2.6	0.0	2.7	0.2	3.1	0.1	1.5

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	276	233	406	112	307	512	522	188	428
v/c Ratio	0.31	0.82	0.69	0.69	0.23	0.60	0.53	0.63	0.31	0.53
Control Delay	30.0	63.8	39.5	22.3	21.3	42.2	4.5	25.0	32.9	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	63.8	39.5	22.3	21.3	42.2	4.5	25.0	32.9	6.4
Queue Length 50th (ft)	28	167	101	84	37	166	0	96	85	0
Queue Length 95th (ft)	90	201	#306	0	110	305	8	197	186	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	347	336	337	588	589	511	959	842	610	806
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.82	0.69	0.69	0.19	0.60	0.53	0.62	0.31	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	134	22	205	17	210	95	230	384	402	139	308
Future Volume (vph)	64	134	22	205	17	210	95	230	384	402	139	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1786	1853		1703	1520		1770	1863	1565	3428	1863	1583
Flt Permitted	0.26	1.00		0.23	1.00		0.64	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)	494	1853		411	1520		1191	1863	1565	1114	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.85	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	72	248	28	233	44	362	112	307	512	522	188	428
RTOR Reduction (vph)	0	2	0	0	188	0	0	0	307	0	0	293
Lane Group Flow (vph)	72	274	0	233	218	0	112	307	205	522	188	135
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	27.7	20.5		40.8	28.6		38.6	29.6	44.9	49.3	35.3	35.3
Effective Green, g (s)	27.7	20.5		40.8	28.6		38.6	29.6	44.9	49.3	35.3	35.3
Actuated g/C Ratio	0.25	0.18		0.36	0.26		0.34	0.26	0.40	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	205	338		325	387		456	491	626	793	586	498
v/s Ratio Prot	0.02	c0.15		c0.10	0.14		0.02	0.16	0.04	c0.09	0.10	
v/s Ratio Perm	0.06			0.16			0.06		0.09	c0.20		0.09
v/c Ratio	0.35	0.81		0.72	0.56		0.25	0.63	0.33	0.66	0.32	0.27
Uniform Delay, d1	33.6	43.9		27.7	36.3		25.7	36.4	23.2	22.3	29.3	28.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	13.3		7.3	1.9		0.2	5.9	0.3	2.0	1.4	1.3
Delay (s)	34.7	57.2		35.0	38.2		25.9	42.3	23.5	24.3	30.7	30.1
Level of Service	C	E		D	D		C	D	C	C	C	C
Approach Delay (s)		52.6			37.0			30.0			27.5	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	55	110	1288	48	151	37	1182	408	24	56	767	127
v/c Ratio	0.28	0.54	0.81	0.15	0.45	0.02	0.91	0.20	0.02	0.25	0.89	0.08
Control Delay	47.9	55.4	4.7	41.6	46.7	0.0	37.0	4.2	0.0	47.3	51.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	55.4	4.7	41.6	46.7	0.0	37.0	4.2	0.0	47.3	51.2	0.1
Queue Length 50th (ft)	17	36	0	14	48	0	231	17	0	17	251	0
Queue Length 95th (ft)	36	58	0	30	71	0	196	29	m0	26	247	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	358	369	1568	1298	2076	1568	225	858	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.31	0.81	0.13	0.41	0.02	0.91	0.20	0.02	0.25	0.89	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	91	644	42	124	30	733	343	16	35	560	114
Future Volume (vph)	48	91	644	42	124	30	733	343	16	35	560	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	5.0	6.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3400	3505	1568	3400	3505	1568	3400	3505	1568
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3400	3505	1568	3400	3505	1568	3400	3505	1568
Peak-hour factor, PHF	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Adj. Flow (vph)	55	110	1288	48	151	37	1182	408	24	56	767	127
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	55	110	1288	48	151	37	1182	408	24	56	767	127
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Split	NA	Free	Split	NA	Free	Prot	NA	Free	Prot	NA	Free
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	5.8	5.8	100.0	9.6	9.6	100.0	38.2	58.2	100.0	5.4	24.4	100.0
Effective Green, g (s)	5.8	5.8	100.0	9.6	9.6	100.0	38.2	58.2	100.0	5.4	24.4	100.0
Actuated g/C Ratio	0.06	0.06	1.00	0.10	0.10	1.00	0.38	0.58	1.00	0.05	0.24	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		6.0	6.0		5.0	6.0	
Vehicle Extension (s)	0.2	0.2		3.0	3.0		2.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	199	205	1583	326	336	1568	1298	2039	1568	183	855	1568
v/s Ratio Prot	0.02	0.03		0.01	0.04		c0.35	0.12		0.02	0.22	
v/s Ratio Perm			c0.81			0.02			0.02			0.08
v/c Ratio	0.28	0.54	0.81	0.15	0.45	0.02	0.91	0.20	0.02	0.31	0.90	0.08
Uniform Delay, d1	45.1	45.8	0.0	41.4	42.7	0.0	29.3	9.9	0.0	45.5	36.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.38	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.4	4.7	0.2	1.0	0.0	9.0	0.2	0.0	1.0	14.1	0.1
Delay (s)	45.4	47.1	4.7	41.7	43.7	0.0	33.9	3.9	0.0	46.4	50.7	0.1
Level of Service	D	D	A	D	D	A	C	A	A	D	D	A
Approach Delay (s)		9.5			36.4			25.8			43.7	
Approach LOS		A			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	8	196	4	76	1240	192	68	1227	4
v/c Ratio	0.02	0.01	0.54	0.02	0.23	0.53	0.17	0.33	0.47	0.00
Control Delay	44.0	0.0	48.3	41.0	1.6	9.4	1.5	50.1	3.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	0.0	48.3	41.0	1.6	9.4	1.5	50.1	3.6	0.0
Queue Length 50th (ft)	1	0	60	2	0	212	10	22	77	0
Queue Length 95th (ft)	3	0	#107	4	0	283	25	m27	m127	m0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	277	1599	366	198	333	2329	1106	215	2618	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.01	0.54	0.02	0.23	0.53	0.17	0.32	0.47	0.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	0	2	184	1	48	0	1042	182	54	1190	2
Future Volume (veh/h)	2	0	2	184	1	48	0	1042	182	54	1190	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	4	0	0	196	4	76	0	1240	192	68	1227	0
Peak Hour Factor	0.50	0.25	0.25	0.94	0.25	0.63	0.25	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	1	1	1	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	10		240	130	110	3	2366	1055	115	2626	
Arrive On Green	0.01	0.00	0.00	0.07	0.07	0.07	0.00	0.67	0.67	0.03	0.74	0.00
Sat Flow, veh/h	3483	1885	1598	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	4	0	0	196	4	76	0	1240	192	68	1227	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.1	0.0	0.0	5.6	0.2	4.7	0.0	17.8	4.6	2.0	13.6	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	5.6	0.2	4.7	0.0	17.8	4.6	2.0	13.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	18	10		240	130	110	3	2366	1055	115	2626	
V/C Ratio(X)	0.22	0.00		0.82	0.03	0.69	0.00	0.52	0.18	0.59	0.47	
Avail Cap(c_a), veh/h	279	151		240	130	110	549	2366	1055	206	2626	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.5	0.0	0.0	45.9	43.3	45.4	0.0	8.3	6.2	47.6	5.0	0.0
Incr Delay (d2), s/veh	7.0	0.0	0.0	19.7	0.1	17.6	0.0	0.8	0.4	1.8	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	3.0	0.1	2.4	0.0	5.6	1.3	0.8	3.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	0.0	65.5	43.5	63.0	0.0	9.2	6.5	49.4	5.6	0.0
LnGrp LOS	E	A		E	D	E	A	A	A	D	A	
Approach Vol, veh/h		4			276			1432			1295	
Approach Delay, s/veh		56.6			64.5			8.8			7.9	
Approach LOS		E			E			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	73.1		6.5	0.0	80.5		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	57.0		8.0	16.0	47.0		7.0				
Max Q Clear Time (g_c+I1), s	4.0	19.8		2.1	0.0	15.6		7.6				
Green Ext Time (p_c), s	0.0	11.7		0.0	0.0	10.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	98	98	643	214	701	1092	487
v/c Ratio	0.58	0.57	0.41	0.51	0.25	0.33	0.41
Control Delay	55.5	55.1	0.8	20.0	2.6	6.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	55.1	0.8	20.0	2.6	6.0	2.2
Queue Length 50th (ft)	64	63	0	36	37	97	12
Queue Length 95th (ft)	103	93	0	139	57	114	11
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	468	2752	3280	1191
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.32	0.41	0.46	0.25	0.33	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	151	9	572	188	652	0	0	972	404
Future Volume (vph)	0	0	0	151	9	572	188	652	0	0	972	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.22	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	405	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	184	12	643	214	701	0	0	1092	487
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	169
Lane Group Flow (vph)	0	0	0	98	98	643	214	701	0	0	1092	318
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.2	10.2	100.0	77.8	77.8			65.2	65.2
Effective Green, g (s)				10.2	10.2	100.0	77.8	77.8			65.2	65.2
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.65	0.65
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				169	171	1568	418	2753			3283	1022
v/s Ratio Prot							0.04	0.20			0.22	
v/s Ratio Perm				0.06	0.06	c0.41	c0.36					0.20
v/c Ratio				0.58	0.57	0.41	0.51	0.25			0.33	0.31
Uniform Delay, d1				42.9	42.8	0.0	3.5	3.1			7.7	7.6
Progression Factor				1.00	1.00	1.00	5.35	0.70			0.69	1.34
Incremental Delay, d2				3.0	2.9	0.8	0.4	0.2			0.3	0.7
Delay (s)				45.8	45.7	0.8	19.4	2.3			5.6	10.9
Level of Service				D	D	A	B	A			A	B
Approach Delay (s)		0.0			11.3			6.3			7.2	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	97	99	199	751	60	297	924
v/c Ratio	0.57	0.58	0.13	0.36	0.06	0.67	0.34
Control Delay	55.1	55.3	0.2	11.9	1.5	51.4	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	55.3	0.2	11.9	1.5	51.4	4.4
Queue Length 50th (ft)	63	64	0	120	0	74	63
Queue Length 95th (ft)	108	77	0	194	8	107	74
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	2109	978	680	2722
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.13	0.36	0.06	0.44	0.34

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	10	167	0	0	0	0	683	49	273	850	0
Future Volume (vph)	157	10	167	0	0	0	0	683	49	273	850	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1666	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1666	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	180	16	199	0	0	0	0	751	60	297	924	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	24	0	0	0
Lane Group Flow (vph)	97	99	199	0	0	0	0	751	36	297	924	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	10.3	10.3	100.0					59.6	59.6	13.1	77.7	
Effective Green, g (s)	10.3	10.3	100.0					59.6	59.6	13.1	77.7	
Actuated g/C Ratio	0.10	0.10	1.00					0.60	0.60	0.13	0.78	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	169	171	1553					2109	943	445	2723	
v/s Ratio Prot								c0.21		c0.09	0.26	
v/s Ratio Perm	0.06	0.06	0.13						0.02			
v/c Ratio	0.57	0.58	0.13					0.36	0.04	0.67	0.34	
Uniform Delay, d1	42.8	42.8	0.0					10.4	8.3	41.4	3.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.07	1.10	
Incremental Delay, d2	2.9	2.9	0.2					0.5	0.1	2.8	0.3	
Delay (s)	45.7	45.7	0.2					10.8	8.4	47.1	4.1	
Level of Service	D	D	A					B	A	D	A	
Approach Delay (s)		22.8			0.0			10.7			14.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	507	604	318
Demand Flow Rate, veh/h	512	616	325
Vehicles Circulating, veh/h	195	330	160
Vehicles Exiting, veh/h	290	377	786
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	5.4	7.3	4.3
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.645	0.355	0.260	0.740	0.600	0.400
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	330	182	160	456	195	130
Cap Entry Lane, veh/h	1128	1203	996	1073	1165	1240
Entry HV Adj Factor	0.991	0.990	0.980	0.980	0.979	0.977
Flow Entry, veh/h	327	180	157	447	191	127
Cap Entry, veh/h	1118	1191	976	1051	1141	1211
V/C Ratio	0.293	0.151	0.161	0.425	0.167	0.105
Control Delay, s/veh	6.0	4.3	5.2	8.1	4.6	3.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	2	1	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	72	72	132	567	89	88	147	852	456	212	1077	145
v/c Ratio	0.29	0.43	0.08	0.81	0.22	0.18	0.52	0.57	0.49	0.57	0.48	0.18
Control Delay	54.1	57.5	0.1	52.1	36.5	0.8	57.1	28.8	4.6	53.8	24.0	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.1	57.5	0.1	52.1	36.5	0.8	57.1	28.8	4.6	53.8	24.0	2.3
Queue Length 50th (ft)	26	50	0	202	52	0	53	250	0	76	204	0
Queue Length 95th (ft)	46	81	0	275	75	0	89	371	59	119	275	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	406	247	1578	862	506	553	309	1485	922	504	2266	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.29	0.08	0.66	0.18	0.16	0.48	0.57	0.49	0.42	0.48	0.18

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	53	124	510	62	74	129	792	397	193	1002	81
Future Volume (veh/h)	58	53	124	510	62	74	129	792	397	193	1002	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	72	72	0	567	89	0	147	852	0	212	1077	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	236	125		654	351		233	1580		284	2346	
Arrive On Green	0.07	0.07	0.00	0.19	0.19	0.00	0.07	0.44	0.00	0.08	0.46	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	72	72	0	567	89	0	147	852	0	212	1077	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.0	3.8	0.0	16.3	4.2	0.0	4.2	18.0	0.0	6.1	14.8	0.0
Cycle Q Clear(g_c), s	2.0	3.8	0.0	16.3	4.2	0.0	4.2	18.0	0.0	6.1	14.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	236	125		654	351		233	1580		284	2346	
V/C Ratio(X)	0.30	0.58		0.87	0.25		0.63	0.54		0.75	0.46	
Avail Cap(c_a), veh/h	422	256		895	512		321	1580		524	2346	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.7	46.7	0.0	40.6	35.8	0.0	46.9	21.1	0.0	46.3	19.3	0.0
Incr Delay (d2), s/veh	0.5	4.1	0.0	6.2	0.4	0.0	2.1	1.3	0.0	2.9	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.9	0.0	7.3	1.9	0.0	1.9	7.5	0.0	2.7	5.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.3	50.9	0.0	46.8	36.2	0.0	49.0	22.5	0.0	49.2	20.0	0.0
LnGrp LOS	D	D		D	D		D	C		D	B	
Approach Vol, veh/h		144			656			999			1289	
Approach Delay, s/veh		48.6			45.4			26.4			24.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	51.5	24.9	12.8	12.4	53.0	12.5	25.2
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	8.1	20.0	18.3	5.8	6.2	16.8	4.0	6.2
Green Ext Time (p_c), s	0.3	10.0	1.1	0.1	0.1	15.4	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	491	317	318	521	298	681
v/c Ratio	0.50	0.28	0.51	0.20	0.65	0.43
Control Delay	20.0	1.4	8.0	5.1	48.0	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.0	1.4	8.0	5.1	48.0	0.8
Queue Length 50th (ft)	180	0	48	42	94	0
Queue Length 95th (ft)	399	13	125	83	132	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	981	1322	642	2609	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.24	0.50	0.20	0.31	0.43

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	447	247	283	417	289	463
Future Volume (vph)	447	247	283	417	289	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1552	1787	3574	3467	1599
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1845	1552	607	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	491	317	318	521	298	681
RTOR Reduction (vph)	0	119	0	0	0	0
Lane Group Flow (vph)	491	198	318	521	298	681
Confl. Peds. (#/hr)		1			33	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	49.2	62.4	69.0	69.0	13.2	100.0
Effective Green, g (s)	49.2	62.4	69.0	69.0	13.2	100.0
Actuated g/C Ratio	0.49	0.62	0.69	0.69	0.13	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	907	968	593	2466	457	1599
v/s Ratio Prot	0.27	0.03	0.08	0.15	c0.09	
v/s Ratio Perm		0.10	c0.29			c0.43
v/c Ratio	0.54	0.20	0.54	0.21	0.65	0.43
Uniform Delay, d1	17.6	8.1	8.3	5.6	41.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0	0.5	0.2	2.5	0.8
Delay (s)	19.9	8.1	8.8	5.8	43.8	0.8
Level of Service	B	A	A	A	D	A
Approach Delay (s)	15.3			7.0	13.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	416	400	190	447	453	139	72	649	185	99	581	243
v/c Ratio	0.75	0.34	0.29	0.76	0.38	0.22	0.28	0.70	0.12	0.43	0.58	0.39
Control Delay	27.8	34.7	5.6	28.6	34.9	6.1	30.6	49.9	0.1	33.9	44.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	34.7	5.6	28.6	34.9	6.1	30.6	49.9	0.1	33.9	44.4	6.6
Queue Length 50th (ft)	202	138	0	222	156	0	41	273	0	57	235	0
Queue Length 95th (ft)	257	192	39	327	206	32	58	350	0	85	304	67
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	597	1182	655	615	1204	623	346	922	1599	296	1010	625
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.34	0.29	0.73	0.38	0.22	0.21	0.70	0.12	0.33	0.58	0.39

Intersection Summary

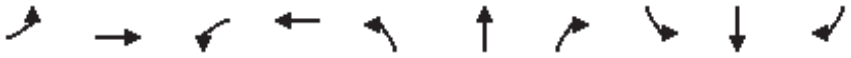
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	337	388	156	411	390	111	50	578	168	77	517	233
Future Volume (veh/h)	337	388	156	411	390	111	50	578	168	77	517	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	416	400	190	447	453	139	72	649	0	99	581	243
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	563	1199	535	583	1237	545	218	934		228	973	434
Arrive On Green	0.17	0.34	0.34	0.18	0.35	0.35	0.04	0.26	0.00	0.05	0.27	0.27
Sat Flow, veh/h	1781	3554	1585	1781	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	416	400	190	447	453	139	72	649	0	99	581	243
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	19.7	11.0	11.8	21.1	12.4	8.3	3.8	21.3	0.0	5.3	18.5	17.2
Cycle Q Clear(g_c), s	19.7	11.0	11.8	21.1	12.4	8.3	3.8	21.3	0.0	5.3	18.5	17.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	563	1199	535	583	1237	545	218	934		228	973	434
V/C Ratio(X)	0.74	0.33	0.36	0.77	0.37	0.26	0.33	0.70		0.43	0.60	0.56
Avail Cap(c_a), veh/h	605	1199	535	606	1237	545	350	934		336	973	434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	32.3	32.5	21.4	31.8	30.4	34.3	43.5	0.0	34.4	41.1	40.6
Incr Delay (d2), s/veh	3.7	0.8	1.8	5.0	0.8	1.1	0.3	4.3	0.0	0.5	2.7	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	4.8	4.7	9.4	5.5	3.3	1.7	9.8	0.0	2.3	8.3	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.5	33.0	34.4	26.4	32.6	31.5	34.6	47.8	0.0	34.9	43.8	45.8
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	D
Approach Vol, veh/h		1006			1039			721			923	
Approach Delay, s/veh		30.2			29.8			46.5			43.4	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.3	50.0	12.1	40.0	26.9	51.4	10.4	41.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	23.1	13.8	7.3	23.3	21.7	14.4	5.8	20.5
Green Ext Time (p_c), s	0.2	3.4	0.1	3.0	0.3	3.6	0.0	3.8

Intersection Summary	
HCM 6th Ctrl Delay	36.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	281	211	327	362	16	268	91	113	327	76
v/c Ratio	0.71	0.62	0.83	0.78	0.03	0.43	0.11	0.12	0.39	0.10
Control Delay	38.0	15.1	46.6	17.6	19.9	30.8	4.2	17.3	24.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.0	15.1	46.6	17.6	19.9	30.8	4.2	17.3	24.2	0.3
Queue Length 50th (ft)	106	1	128	2	4	95	0	12	88	0
Queue Length 95th (ft)	211	0	#292	0	15	260	8	58	361	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	397	511	394	605	632	623	854	1076	842	772
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.41	0.83	0.60	0.03	0.43	0.11	0.11	0.39	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	1	144	232	1	265	8	204	60	106	281	59
Future Volume (vph)	188	1	144	232	1	265	8	204	60	106	281	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.93		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00
Frt	1.00	0.85		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1762	1586		1752	1455		1770	1863	1558	3383	1845	1531
Flt Permitted	0.45	1.00		0.45	1.00		0.56	1.00	1.00	0.44	1.00	1.00
Satd. Flow (perm)	843	1586		838	1455		1046	1863	1558	1582	1845	1531
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	281	2	209	327	4	358	16	268	91	113	327	76
RTOR Reduction (vph)	0	190	0	0	326	0	0	0	44	0	0	44
Lane Group Flow (vph)	281	21	0	327	36	0	16	268	47	113	327	32
Confl. Peds. (#/hr)	10					10			19	19		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.5	8.8		24.5	8.8		35.8	34.9	50.6	47.3	41.4	41.4
Effective Green, g (s)	24.5	8.8		24.5	8.8		35.8	34.9	50.6	47.3	41.4	41.4
Actuated g/C Ratio	0.25	0.09		0.25	0.09		0.36	0.36	0.52	0.48	0.42	0.42
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	357	142		355	130		388	662	803	898	778	646
v/s Ratio Prot	0.13	0.01		c0.15	0.02		0.00	0.14	0.01	c0.01	c0.18	
v/s Ratio Perm	0.07			c0.08			0.01		0.02	0.05		0.02
v/c Ratio	0.79	0.15		0.92	0.28		0.04	0.40	0.06	0.13	0.42	0.05
Uniform Delay, d1	33.0	41.2		34.4	41.7		20.0	23.8	11.9	14.2	19.9	16.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	0.5		28.6	1.2		0.0	1.8	0.0	0.1	1.7	0.1
Delay (s)	43.9	41.7		63.0	42.9		20.0	25.6	11.9	14.2	21.6	16.9
Level of Service	D	D		E	D		B	C	B	B	C	B
Approach Delay (s)		42.9			52.4			22.0			19.3	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	110	194	953	27	131	69	1256	869	63	31	433	56
v/c Ratio	0.39	0.67	0.60	0.09	0.41	0.04	0.98	0.41	0.04	0.14	0.51	0.04
Control Delay	47.1	56.0	1.6	41.3	46.4	0.1	53.0	8.6	0.0	45.3	35.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.1	56.0	1.6	41.3	46.4	0.1	53.0	8.6	0.0	45.3	35.3	0.0
Queue Length 50th (ft)	35	64	0	8	42	0	426	116	0	9	126	0
Queue Length 95th (ft)	60	98	0	13	68	0	201	88	0	21	156	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	356	367	1599	1279	2136	1599	226	857	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.36	0.60	0.08	0.36	0.04	0.98	0.41	0.04	0.14	0.51	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	184	791	16	115	54	628	626	43	24	355	53
Future Volume (veh/h)	109	184	791	16	115	54	628	626	43	24	355	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	110	194	0	27	131	0	1256	869	0	31	433	0
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	259	267		201	207		1010	2273		80	1281	
Arrive On Green	0.07	0.07	0.00	0.06	0.06	0.00	0.29	0.63	0.00	0.02	0.36	0.00
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	110	194	0	27	131	0	1256	869	0	31	433	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.0	5.3	0.0	0.7	3.6	0.0	29.0	11.7	0.0	0.9	8.8	0.0
Cycle Q Clear(g_c), s	3.0	5.3	0.0	0.7	3.6	0.0	29.0	11.7	0.0	0.9	8.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	259	267		201	207		1010	2273		80	1281	
V/C Ratio(X)	0.42	0.73		0.13	0.63		1.24	0.38		0.39	0.34	
Avail Cap(c_a), veh/h	522	537		348	358		1010	2273		209	1281	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.2	45.3	0.0	44.7	46.1	0.0	35.5	8.8	0.0	48.1	23.5	0.0
Incr Delay (d2), s/veh	0.4	1.4	0.0	0.3	3.2	0.0	118.0	0.5	0.0	3.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.3	0.0	0.3	1.7	0.0	28.0	3.9	0.0	0.4	3.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	46.7	0.0	45.0	49.2	0.0	153.5	9.3	0.0	51.1	24.2	0.0
LnGrp LOS	D	D		D	D		F	A		D	C	
Approach Vol, veh/h		304			158			2125			464	
Approach Delay, s/veh		46.0			48.5			94.5			26.0	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	69.5		12.4	35.0	41.8		10.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	13.7		7.3	31.0	10.8		5.6				
Green Ext Time (p_c), s	0.0	6.3		0.1	0.0	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	76.9	
HCM 6th LOS	E	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	4	4	197	4	52	8	1348	191	41	1171	4
v/c Ratio	0.03	0.00	0.53	0.02	0.15	0.04	0.55	0.17	0.21	0.46	0.00
Control Delay	44.5	0.0	47.5	39.5	1.0	52.5	6.0	0.9	50.7	5.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	0.0	47.5	39.5	1.0	52.5	6.0	0.9	50.7	5.3	0.0
Queue Length 50th (ft)	2	0	61	2	0	2	44	0	13	75	0
Queue Length 95th (ft)	7	0	96	7	0	2	323	13	19	194	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	383	208	341	554	2448	1155	274	2570	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.00	0.51	0.02	0.15	0.01	0.55	0.17	0.15	0.46	0.00

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2	4	175	2	43	2	1254	172	24	1136	2
Future Volume (veh/h)	0	2	4	175	2	43	2	1254	172	24	1136	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	4	0	197	4	52	8	1348	191	41	1171	0
Peak Hour Factor	0.25	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	18	10		271	147	124	35	2419	1079	75	2441	
Arrive On Green	0.00	0.01	0.00	0.08	0.08	0.08	0.01	0.68	0.68	0.02	0.69	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	4	0	197	4	52	8	1348	191	41	1171	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.2	0.0	5.5	0.2	3.1	0.2	19.6	4.4	1.2	15.4	0.0
Cycle Q Clear(g_c), s	0.0	0.2	0.0	5.5	0.2	3.1	0.2	19.6	4.4	1.2	15.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	18	10		271	147	124	35	2419	1079	75	2441	
V/C Ratio(X)	0.00	0.40		0.73	0.03	0.42	0.23	0.56	0.18	0.55	0.48	
Avail Cap(c_a), veh/h	281	152		348	189	160	557	2419	1079	276	2441	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.6	0.0	45.1	42.6	44.0	49.1	8.5	6.0	48.4	7.3	0.0
Incr Delay (d2), s/veh	0.0	28.4	0.0	6.0	0.1	2.7	3.3	0.9	0.4	2.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.0	2.6	0.1	1.3	0.1	6.2	1.3	0.5	4.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	78.0	0.0	51.1	42.7	46.6	52.4	9.4	6.3	50.7	8.0	0.0
LnGrp LOS	A	E		D	D	D	D	A	A	D	A	
Approach Vol, veh/h		4			253			1547			1212	
Approach Delay, s/veh		78.0			50.1			9.2			9.4	
Approach LOS		E			D			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	73.5		6.5	5.0	74.7		13.8				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	52.0		8.0	16.0	44.0		10.0				
Max Q Clear Time (g_c+I1), s	3.2	21.6		2.2	2.2	17.4		7.5				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.0	8.9		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		12.8
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	93	94	407	214	1142	1128	264
v/c Ratio	0.56	0.56	0.25	0.51	0.41	0.34	0.24
Control Delay	54.8	54.9	0.4	19.8	4.3	5.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	54.9	0.4	19.8	4.3	5.7	1.6
Queue Length 50th (ft)	61	61	0	63	57	106	6
Queue Length 95th (ft)	109	44	0	139	141	53	8
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	324	1599	651	2764	3309	1122
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.29	0.25	0.33	0.41	0.34	0.24

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	163	3	366	182	1062	0	0	1083	232
Future Volume (vph)	0	0	0	163	3	366	182	1062	0	0	1083	232
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1709	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.21	1.00			1.00	1.00
Satd. Flow (perm)				1698	1709	1599	387	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	179	8	407	214	1142	0	0	1128	264
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	92
Lane Group Flow (vph)	0	0	0	93	94	407	214	1142	0	0	1128	172
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				9.9	9.9	100.0	78.1	78.1			65.1	65.1
Effective Green, g (s)				9.9	9.9	100.0	78.1	78.1			65.1	65.1
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.65	0.65
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				168	169	1599	412	2763			3310	1030
v/s Ratio Prot							c0.04	0.32			0.22	
v/s Ratio Perm				0.05	0.06	0.25	c0.36					0.11
v/c Ratio				0.55	0.56	0.25	0.52	0.41			0.34	0.17
Uniform Delay, d1				42.9	43.0	0.0	3.6	3.5			7.8	6.8
Progression Factor				1.00	1.00	1.00	5.54	1.01			0.63	0.88
Incremental Delay, d2				2.2	2.2	0.4	0.4	0.4			0.3	0.3
Delay (s)				45.2	45.2	0.4	20.2	4.0			5.2	6.4
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.5			6.5			5.4	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	183	184	223	971	179	504	783
v/c Ratio	0.75	0.75	0.14	0.55	0.20	0.81	0.30
Control Delay	59.0	58.9	0.2	19.8	3.2	49.6	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	58.9	0.2	19.8	3.2	49.6	6.9
Queue Length 50th (ft)	117	118	0	221	0	118	63
Queue Length 95th (ft)	186	96	0	312	17	154	77
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1770	881	692	2588
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.58	0.14	0.55	0.20	0.73	0.30

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	312	8	176	0	0	0	0	932	131	494	752	0
Future Volume (vph)	312	8	176	0	0	0	0	932	131	494	752	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1660	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1660	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	351	16	223	0	0	0	0	971	179	504	783	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	90	0	0	0
Lane Group Flow (vph)	183	184	223	0	0	0	0	971	90	504	783	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	5%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	14.9	14.9	100.0					50.0	50.0	18.1	73.1	
Effective Green, g (s)	14.9	14.9	100.0					50.0	50.0	18.1	73.1	
Actuated g/C Ratio	0.15	0.15	1.00					0.50	0.50	0.18	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	245	247	1553					1769	791	621	2587	
v/s Ratio Prot								c0.27		c0.15	0.22	
v/s Ratio Perm	c0.11	0.11	0.14						0.06			
v/c Ratio	0.75	0.74	0.14					0.55	0.11	0.81	0.30	
Uniform Delay, d1	40.7	40.7	0.0					17.2	13.2	39.3	4.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.00	1.31	
Incremental Delay, d2	10.3	10.2	0.2					1.2	0.3	7.2	0.3	
Delay (s)	51.1	50.9	0.2					18.5	13.5	46.4	6.4	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		31.8			0.0			17.7			22.1	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.2
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	288	355	599
Demand Flow Rate, veh/h	294	362	611
Vehicles Circulating, veh/h	395	106	164
Vehicles Exiting, veh/h	380	583	304
Ped Vol Crossing Leg, #/h	6	0	0
Ped Cap Adj	0.995	1.000	1.000
Approach Delay, s/veh	5.2	4.1	5.8
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.453	0.547	0.646	0.354
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	138	156	164	198	395	216
Cap Entry Lane, veh/h	939	1015	1224	1298	1161	1235
Entry HV Adj Factor	0.982	0.980	0.980	0.980	0.980	0.981
Flow Entry, veh/h	136	153	161	194	387	212
Cap Entry, veh/h	917	990	1200	1272	1137	1212
V/C Ratio	0.148	0.154	0.134	0.153	0.340	0.175
Control Delay, s/veh	5.3	5.1	4.1	4.1	6.5	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	2	1

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2025 Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	22	55	401	47	174	127	898	516	215	667	75
v/c Ratio	0.26	0.20	0.03	0.72	0.18	0.48	0.47	0.48	0.49	0.61	0.24	0.08
Control Delay	56.5	57.5	0.1	55.3	44.8	10.6	58.5	21.6	3.6	58.9	16.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	57.5	0.1	55.3	44.8	10.6	58.5	21.6	3.6	58.9	16.1	0.2
Queue Length 50th (ft)	21	17	0	155	32	0	49	240	0	83	100	0
Queue Length 95th (ft)	29	33	0	180	62	47	69	346	36	95	151	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	551	357	1855	1062	383	2789	948
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.03	0.46	0.09	0.32	0.36	0.48	0.49	0.56	0.24	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	40	333	40	146	100	790	423	157	640	45
Future Volume (veh/h)	35	15	40	333	40	146	100	790	423	157	640	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	22	0	401	47	0	127	898	0	215	667	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		475	232		199	1940		273	2898	
Arrive On Green	0.06	0.04	0.00	0.14	0.13	0.00	0.06	0.55	0.00	0.08	0.57	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	22	0	401	47	0	127	898	0	215	667	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.8	1.3	0.0	13.7	2.7	0.0	4.3	18.4	0.0	7.3	7.8	0.0
Cycle Q Clear(g_c), s	1.8	1.3	0.0	13.7	2.7	0.0	4.3	18.4	0.0	7.3	7.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	85		475	232		199	1940		273	2898	
V/C Ratio(X)	0.27	0.26		0.84	0.20		0.64	0.46		0.79	0.23	
Avail Cap(c_a), veh/h	278	190		871	510		360	1940		360	2898	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	55.4	0.0	50.4	47.1	0.0	55.3	16.6	0.0	54.3	12.9	0.0
Incr Delay (d2), s/veh	0.5	1.6	0.0	3.2	0.4	0.0	2.5	0.8	0.0	7.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.7	0.0	6.0	1.3	0.0	1.9	7.4	0.0	3.4	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	57.0	0.0	53.6	47.6	0.0	57.9	17.4	0.0	61.6	13.1	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		78			448			1025			882	
Approach Delay, s/veh		55.3			53.0			22.4			24.9	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	71.5	22.1	11.4	12.4	74.1	12.5	21.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	9.3	20.4	15.7	3.3	6.3	9.8	3.8	4.7
Green Ext Time (p_c), s	0.2	10.8	0.9	0.0	0.1	9.3	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	30.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	384	484	566	501	419	526
v/c Ratio	0.70	0.46	0.80	0.40	0.70	0.34
Control Delay	46.1	2.9	29.4	11.5	54.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	2.9	29.4	11.5	54.0	0.6
Queue Length 50th (ft)	252	0	248	135	157	0
Queue Length 95th (ft)	#492	36	#455	244	151	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	549	1041	710	1238	601	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.46	0.80	0.40	0.70	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	342	431	453	361	260	458
Future Volume (vph)	342	431	453	361	260	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1752	1845	3400	1568
Flt Permitted	1.00	1.00	0.20	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	372	1845	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	384	484	566	501	419	526
RTOR Reduction (vph)	0	270	0	0	0	0
Lane Group Flow (vph)	384	214	566	501	419	526
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	31.8	53.0	76.6	76.6	21.2	120.0
Effective Green, g (s)	31.8	53.0	76.6	76.6	21.2	120.0
Actuated g/C Ratio	0.27	0.44	0.64	0.64	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	488	692	695	1177	600	1568
v/s Ratio Prot	0.21	0.05	c0.27	0.27	c0.12	
v/s Ratio Perm		0.08	c0.25			c0.34
v/c Ratio	0.79	0.31	0.81	0.43	0.70	0.34
Uniform Delay, d1	41.0	21.7	22.9	10.8	46.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.1	0.1	6.9	1.1	2.9	0.6
Delay (s)	53.0	21.8	29.8	11.9	49.3	0.6
Level of Service	D	C	C	B	D	A
Approach Delay (s)	35.6			21.4	22.2	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	398	363	152	264	523	98	232	697	412	119	608	423
v/c Ratio	0.84	0.31	0.24	0.52	0.52	0.18	0.74	0.70	0.26	0.47	0.69	0.61
Control Delay	37.3	31.9	6.1	21.9	37.8	4.5	39.2	42.8	0.4	28.7	45.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	31.9	6.1	21.9	37.8	4.5	39.2	42.8	0.4	28.7	45.6	8.6
Queue Length 50th (ft)	192	111	0	117	180	0	119	251	0	57	227	11
Queue Length 95th (ft)	#328	148	37	159	172	19	117	335	0	90	289	24
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	482	1159	621	585	1002	532	329	998	1583	339	879	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.31	0.24	0.45	0.52	0.18	0.71	0.70	0.26	0.35	0.69	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

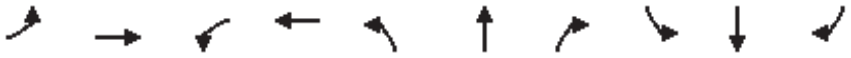
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
Future Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	494	1193	532	501	1009	450	310	1038		268	882	393
Arrive On Green	0.17	0.33	0.33	0.12	0.29	0.29	0.11	0.29	0.00	0.07	0.25	0.25
Sat Flow, veh/h	1795	3582	1598	1753	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1753	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	17.7	8.9	8.3	12.3	14.7	5.6	11.0	20.3	0.0	5.8	18.2	29.0
Cycle Q Clear(g_c), s	17.7	8.9	8.3	12.3	14.7	5.6	11.0	20.3	0.0	5.8	18.2	29.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	494	1193	532	501	1009	450	310	1038		268	882	393
V/C Ratio(X)	0.81	0.30	0.29	0.53	0.52	0.22	0.75	0.67		0.44	0.69	1.08
Avail Cap(c_a), veh/h	498	1193	532	583	1009	450	338	1038		380	882	393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	29.2	29.0	24.1	35.1	31.8	29.4	36.7	0.0	31.0	40.3	44.4
Incr Delay (d2), s/veh	8.7	0.7	1.3	0.3	1.9	1.1	6.9	3.5	0.0	0.4	4.4	67.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	3.9	3.3	5.0	6.5	2.2	5.2	9.1	0.0	2.5	8.3	18.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	29.8	30.3	24.4	37.0	32.9	36.3	40.2	0.0	31.5	44.7	111.5
LnGrp LOS	C	C	C	C	D	C	D	D		C	D	F
Approach Vol, veh/h		913			885			929			1150	
Approach Delay, s/veh		30.9			32.8			39.2			67.9	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	45.2	12.7	40.4	24.7	40.0	18.1	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	14.3	10.9	7.8	22.3	19.7	16.7	13.0	31.0
Green Ext Time (p_c), s	0.2	2.8	0.1	2.4	0.0	3.5	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	282	249	413	108	384	545	526	235	431
v/c Ratio	0.32	0.85	0.76	0.73	0.23	0.75	0.60	0.73	0.38	0.53
Control Delay	30.4	66.5	43.8	27.7	21.3	48.2	8.2	28.1	33.9	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	66.5	43.8	27.7	21.3	48.2	8.2	28.1	33.9	6.3
Queue Length 50th (ft)	29	171	109	114	35	219	35	97	109	0
Queue Length 95th (ft)	90	205	#346	7	112	#413	77	#207	230	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	337	333	329	562	572	509	915	718	618	813
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.85	0.76	0.73	0.19	0.75	0.60	0.73	0.38	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Future Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1844		1702	1527		1770	1863	1565	3431	1863	1583
Flt Permitted	0.24	1.00		0.22	1.00		0.61	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	452	1844		387	1527		1141	1863	1565	725	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	73	250	32	249	51	362	108	384	545	526	235	431
RTOR Reduction (vph)	0	3	0	0	163	0	0	0	264	0	0	294
Lane Group Flow (vph)	73	279	0	249	250	0	108	384	281	526	235	137
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	27.8	20.5		40.8	28.5		38.4	29.5	44.8	49.8	35.9	35.9
Effective Green, g (s)	27.8	20.5		40.8	28.5		38.4	29.5	44.8	49.8	35.9	35.9
Actuated g/C Ratio	0.25	0.18		0.36	0.25		0.34	0.26	0.40	0.44	0.32	0.32
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	198	335		318	386		438	488	622	688	593	504
v/s Ratio Prot	0.02	0.15		c0.11	0.16		0.02	0.21	0.06	c0.10	0.13	
v/s Ratio Perm	0.07			c0.18			0.06		0.12	c0.23		0.09
v/c Ratio	0.37	0.83		0.78	0.65		0.25	0.79	0.45	0.76	0.40	0.27
Uniform Delay, d1	33.9	44.4		28.3	37.6		26.0	38.6	24.9	23.5	29.9	28.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.2	16.0		11.9	3.7		0.2	12.1	0.5	5.1	2.0	1.3
Delay (s)	35.0	60.4		40.2	41.3		26.3	50.7	25.4	28.6	31.9	29.9
Level of Service	D	E		D	D		C	D	C	C	C	C
Approach Delay (s)		55.2			40.9			34.9			29.7	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	112.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	137	1426	64	235	53	1373	430	29	63	781	133
v/c Ratio	0.25	0.59	0.90	0.17	0.62	0.03	1.11	0.21	0.02	0.30	0.93	0.08
Control Delay	46.3	55.7	9.8	41.2	49.8	0.0	87.0	4.8	0.0	48.6	55.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	55.7	9.8	41.2	49.8	0.0	87.0	4.8	0.0	48.6	55.9	0.1
Queue Length 50th (ft)	18	45	0	19	75	0	~531	21	0	20	256	0
Queue Length 95th (ft)	36	69	0	39	105	0	247	34	m0	28	253	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	380	391	1568	1242	2011	1568	215	841	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.90	0.17	0.60	0.03	1.11	0.21	0.02	0.29	0.93	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
Future Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	137	0	64	235	0	1373	430	0	63	781	0
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	201	206		300	309		1166	2155		113	1038	
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.34	0.61	0.00	0.03	0.29	0.00
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	57	137	0	64	235	0	1373	430	0	63	781	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.6	3.8	0.0	1.7	6.5	0.0	34.0	5.4	0.0	1.8	20.1	0.0
Cycle Q Clear(g_c), s	1.6	3.8	0.0	1.7	6.5	0.0	34.0	5.4	0.0	1.8	20.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	206		300	309		1166	2155		113	1038	
V/C Ratio(X)	0.28	0.66		0.21	0.76		1.18	0.20		0.56	0.75	
Avail Cap(c_a), veh/h	346	355		343	353		1166	2155		206	1038	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.1	46.1	0.0	42.4	44.6	0.0	33.0	8.6	0.0	47.6	32.0	0.0
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.4	8.2	0.0	89.2	0.2	0.0	4.2	5.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	0.7	3.2	0.0	27.5	1.8	0.0	0.8	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	47.5	0.0	42.8	52.8	0.0	122.2	8.8	0.0	51.8	37.0	0.0
LnGrp LOS	D	D		D	D		F	A		D	D	
Approach Vol, veh/h		194			299			1803			844	
Approach Delay, s/veh		46.9			50.7			95.2			38.1	
Approach LOS		D			D			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	67.1		10.8	40.0	35.4		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	7.4		5.8	36.0	22.1		8.5				
Green Ext Time (p_c), s	0.0	2.8		0.1	0.0	0.9		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	72.6	
HCM 6th LOS	E	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	251	20	98	1381	195	70	1313	10
v/c Ratio	0.05	0.01	0.54	0.08	0.26	0.62	0.18	0.34	0.52	0.01
Control Delay	44.2	0.0	46.2	40.2	1.7	11.1	1.2	49.7	7.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	46.2	40.2	1.7	11.1	1.2	49.7	7.6	0.0
Queue Length 50th (ft)	3	0	76	11	0	262	11	22	161	0
Queue Length 95th (ft)	6	0	#157	10	0	315	12	39	260	0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	280	1615	467	253	375	2221	1065	215	2511	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.54	0.08	0.26	0.62	0.18	0.33	0.52	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
Future Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		240	130	110	3	2339	1043	118	2601	
Arrive On Green	0.01	0.00	0.00	0.07	0.07	0.07	0.00	0.66	0.66	0.03	0.74	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.0	1.0	6.2	0.0	21.7	4.8	2.0	15.6	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.0	1.0	6.2	0.0	21.7	4.8	2.0	15.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		240	130	110	3	2339	1043	118	2601	
V/C Ratio(X)	0.23	0.00		1.05	0.15	0.89	0.00	0.59	0.19	0.59	0.50	
Avail Cap(c_a), veh/h	281	152		240	130	110	549	2339	1043	206	2601	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	46.5	43.7	46.1	0.0	9.3	6.5	47.6	5.5	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	70.6	0.7	53.4	0.0	1.1	0.4	1.8	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	5.3	0.5	4.0	0.0	6.9	1.4	0.9	4.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	117.1	44.4	99.5	0.0	10.4	6.9	49.3	6.2	0.0
LnGrp LOS	D	A		F	D	F	A	B	A	D	A	
Approach Vol, veh/h		10			369			1576			1383	
Approach Delay, s/veh		52.3			108.5			10.0			8.4	
Approach LOS		D			F			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	72.3		7.2	0.0	79.8		13.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	57.0		8.0	16.0	47.0		7.0				
Max Q Clear Time (g_c+I1), s	4.0	23.7		2.3	0.0	17.6		9.0				
Green Ext Time (p_c), s	0.0	13.2		0.0	0.0	10.8		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		20.3
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	102	734	222	744	1202	530
v/c Ratio	0.58	0.58	0.47	0.57	0.27	0.37	0.44
Control Delay	55.1	55.3	1.0	25.5	2.6	6.5	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	55.3	1.0	25.5	2.6	6.5	2.4
Queue Length 50th (ft)	65	66	0	64	38	110	5
Queue Length 95th (ft)	104	96	0	164	58	155	33
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	433	2744	3254	1200
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.34	0.47	0.51	0.27	0.37	0.44

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	155	10	653	195	692	0	0	1070	440
Future Volume (veh/h)	0	0	0	155	10	653	195	692	0	0	1070	440
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1870	1870	0	0	1856	1856
Adj Flow Rate, veh/h				198	0	0	222	744	0	0	1202	0
Peak Hour Factor				0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				272	0		453	2854	0	0	3527	
Arrive On Green				0.08	0.00	0.00	0.11	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				198	0	0	222	744	0	0	1202	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	9.5	0.0
Cycle Q Clear(g_c), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	9.5	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				272	0		453	2854	0	0	3527	
V/C Ratio(X)				0.73	0.00		0.49	0.26	0.00	0.00	0.34	
Avail Cap(c_a), veh/h				636	0		548	2854	0	0	3527	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.91	0.91	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	3.9	0.0	0.0	0.0	6.0	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	0.3	0.2	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	0.0	0.7	0.1	0.0	0.0	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.5	0.0	0.0	4.2	0.2	0.0	0.0	6.3	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					198			966			1202	
Approach Delay, s/veh					46.5			1.1			6.3	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	86.3		10.7	75.6		13.7						
Change Period (Y+Rc), s	6.0		5.0	6.0		6.0						
Max Green Setting (Gmax), s	70.0		11.0	54.0		18.0						
Max Q Clear Time (g_c+I1), s	2.0		5.5	11.5		7.5						
Green Ext Time (p_c), s	5.4		0.1	10.1		0.3						

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	116	119	202	773	61	358	974
v/c Ratio	0.61	0.62	0.13	0.39	0.07	0.71	0.36
Control Delay	55.4	55.7	0.2	13.8	1.7	46.7	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	55.7	0.2	13.8	1.7	46.7	4.6
Queue Length 50th (ft)	75	76	0	134	0	78	64
Queue Length 95th (ft)	124	88	0	217	9	117	76
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	317	1553	2006	935	680	2682
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	0.13	0.39	0.07	0.53	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	15	170	0	0	0	0	703	50	329	896	0
Future Volume (vph)	184	15	170	0	0	0	0	703	50	329	896	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1669	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1669	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	211	24	202	0	0	0	0	773	61	358	974	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	26	0	0	0
Lane Group Flow (vph)	116	119	202	0	0	0	0	773	35	358	974	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	11.5	11.5	100.0					56.7	56.7	14.8	76.5	
Effective Green, g (s)	11.5	11.5	100.0					56.7	56.7	14.8	76.5	
Actuated g/C Ratio	0.12	0.12	1.00					0.57	0.57	0.15	0.76	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	189	191	1553					2006	897	503	2681	
v/s Ratio Prot								c0.22		c0.11	0.28	
v/s Ratio Perm	0.07	0.07	0.13						0.02			
v/c Ratio	0.61	0.62	0.13					0.39	0.04	0.71	0.36	
Uniform Delay, d1	42.1	42.2	0.0					12.0	9.6	40.6	3.8	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.97	1.00	
Incremental Delay, d2	4.1	4.5	0.2					0.6	0.1	3.7	0.4	
Delay (s)	46.2	46.7	0.2					12.6	9.7	43.1	4.2	
Level of Service	D	D	A					B	A	D	A	
Approach Delay (s)		25.1			0.0			12.3			14.6	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	7.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	613	641	407
Demand Flow Rate, veh/h	619	654	415
Vehicles Circulating, veh/h	241	428	168
Vehicles Exiting, veh/h	342	432	914
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.6	8.8	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.691	0.309	0.257	0.743	0.581	0.419
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	428	191	168	486	241	174
Cap Entry Lane, veh/h	1081	1157	911	987	1157	1231
Entry HV Adj Factor	0.991	0.990	0.980	0.979	0.979	0.983
Flow Entry, veh/h	424	189	165	476	236	171
Cap Entry, veh/h	1071	1146	892	966	1133	1210
V/C Ratio	0.396	0.165	0.185	0.493	0.208	0.141
Control Delay, s/veh	7.5	4.6	5.9	9.8	5.1	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	1	1	3	1	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	74	74	138	617	93	115	153	866	482	231	1091	152
v/c Ratio	0.30	0.44	0.09	0.85	0.22	0.23	0.55	0.60	0.52	0.60	0.49	0.19
Control Delay	54.6	58.1	0.1	54.1	36.3	1.9	58.5	30.2	4.7	54.8	24.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.6	58.1	0.1	54.1	36.3	1.9	58.5	30.2	4.7	54.8	24.8	2.8
Queue Length 50th (ft)	27	53	0	224	55	0	56	269	0	85	216	0
Queue Length 95th (ft)	47	83	0	302	78	1	93	378	60	128	280	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	401	243	1578	850	502	549	304	1448	925	497	2234	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.30	0.09	0.73	0.19	0.21	0.50	0.60	0.52	0.46	0.49	0.19

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	55	130	555	65	97	135	805	419	210	1015	85
Future Volume (veh/h)	60	55	130	555	65	97	135	805	419	210	1015	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	74	74	0	617	93	0	153	866	0	231	1091	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	232	126		700	379		229	1527		302	2302	
Arrive On Green	0.07	0.07	0.00	0.20	0.20	0.00	0.07	0.43	0.00	0.09	0.45	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	74	74	0	617	93	0	153	866	0	231	1091	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.1	4.0	0.0	18.1	4.4	0.0	4.5	19.2	0.0	6.8	15.6	0.0
Cycle Q Clear(g_c), s	2.1	4.0	0.0	18.1	4.4	0.0	4.5	19.2	0.0	6.8	15.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	126		700	379		229	1527		302	2302	
V/C Ratio(X)	0.32	0.59		0.88	0.25		0.67	0.57		0.76	0.47	
Avail Cap(c_a), veh/h	414	251		879	502		315	1527		514	2302	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.8	47.6	0.0	40.7	35.3	0.0	47.9	22.8	0.0	46.9	20.4	0.0
Incr Delay (d2), s/veh	0.6	4.3	0.0	8.2	0.3	0.0	2.5	1.5	0.0	3.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.0	0.0	8.3	2.0	0.0	2.0	8.1	0.0	3.0	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	51.9	0.0	49.0	35.6	0.0	50.4	24.3	0.0	49.9	21.1	0.0
LnGrp LOS	D	D		D	D		D	C		D	C	
Approach Vol, veh/h		148			710			1019			1322	
Approach Delay, s/veh		49.6			47.2			28.2			26.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.6	50.8	26.6	13.0	12.4	53.0	12.5	27.1
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	8.8	21.2	20.1	6.0	6.5	17.6	4.1	6.4
Green Ext Time (p_c), s	0.3	9.8	1.1	0.1	0.1	15.4	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	534	337	373	618	312	732
v/c Ratio	0.67	0.31	0.59	0.45	0.67	0.46
Control Delay	29.8	1.7	12.3	7.9	48.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	1.7	12.3	7.9	48.0	0.9
Queue Length 50th (ft)	249	1	60	124	98	0
Queue Length 95th (ft)	#521	15	195	245	137	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	794	1269	629	1367	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.27	0.59	0.45	0.32	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	263	332	494	303	498
Future Volume (vph)	486	263	332	494	303	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1787	1881	3467	1599
Flt Permitted	1.00	1.00	0.20	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	385	1881	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	534	337	373	618	312	732
RTOR Reduction (vph)	0	158	0	0	0	0
Lane Group Flow (vph)	534	179	373	618	312	732
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	39.1	52.6	68.7	68.7	13.5	100.0
Effective Green, g (s)	39.1	52.6	68.7	68.7	13.5	100.0
Actuated g/C Ratio	0.39	0.53	0.69	0.69	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	721	824	609	1292	468	1599
v/s Ratio Prot	c0.29	0.03	c0.15	0.33	c0.09	
v/s Ratio Perm		0.08	0.27			c0.46
v/c Ratio	0.74	0.22	0.61	0.48	0.67	0.46
Uniform Delay, d1	26.1	12.7	11.5	7.3	41.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.7	0.0	1.3	1.3	2.8	0.9
Delay (s)	32.8	12.7	12.8	8.6	43.9	0.9
Level of Service	C	B	B	A	D	A
Approach Delay (s)	25.1			10.2	13.8	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	420	195	499	505	145	83	735	189	147	664	322
v/c Ratio	0.90	0.36	0.30	0.86	0.44	0.24	0.37	0.82	0.12	0.68	0.69	0.48
Control Delay	42.4	36.9	5.8	37.8	38.4	6.2	32.8	57.6	0.2	45.6	49.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	36.9	5.8	37.8	38.4	6.2	32.8	57.6	0.2	45.6	49.1	6.7
Queue Length 50th (ft)	260	151	0	271	187	0	48	328	0	88	279	0
Queue Length 95th (ft)	#333	205	39	#373	235	33	64	410	0	119	355	76
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	546	1151	646	589	1142	602	304	891	1599	254	965	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.36	0.30	0.85	0.44	0.24	0.27	0.82	0.12	0.58	0.69	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

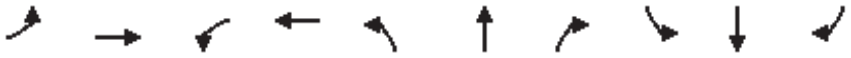
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
Future Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	550	1157	516	573	1157	510	203	901		229	994	443
Arrive On Green	0.18	0.33	0.33	0.18	0.33	0.33	0.05	0.25	0.00	0.08	0.28	0.28
Sat Flow, veh/h	1781	3554	1585	1781	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	24.7	12.2	12.8	25.0	15.1	9.3	4.6	26.1	0.0	8.1	22.4	24.8
Cycle Q Clear(g_c), s	24.7	12.2	12.8	25.0	15.1	9.3	4.6	26.1	0.0	8.1	22.4	24.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	550	1157	516	573	1157	510	203	901		229	994	443
V/C Ratio(X)	0.88	0.36	0.38	0.87	0.44	0.28	0.41	0.82		0.64	0.67	0.73
Avail Cap(c_a), veh/h	550	1157	516	573	1157	510	318	901		293	994	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	34.9	35.0	24.4	35.8	33.9	36.4	47.6	0.0	36.2	43.1	44.0
Incr Delay (d2), s/veh	14.7	0.9	2.1	13.2	1.2	1.4	0.5	8.1	0.0	1.2	3.6	10.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	5.4	5.2	12.7	6.7	3.7	2.0	12.5	0.0	3.5	10.2	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.2	35.7	37.2	37.6	37.0	35.3	36.8	55.7	0.0	37.3	46.7	54.0
LnGrp LOS	D	D	D	D	D	D	D	E		D	D	D
Approach Vol, veh/h		1099			1149			818			1133	
Approach Delay, s/veh		37.5			37.1			53.8			47.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	50.0	15.1	40.0	30.0	50.0	11.3	43.8
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	27.0	14.8	10.1	28.1	26.7	17.1	6.6	26.8
Green Ext Time (p_c), s	0.0	3.5	0.1	2.3	0.0	4.0	0.0	3.1

Intersection Summary	
HCM 6th Ctrl Delay	43.3
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	220	355	378	20	324	106	117	395	77
v/c Ratio	0.72	0.63	0.91	0.79	0.05	0.52	0.12	0.15	0.50	0.11
Control Delay	38.5	16.1	56.4	19.3	19.9	32.6	5.1	17.6	27.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.5	16.1	56.4	19.3	19.9	32.6	5.1	17.6	27.8	0.3
Queue Length 50th (ft)	108	5	142	9	4	122	1	13	115	0
Queue Length 95th (ft)	214	0	#275	0	17	316	15	59	#488	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	395	512	391	616	563	620	856	1001	790	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.43	0.91	0.61	0.04	0.52	0.12	0.12	0.50	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Future Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1596		1752	1537		1770	1863	1565	3394	1845	1531
Flt Permitted	0.43	1.00		0.43	1.00		0.45	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	809	1596		802	1537		833	1863	1565	1344	1845	1531
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	284	10	210	355	20	358	20	324	106	117	395	77
RTOR Reduction (vph)	0	190	0	0	324	0	0	0	50	0	0	46
Lane Group Flow (vph)	284	30	0	355	54	0	20	324	56	117	395	31
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.9	9.2		24.9	9.2		36.2	33.9	49.6	46.4	39.1	39.1
Effective Green, g (s)	24.9	9.2		24.9	9.2		36.2	33.9	49.6	46.4	39.1	39.1
Actuated g/C Ratio	0.26	0.09		0.26	0.09		0.37	0.35	0.51	0.48	0.40	0.40
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	360	150		357	144		331	647	795	796	739	613
v/s Ratio Prot	0.13	0.02		c0.16	0.03		0.00	0.17	0.01	c0.01	c0.21	
v/s Ratio Perm	0.07			c0.09			0.02		0.02	0.06		0.02
v/c Ratio	0.79	0.20		0.99	0.37		0.06	0.50	0.07	0.15	0.53	0.05
Uniform Delay, d1	32.4	40.8		34.8	41.5		19.7	25.2	12.2	14.8	22.3	17.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.9	0.7		45.9	1.6		0.1	2.8	0.0	0.1	2.8	0.2
Delay (s)	43.3	41.5		80.7	43.1		19.7	27.9	12.3	14.9	25.1	18.0
Level of Service	D	D		F	D		B	C	B	B	C	B
Approach Delay (s)		42.5			61.3			23.9			22.1	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	225	1042	40	182	88	1334	896	66	32	439	58
v/c Ratio	0.37	0.70	0.65	0.11	0.49	0.06	1.11	0.43	0.04	0.15	0.51	0.04
Control Delay	45.6	56.0	2.1	40.4	46.7	0.1	92.8	9.6	0.0	46.2	35.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	56.0	2.1	40.4	46.7	0.1	92.8	9.6	0.0	46.2	35.4	0.0
Queue Length 50th (ft)	36	74	0	12	58	0	~515	136	0	10	127	0
Queue Length 95th (ft)	61	111	0	18	88	0	228	92	0	22	159	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1203	2069	1599	215	857	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.65	0.11	0.47	0.06	1.11	0.43	0.04	0.15	0.51	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
Future Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	116	225	0	40	182	0	1334	896	0	32	439	0
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	289	298		253	260		1010	2187		82	1197	
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.00
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	116	225	0	40	182	0	1334	896	0	32	439	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	6.1	0.0	1.1	5.0	0.0	29.0	13.0	0.0	0.9	9.3	0.0
Cycle Q Clear(g_c), s	3.2	6.1	0.0	1.1	5.0	0.0	29.0	13.0	0.0	0.9	9.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	289	298		253	260		1010	2187		82	1197	
V/C Ratio(X)	0.40	0.76		0.16	0.70		1.32	0.41		0.39	0.37	
Avail Cap(c_a), veh/h	522	537		348	358		1010	2187		209	1197	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.5	44.9	0.0	43.5	45.3	0.0	35.5	10.1	0.0	48.1	25.3	0.0
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.3	3.6	0.0	151.3	0.6	0.0	3.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.7	0.0	0.5	2.3	0.0	32.7	4.5	0.0	0.4	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	46.3	0.0	43.8	48.9	0.0	186.8	10.7	0.0	51.1	26.1	0.0
LnGrp LOS	D	D		D	D		F	B		D	C	
Approach Vol, veh/h		341			222			2230			471	
Approach Delay, s/veh		45.5			48.0			116.0			27.8	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	35.0	39.4		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.0		8.1	31.0	11.3		7.0				
Green Ext Time (p_c), s	0.0	6.6		0.2	0.0	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	91.3	
HCM 6th LOS	F	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	252	12	67	20	1399	194	43	1257	10
v/c Ratio	0.08	0.00	0.61	0.05	0.19	0.09	0.58	0.17	0.22	0.51	0.01
Control Delay	44.8	0.0	48.8	39.7	1.2	52.2	7.0	0.8	50.4	7.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	48.8	39.7	1.2	52.2	7.0	0.8	50.4	7.2	0.0
Queue Length 50th (ft)	6	0	78	7	0	6	96	0	13	96	0
Queue Length 95th (ft)	13	0	#124	14	0	5	333	13	20	225	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	414	224	354	554	2398	1136	274	2444	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.61	0.05	0.19	0.04	0.58	0.17	0.16	0.51	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
Future Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		321	174	147	74	2339	1043	78	2325	
Arrive On Green	0.00	0.01	0.00	0.09	0.09	0.09	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.2	4.8	1.2	18.9	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.2	4.8	1.2	18.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		321	174	147	74	2339	1043	78	2325	
V/C Ratio(X)	0.00	0.43		0.78	0.07	0.45	0.27	0.60	0.19	0.55	0.54	
Avail Cap(c_a), veh/h	281	152		348	189	160	557	2339	1043	276	2325	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.4	41.5	43.0	48.2	9.9	6.9	48.4	9.2	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	10.8	0.2	2.6	1.9	1.1	0.4	2.2	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	3.5	0.3	1.7	0.3	7.4	1.5	0.5	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	55.2	41.7	45.6	50.1	11.0	7.2	50.6	10.2	0.0
LnGrp LOS	A	E		E	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			331			1613			1300	
Approach Delay, s/veh		63.8			52.8			11.0			11.5	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	71.3		7.2	6.1	71.4		15.2				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	52.0		8.0	16.0	44.0		10.0				
Max Q Clear Time (g_c+I1), s	3.2	24.2		2.5	2.6	20.9		9.1				
Green Ext Time (p_c), s	0.0	12.4		0.0	0.0	9.2		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		15.6	
HCM 6th LOS		B	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	96	98	440	218	1167	1232	295
v/c Ratio	0.56	0.57	0.28	0.55	0.42	0.38	0.26
Control Delay	54.7	55.0	0.4	23.1	4.5	5.9	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	55.0	0.4	23.1	4.5	5.9	1.5
Queue Length 50th (ft)	62	64	0	87	59	127	4
Queue Length 95th (ft)	112	45	0	150	165	66	14
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	624	2756	3250	1118
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.28	0.35	0.42	0.38	0.26

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	165	5	396	185	1085	0	0	1183	260
Future Volume (vph)	0	0	0	165	5	396	185	1085	0	0	1183	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.18	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	336	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	181	13	440	218	1167	0	0	1232	295
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	106
Lane Group Flow (vph)	0	0	0	96	98	440	218	1167	0	0	1232	189
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.1	10.1	100.0	77.9	77.9			63.9	63.9
Effective Green, g (s)				10.1	10.1	100.0	77.9	77.9			63.9	63.9
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				171	173	1599	390	2756			3249	1011
v/s Ratio Prot							c0.05	0.33			0.24	
v/s Ratio Perm				0.06	0.06	0.28	c0.38					0.12
v/c Ratio				0.56	0.57	0.28	0.56	0.42			0.38	0.19
Uniform Delay, d1				42.8	42.9	0.0	4.1	3.6			8.6	7.4
Progression Factor				1.00	1.00	1.00	6.27	1.04			0.59	0.73
Incremental Delay, d2				2.5	2.5	0.4	0.8	0.4			0.3	0.4
Delay (s)				45.3	45.4	0.4	26.8	4.2			5.4	5.7
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.2			7.7			5.4	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	192	228	990	185	568	830
v/c Ratio	0.77	0.76	0.15	0.58	0.21	0.86	0.32
Control Delay	59.9	58.9	0.2	21.1	3.2	50.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	58.9	0.2	21.1	3.2	50.4	6.7
Queue Length 50th (ft)	124	124	0	242	0	142	64
Queue Length 95th (ft)	195	100	0	320	17	#186	78
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1712	861	697	2572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.61	0.15	0.58	0.21	0.81	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	325	10	180	0	0	0	0	950	135	557	797	0
Future Volume (vph)	325	10	180	0	0	0	0	950	135	557	797	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1661	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1661	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	365	20	228	0	0	0	0	990	185	568	830	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	95	0	0	0
Lane Group Flow (vph)	193	192	228	0	0	0	0	990	90	568	830	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.3	15.3	100.0					48.4	48.4	19.3	72.7	
Effective Green, g (s)	15.3	15.3	100.0					48.4	48.4	19.3	72.7	
Actuated g/C Ratio	0.15	0.15	1.00					0.48	0.48	0.19	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	252	254	1553					1712	766	662	2572	
v/s Ratio Prot								c0.28		c0.17	0.23	
v/s Ratio Perm	c0.12	0.12	0.15						0.06			
v/c Ratio	0.77	0.76	0.15					0.58	0.12	0.86	0.32	
Uniform Delay, d1	40.6	40.6	0.0					18.5	14.1	39.0	4.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.96	1.21	
Incremental Delay, d2	11.8	10.8	0.2					1.4	0.3	9.8	0.3	
Delay (s)	52.4	51.4	0.2					19.9	14.4	47.1	6.2	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		32.7			0.0			19.1			22.8	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	353	353	656
Demand Flow Rate, veh/h	361	360	669
Vehicles Circulating, veh/h	426	131	168
Vehicles Exiting, veh/h	411	655	323
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.7	4.2	6.1
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.471	0.529	0.467	0.533	0.637	0.363
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	170	191	168	192	426	243
Cap Entry Lane, veh/h	912	989	1197	1270	1157	1231
Entry HV Adj Factor	0.977	0.981	0.980	0.979	0.981	0.979
Flow Entry, veh/h	166	187	165	188	418	238
Cap Entry, veh/h	892	970	1166	1236	1135	1206
V/C Ratio	0.186	0.193	0.141	0.152	0.368	0.197
Control Delay, s/veh	5.9	5.6	4.3	4.2	6.9	4.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	2	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	384	484	566	501	419	526
v/c Ratio	0.42	0.39	0.47	0.40	0.70	0.34
Control Delay	24.3	1.8	9.8	11.5	54.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	1.8	9.8	11.5	54.0	0.6
Queue Length 50th (ft)	164	0	66	135	157	0
Queue Length 95th (ft)	377	29	135	244	151	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	915	1257	1504	1238	601	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.39	0.38	0.40	0.70	0.34

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	342	431	453	361	260	458
Future Volume (vph)	342	431	453	361	260	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3400	1845	3400	1568
Flt Permitted	1.00	1.00	0.39	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1393	1845	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	384	484	566	501	419	526
RTOR Reduction (vph)	0	174	0	0	0	0
Lane Group Flow (vph)	384	310	566	501	419	526
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	55.6	76.8	76.6	76.6	21.2	120.0
Effective Green, g (s)	55.6	76.8	76.6	76.6	21.2	120.0
Actuated g/C Ratio	0.46	0.64	0.64	0.64	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	854	1003	1156	1177	600	1568
v/s Ratio Prot	0.21	0.05	c0.07	0.27	c0.12	
v/s Ratio Perm		0.14	c0.25			c0.34
v/c Ratio	0.45	0.31	0.49	0.43	0.70	0.34
Uniform Delay, d1	21.8	9.7	11.0	10.8	46.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1	0.1	1.1	2.9	0.6
Delay (s)	23.5	9.8	11.1	11.9	49.3	0.6
Level of Service	C	A	B	B	D	A
Approach Delay (s)	15.9			11.5	22.2	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	398	363	152	264	523	98	232	697	412	119	608	423
v/c Ratio	0.50	0.30	0.24	0.30	0.49	0.18	0.69	0.66	0.26	0.43	0.65	0.56
Control Delay	19.8	28.6	5.4	18.2	34.1	4.4	32.4	38.2	0.4	25.1	41.1	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	28.6	5.4	18.2	34.1	4.4	32.4	38.2	0.4	25.1	41.1	19.3
Queue Length 50th (ft)	86	102	0	55	163	0	105	226	0	50	207	156
Queue Length 95th (ft)	119	134	33	73	166	19	113	324	0	87	281	172
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	969	1199	637	1157	1063	557	359	1062	1583	372	934	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.30	0.24	0.23	0.49	0.18	0.65	0.66	0.26	0.32	0.65	0.49

Intersection Summary

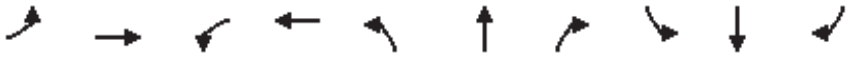
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
Future Volume (veh/h)	374	301	125	219	361	79	144	655	375	100	541	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	788	1226	547	837	1106	493	329	1119		295	966	590
Arrive On Green	0.10	0.34	0.34	0.07	0.32	0.32	0.11	0.31	0.00	0.06	0.27	0.27
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	398	363	152	264	523	98	232	697	0	119	608	423
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	8.1	8.0	7.4	5.5	12.9	4.9	9.7	18.0	0.0	5.1	16.0	24.4
Cycle Q Clear(g_c), s	8.1	8.0	7.4	5.5	12.9	4.9	9.7	18.0	0.0	5.1	16.0	24.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	788	1226	547	837	1106	493	329	1119		295	966	590
V/C Ratio(X)	0.51	0.30	0.28	0.32	0.47	0.20	0.71	0.62		0.40	0.63	0.72
Avail Cap(c_a), veh/h	1090	1226	547	1220	1106	493	382	1119		429	966	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	25.9	25.7	21.8	29.5	26.8	25.1	31.4	0.0	26.4	34.5	29.1
Incr Delay (d2), s/veh	0.2	0.6	1.3	0.1	1.5	0.9	3.6	2.6	0.0	0.3	3.1	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.4	2.9	2.2	5.5	1.9	4.2	7.8	0.0	2.1	7.2	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	26.5	27.0	21.9	31.0	27.7	28.6	34.0	0.0	26.8	37.6	36.4
LnGrp LOS	C	C	C	C	C	C	C	C		C	D	D
Approach Vol, veh/h		913			885			929			1150	
Approach Delay, s/veh		24.6			27.9			32.7			36.0	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	42.8	12.0	39.9	15.7	40.0	16.8	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	7.5	10.0	7.1	20.0	10.1	14.9	11.7	26.4
Green Ext Time (p_c), s	0.4	2.8	0.1	3.0	0.6	3.6	0.1	1.4

Intersection Summary	
HCM 6th Ctrl Delay	30.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	282	249	413	108	384	545	526	235	431
v/c Ratio	0.31	0.80	0.75	0.73	0.23	0.39	0.56	0.58	0.39	0.54
Control Delay	29.9	59.5	43.4	27.2	21.3	35.2	4.7	24.2	34.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	59.5	43.4	27.2	21.3	35.2	4.7	24.2	34.2	6.4
Queue Length 50th (ft)	28	167	108	113	35	101	0	97	109	0
Queue Length 95th (ft)	90	203	#345	7	112	178	5	198	230	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	346	354	330	567	574	979	971	924	604	804
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.80	0.75	0.73	0.19	0.39	0.56	0.57	0.39	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Future Volume (vph)	65	135	25	219	20	210	95	288	409	405	174	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1844		1702	1528		1770	3539	1564	3427	1863	1583
Flt Permitted	0.24	1.00		0.24	1.00		0.60	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	451	1844		428	1528		1124	3539	1564	1380	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	73	250	32	249	51	362	108	384	545	526	235	431
RTOR Reduction (vph)	0	3	0	0	162	0	0	0	330	0	0	297
Lane Group Flow (vph)	73	279	0	249	251	0	108	384	215	526	235	134
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Effective Green, g (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Actuated g/C Ratio	0.26	0.19		0.37	0.26		0.35	0.27	0.39	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	202	355		320	391		441	939	615	861	579	492
v/s Ratio Prot	0.02	0.15		c0.10	0.16		0.02	0.11	0.04	c0.08	0.13	
v/s Ratio Perm	0.07			c0.19			0.06		0.09	c0.19		0.08
v/c Ratio	0.36	0.79		0.78	0.64		0.24	0.41	0.35	0.61	0.41	0.27
Uniform Delay, d1	32.7	42.8		27.7	36.9		25.4	33.7	23.8	21.4	30.3	28.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	10.9		11.3	3.6		0.2	1.3	0.3	1.3	2.1	1.4
Delay (s)	33.8	53.7		39.0	40.5		25.6	35.1	24.1	22.7	32.4	30.3
Level of Service	C	D		D	D		C	D	C	C	C	C
Approach Delay (s)		49.6			39.9			28.3			27.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	26.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	137	1426	64	235	53	1373	430	29	63	781	133
v/c Ratio	0.26	0.60	0.90	0.17	0.60	0.03	0.88	0.21	0.02	0.30	0.77	0.18
Control Delay	46.9	56.5	9.8	41.1	49.1	0.0	40.2	11.9	0.0	49.2	40.5	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.9	56.5	9.8	41.1	49.1	0.0	40.2	11.9	0.0	49.2	40.5	3.9
Queue Length 50th (ft)	18	46	0	19	76	0	290	73	0	20	247	0
Queue Length 95th (ft)	36	69	0	39	105	0	206	96	0	29	255	33
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	373	385	1583	390	402	1568	1663	2010	1568	213	1013	793
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.36	0.90	0.16	0.58	0.03	0.83	0.21	0.02	0.30	0.77	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
Future Volume (veh/h)	50	114	713	56	193	43	851	361	20	40	570	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	137	0	64	235	0	1373	430	0	63	781	133
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	206		299	308		1509	2164		113	1178	616
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.30	0.61	0.00	0.03	0.33	0.33
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	57	137	0	64	235	0	1373	430	0	63	781	133
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.6	3.8	0.0	1.8	6.6	0.0	26.8	5.4	0.0	1.8	19.1	5.7
Cycle Q Clear(g_c), s	1.6	3.8	0.0	1.8	6.6	0.0	26.8	5.4	0.0	1.8	19.1	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	206		299	308		1509	2164		113	1178	616
V/C Ratio(X)	0.28	0.66		0.21	0.76		0.91	0.20		0.56	0.66	0.22
Avail Cap(c_a), veh/h	376	387		339	349		1678	2164		204	1178	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	46.6	0.0	42.9	45.1	0.0	33.9	8.6	0.0	48.1	28.8	20.4
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.4	8.5	0.0	6.9	0.2	0.0	4.3	3.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	0.8	3.2	0.0	11.1	1.8	0.0	0.8	8.1	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.8	48.0	0.0	43.2	53.6	0.0	40.7	8.8	0.0	52.4	31.7	21.2
LnGrp LOS	D	D		D	D		D	A		D	C	C
Approach Vol, veh/h		194			299			1803			977	
Approach Delay, s/veh		47.4			51.4			33.1			31.6	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	68.0		10.9	36.6	39.7		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		11.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	7.4		5.8	28.8	21.1		8.6				
Green Ext Time (p_c), s	0.0	2.8		0.1	1.8	1.5		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	35.2	
HCM 6th LOS	D	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	251	20	98	1381	195	70	1313	10
v/c Ratio	0.05	0.01	0.60	0.09	0.28	0.61	0.18	0.34	0.51	0.01
Control Delay	44.2	0.0	47.6	39.2	1.9	10.7	1.3	49.7	7.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	47.6	39.2	1.9	10.7	1.3	49.7	7.5	0.0
Queue Length 50th (ft)	3	0	78	11	0	250	10	22	147	0
Queue Length 95th (ft)	6	0	120	9	0	330	24	39	299	0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	280	1615	430	233	360	2269	1084	215	2560	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.58	0.09	0.27	0.61	0.18	0.33	0.51	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
Future Volume (veh/h)	5	0	5	236	5	62	0	1160	185	55	1274	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		325	176	149	3	2251	1004	118	2514	
Arrive On Green	0.01	0.00	0.00	0.09	0.09	0.09	0.00	0.64	0.64	0.03	0.71	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	251	20	98	0	1381	195	70	1313	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.2	1.0	6.0	0.0	23.3	5.1	2.0	17.0	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.2	1.0	6.0	0.0	23.3	5.1	2.0	17.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		325	176	149	3	2251	1004	118	2514	
V/C Ratio(X)	0.23	0.00		0.77	0.11	0.66	0.00	0.61	0.19	0.59	0.52	
Avail Cap(c_a), veh/h	281	152		377	204	173	549	2251	1004	206	2514	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	44.2	41.4	43.7	0.0	10.7	7.5	47.6	6.6	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	8.8	0.3	7.9	0.0	1.3	0.4	1.8	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	3.4	0.5	2.7	0.0	7.7	1.6	0.9	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	53.0	41.8	51.6	0.0	12.0	7.9	49.3	7.3	0.0
LnGrp LOS	D	A		D	D	D	A	B	A	D	A	
Approach Vol, veh/h		10			369			1576			1383	
Approach Delay, s/veh		52.3			52.0			11.5			9.5	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	69.9		7.2	0.0	77.3		15.5				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	53.0		8.0	16.0	43.0		11.0				
Max Q Clear Time (g_c+I1), s	4.0	25.3		2.3	0.0	19.0		9.2				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.0	9.9		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		15.2
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	534	337	373	618	312	732
v/c Ratio	0.49	0.26	0.35	0.45	0.67	0.46
Control Delay	16.0	1.0	5.5	7.9	48.0	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	1.0	5.5	7.9	48.0	0.9
Queue Length 50th (ft)	173	0	27	124	98	0
Queue Length 95th (ft)	381	9	65	245	137	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1083	1461	1192	1367	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.23	0.31	0.45	0.32	0.46

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	263	332	494	303	498
Future Volume (vph)	486	263	332	494	303	498
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	1.00	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3467	1881	3467	1599
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1185	1881	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	534	337	373	618	312	732
RTOR Reduction (vph)	0	107	0	0	0	0
Lane Group Flow (vph)	534	230	373	618	312	732
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.8	68.3	68.7	68.7	13.5	100.0
Effective Green, g (s)	54.8	68.3	68.7	68.7	13.5	100.0
Actuated g/C Ratio	0.55	0.68	0.69	0.69	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1011	1070	1017	1292	468	1599
v/s Ratio Prot	c0.29	0.03	0.03	0.33	c0.09	
v/s Ratio Perm		0.12	0.22			c0.46
v/c Ratio	0.53	0.22	0.37	0.48	0.67	0.46
Uniform Delay, d1	14.4	5.9	7.6	7.3	41.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.0	0.1	1.3	2.8	0.9
Delay (s)	16.4	5.9	7.7	8.6	43.9	0.9
Level of Service	B	A	A	A	D	A
Approach Delay (s)	12.3			8.2	13.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	484	420	195	499	505	145	83	735	189	147	664	322
v/c Ratio	0.54	0.34	0.29	0.51	0.41	0.23	0.34	0.76	0.12	0.62	0.64	0.47
Control Delay	20.1	32.1	5.4	19.7	33.0	5.7	28.1	49.2	0.2	36.3	42.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	32.1	5.4	19.7	33.0	5.7	28.1	49.2	0.2	36.3	42.8	6.2
Queue Length 50th (ft)	111	132	0	115	163	0	42	291	0	77	247	0
Queue Length 95th (ft)	136	194	38	159	221	32	60	391	0	112	335	73
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1119	1235	679	1184	1243	643	341	963	1599	289	1037	691
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.34	0.29	0.42	0.41	0.23	0.24	0.76	0.12	0.51	0.64	0.47

Intersection Summary

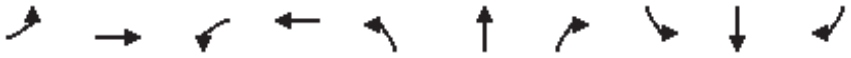
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
Future Volume (veh/h)	392	407	160	459	434	116	57	654	172	115	591	309
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	882	1271	567	931	1282	564	225	990		256	1082	483
Arrive On Green	0.11	0.36	0.36	0.11	0.36	0.36	0.05	0.28	0.00	0.07	0.30	0.30
Sat Flow, veh/h	3456	3554	1585	3456	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	484	420	195	499	505	145	83	735	0	147	664	322
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	10.7	10.6	11.1	11.0	13.0	8.0	4.0	23.0	0.0	7.1	19.7	21.8
Cycle Q Clear(g_c), s	10.7	10.6	11.1	11.0	13.0	8.0	4.0	23.0	0.0	7.1	19.7	21.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	882	1271	567	931	1282	564	225	990		256	1082	483
V/C Ratio(X)	0.55	0.33	0.34	0.54	0.39	0.26	0.37	0.74		0.57	0.61	0.67
Avail Cap(c_a), veh/h	1206	1271	567	1245	1282	564	361	990		341	1082	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	28.8	28.9	20.8	29.3	27.7	30.8	40.5	0.0	30.7	36.6	37.3
Incr Delay (d2), s/veh	0.2	0.7	1.7	0.2	0.9	1.1	0.4	5.0	0.0	0.8	2.6	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.6	4.4	4.4	5.7	3.1	1.7	10.6	0.0	3.0	8.7	9.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	29.5	30.6	21.0	30.2	28.8	31.2	45.5	0.0	31.5	39.2	44.5
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	D
Approach Vol, veh/h		1099			1149			818			1133	
Approach Delay, s/veh		26.1			26.0			44.1			39.7	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.8	50.0	14.2	40.0	18.5	50.3	10.7	43.4
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	13.0	13.1	9.1	25.0	12.7	15.0	6.0	23.8
Green Ext Time (p_c), s	0.8	3.5	0.1	3.1	0.8	4.0	0.0	3.9

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	220	355	378	20	324	106	117	395	77
v/c Ratio	0.66	0.65	0.79	0.78	0.05	0.30	0.12	0.13	0.53	0.11
Control Delay	33.7	17.0	40.5	18.6	21.2	29.0	4.5	18.7	29.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	17.0	40.5	18.6	21.2	29.0	4.5	18.7	29.7	0.3
Queue Length 50th (ft)	103	5	136	9	5	61	0	14	122	0
Queue Length 95th (ft)	209	0	#308	0	18	152	12	61	#513	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	433	494	448	614	532	1088	870	1057	743	698
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.45	0.79	0.62	0.04	0.30	0.12	0.11	0.53	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Future Volume (vph)	190	5	145	252	5	265	10	246	70	110	340	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1596		1752	1538		1770	3539	1567	3392	1845	1530
Flt Permitted	0.46	1.00		0.41	1.00		0.43	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	856	1596		761	1538		803	3539	1567	1663	1845	1530
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	284	10	210	355	20	358	20	324	106	117	395	77
RTOR Reduction (vph)	0	191	0	0	323	0	0	0	51	0	0	48
Lane Group Flow (vph)	284	29	0	355	55	0	20	324	55	117	395	29
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	26.5	8.7		28.5	9.7		34.0	31.7	50.5	44.3	37.0	37.0
Effective Green, g (s)	26.5	8.7		28.5	9.7		34.0	31.7	50.5	44.3	37.0	37.0
Actuated g/C Ratio	0.27	0.09		0.29	0.10		0.35	0.32	0.51	0.45	0.38	0.38
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	396	141		411	152		300	1143	806	884	695	577
v/s Ratio Prot	0.13	0.02		c0.17	0.04		0.00	0.09	0.01	c0.01	c0.21	
v/s Ratio Perm	0.06			c0.09			0.02		0.02	0.05		0.02
v/c Ratio	0.72	0.20		0.86	0.36		0.07	0.28	0.07	0.13	0.57	0.05
Uniform Delay, d1	31.3	41.5		31.2	41.3		21.4	24.7	12.0	15.5	24.2	19.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	0.7		16.9	1.5		0.1	0.6	0.0	0.1	3.4	0.2
Delay (s)	37.4	42.2		48.1	42.8		21.4	25.4	12.0	15.5	27.6	19.6
Level of Service	D	D		D	D		C	C	B	B	C	B
Approach Delay (s)		39.5			45.3			22.0			24.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	98.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	225	1042	40	182	88	1334	896	66	32	439	58
v/c Ratio	0.37	0.70	0.65	0.11	0.49	0.06	0.91	0.43	0.04	0.15	0.41	0.08
Control Delay	45.6	56.0	2.1	40.4	46.7	0.1	49.6	17.2	0.0	46.2	30.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.6	56.0	2.1	40.4	46.7	0.1	49.6	17.2	0.0	46.2	30.6	1.4
Queue Length 50th (ft)	36	74	0	12	58	0	316	221	0	10	117	0
Queue Length 95th (ft)	61	111	0	18	88	0	192	240	0	22	159	8
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1461	2069	1599	215	1062	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.65	0.11	0.47	0.06	0.91	0.43	0.04	0.15	0.41	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
Future Volume (veh/h)	115	214	865	24	160	69	667	645	45	25	360	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	116	225	0	40	182	0	1334	896	0	32	439	58
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	289	298		253	260		1945	2187		82	860	516
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.38	0.61	0.00	0.02	0.24	0.24
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	116	225	0	40	182	0	1334	896	0	32	439	58
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	6.1	0.0	1.1	5.0	0.0	22.0	13.0	0.0	0.9	10.6	2.6
Cycle Q Clear(g_c), s	3.2	6.1	0.0	1.1	5.0	0.0	22.0	13.0	0.0	0.9	10.6	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	289	298		253	260		1945	2187		82	860	516
V/C Ratio(X)	0.40	0.76		0.16	0.70		0.69	0.41		0.39	0.51	0.11
Avail Cap(c_a), veh/h	522	537		348	358		1945	2187		209	860	516
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.5	44.9	0.0	43.5	45.3	0.0	25.7	10.1	0.0	48.1	32.9	23.8
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.3	3.6	0.0	0.8	0.6	0.0	3.0	2.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.7	0.0	0.5	2.3	0.0	8.3	4.5	0.0	0.4	4.6	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.8	46.3	0.0	43.8	48.9	0.0	26.6	10.7	0.0	51.1	35.1	24.2
LnGrp LOS	D	D		D	D		C	B		D	D	C
Approach Vol, veh/h		341			222			2230			529	
Approach Delay, s/veh		45.5			48.0			20.2			34.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	44.4	30.0		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.0		8.1	24.0	12.6		7.0				
Green Ext Time (p_c), s	0.0	6.6		0.2	1.7	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		27.0
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	252	12	67	20	1399	194	43	1257	10
v/c Ratio	0.08	0.00	0.60	0.05	0.19	0.09	0.59	0.17	0.22	0.52	0.01
Control Delay	44.8	0.0	47.8	38.8	1.2	51.4	7.0	1.2	53.2	6.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	47.8	38.8	1.2	51.4	7.0	1.2	53.2	6.9	0.0
Queue Length 50th (ft)	6	0	78	7	0	6	51	0	13	78	0
Queue Length 95th (ft)	13	0	119	13	0	4	348	18	20	235	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	441	239	364	554	2390	1133	274	2435	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.57	0.05	0.18	0.04	0.59	0.17	0.16	0.52	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
Future Volume (veh/h)	0	5	5	224	6	56	5	1301	175	25	1219	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		330	179	152	74	2330	1039	78	2316	
Arrive On Green	0.00	0.01	0.00	0.09	0.09	0.09	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	252	12	67	20	1399	194	43	1257	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.4	4.8	1.2	19.1	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.1	0.6	4.0	0.6	22.4	4.8	1.2	19.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		330	179	152	74	2330	1039	78	2316	
V/C Ratio(X)	0.00	0.43		0.76	0.07	0.44	0.27	0.60	0.19	0.55	0.54	
Avail Cap(c_a), veh/h	281	152		418	226	192	557	2330	1039	276	2316	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.2	41.2	42.8	48.2	10.0	7.0	48.4	9.4	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	6.8	0.2	2.4	1.9	1.2	0.4	2.2	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	3.3	0.3	1.7	0.3	7.4	1.5	0.5	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	51.0	41.4	45.2	50.1	11.2	7.4	50.6	10.3	0.0
LnGrp LOS	A	E		D	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			331			1613			1300	
Approach Delay, s/veh		63.8			49.5			11.2			11.6	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	71.0		7.2	6.1	71.2		15.5				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	50.0		8.0	16.0	42.0		12.0				
Max Q Clear Time (g_c+I1), s	3.2	24.4		2.5	2.6	21.1		9.1				
Green Ext Time (p_c), s	0.0	11.9		0.0	0.0	8.8		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		15.4
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2030 Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	22	55	416	47	173	133	920	530	219	688	75
v/c Ratio	0.26	0.20	0.03	0.73	0.18	0.47	0.49	0.50	0.50	0.62	0.25	0.08
Control Delay	56.5	57.5	0.1	55.4	44.2	10.3	58.6	22.3	3.7	58.8	16.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	57.5	0.1	55.4	44.2	10.3	58.6	22.3	3.7	58.8	16.5	0.2
Queue Length 50th (ft)	21	17	0	160	32	0	51	251	0	85	106	0
Queue Length 95th (ft)	29	33	0	187	62	47	72	362	36	97	158	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	550	357	1837	1064	385	2763	941
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.12	0.03	0.48	0.09	0.31	0.37	0.50	0.50	0.57	0.25	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	40	345	40	145	105	810	435	160	660	45
Future Volume (veh/h)	35	15	40	345	40	145	105	810	435	160	660	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	22	0	416	47	0	133	920	0	219	688	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		490	240		199	1920		277	2874	
Arrive On Green	0.06	0.04	0.00	0.14	0.13	0.00	0.06	0.54	0.00	0.08	0.56	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	22	0	416	47	0	133	920	0	219	688	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.8	1.3	0.0	14.2	2.7	0.0	4.5	19.3	0.0	7.5	8.2	0.0
Cycle Q Clear(g_c), s	1.8	1.3	0.0	14.2	2.7	0.0	4.5	19.3	0.0	7.5	8.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	85		490	240		199	1920		277	2874	
V/C Ratio(X)	0.27	0.26		0.85	0.20		0.67	0.48		0.79	0.24	
Avail Cap(c_a), veh/h	278	190		871	510		360	1920		360	2874	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	55.4	0.0	50.2	46.6	0.0	55.4	17.1	0.0	54.2	13.3	0.0
Incr Delay (d2), s/veh	0.5	1.6	0.0	3.2	0.4	0.0	2.9	0.9	0.0	7.8	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.7	0.0	6.2	1.3	0.0	2.0	7.8	0.0	3.5	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	57.0	0.0	53.3	47.0	0.0	58.3	18.0	0.0	61.9	13.4	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		78			463			1053			907	
Approach Delay, s/veh		55.3			52.7			23.1			25.2	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	70.8	22.7	11.4	12.4	73.5	12.5	21.5
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	9.5	21.3	16.2	3.3	6.5	10.2	3.8	4.7
Green Ext Time (p_c), s	0.2	10.8	1.0	0.0	0.1	9.5	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	30.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	393	494	581	507	427	546
v/c Ratio	0.44	0.39	0.49	0.22	0.69	0.35
Control Delay	25.3	1.8	10.2	9.1	53.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	1.8	10.2	9.1	53.0	0.6
Queue Length 50th (ft)	172	0	69	62	159	0
Queue Length 95th (ft)	392	29	138	110	#157	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	896	1255	1476	2331	621	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.39	0.39	0.22	0.69	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	350	440	465	365	265	475
Future Volume (vph)	350	440	465	365	265	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.38	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1343	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	393	494	581	507	427	546
RTOR Reduction (vph)	0	180	0	0	0	0
Lane Group Flow (vph)	393	314	581	507	427	546
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.4	76.3	75.9	75.9	21.9	120.0
Effective Green, g (s)	54.4	76.3	75.9	75.9	21.9	120.0
Actuated g/C Ratio	0.45	0.64	0.63	0.63	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	836	996	1132	2216	620	1568
v/s Ratio Prot	0.21	0.06	c0.07	0.14	c0.13	
v/s Ratio Perm		0.14	c0.25			c0.35
v/c Ratio	0.47	0.32	0.51	0.23	0.69	0.35
Uniform Delay, d1	22.8	10.0	11.6	9.5	45.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.1	0.2	0.2	2.5	0.6
Delay (s)	24.7	10.0	11.7	9.7	48.4	0.6
Level of Service	C	B	B	A	D	A
Approach Delay (s)	16.5			10.8	21.6	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	410	373	159	271	529	105	242	713	429	119	624	438
v/c Ratio	0.52	0.31	0.25	0.31	0.50	0.19	0.73	0.67	0.27	0.44	0.67	0.58
Control Delay	20.1	28.9	5.3	18.3	34.5	5.3	35.2	38.7	0.4	25.5	42.0	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	28.9	5.3	18.3	34.5	5.3	35.2	38.7	0.4	25.5	42.0	20.7
Queue Length 50th (ft)	89	106	0	57	166	0	111	234	0	50	215	173
Queue Length 95th (ft)	122	137	35	75	169	23	118	334	0	87	290	187
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	959	1197	641	1149	1057	554	350	1066	1583	367	928	848
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.31	0.25	0.24	0.50	0.19	0.69	0.67	0.27	0.32	0.67	0.52

Intersection Summary

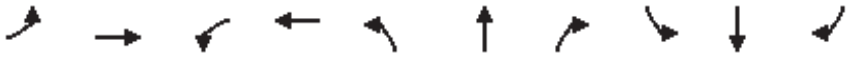
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	385	310	130	225	365	85	150	670	390	100	555	320
Future Volume (veh/h)	385	310	130	225	365	85	150	670	390	100	555	320
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	410	373	159	271	529	105	242	713	0	119	624	438
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	785	1220	544	828	1097	489	329	1125		290	959	590
Arrive On Green	0.10	0.34	0.34	0.08	0.31	0.31	0.11	0.32	0.00	0.06	0.27	0.27
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	410	373	159	271	529	105	242	713	0	119	624	438
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	8.4	8.3	7.9	5.7	13.3	5.4	10.2	18.6	0.0	5.1	16.7	25.8
Cycle Q Clear(g_c), s	8.4	8.3	7.9	5.7	13.3	5.4	10.2	18.6	0.0	5.1	16.7	25.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	785	1220	544	828	1097	489	329	1125		290	959	590
V/C Ratio(X)	0.52	0.31	0.29	0.33	0.48	0.21	0.74	0.63		0.41	0.65	0.74
Avail Cap(c_a), veh/h	1073	1220	544	1200	1097	489	373	1125		423	959	590
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	26.3	26.2	22.2	30.1	27.4	25.5	31.7	0.0	26.8	35.2	29.7
Incr Delay (d2), s/veh	0.2	0.6	1.4	0.1	1.5	1.0	5.2	2.7	0.0	0.3	3.4	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.6	3.1	2.3	5.7	2.1	4.6	8.1	0.0	2.2	7.5	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	26.9	27.5	22.2	31.6	28.4	30.7	34.4	0.0	27.2	38.6	37.9
LnGrp LOS	C	C	C	C	C	C	C	C		C	D	D
Approach Vol, veh/h		942			905			955			1181	
Approach Delay, s/veh		25.0			28.4			33.4			37.2	
Approach LOS		C			C			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	42.9	12.0	40.3	16.0	40.0	17.3	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	7.7	10.3	7.1	20.6	10.4	15.3	12.2	27.8
Green Ext Time (p_c), s	0.4	2.9	0.1	2.9	0.6	3.6	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	31.4
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	282	250	413	108	393	547	526	236	431
v/c Ratio	0.31	0.80	0.76	0.73	0.23	0.40	0.56	0.59	0.39	0.54
Control Delay	29.9	59.5	43.6	27.2	21.3	35.4	4.7	24.3	34.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	59.5	43.6	27.2	21.3	35.4	4.7	24.3	34.3	6.4
Queue Length 50th (ft)	28	167	109	113	35	104	0	97	109	0
Queue Length 95th (ft)	90	203	#349	7	112	183	6	198	230	3
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	346	354	330	567	573	979	973	915	604	804
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.80	0.76	0.73	0.19	0.40	0.56	0.57	0.39	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	135	25	220	20	210	95	295	410	405	175	310
Future Volume (vph)	65	135	25	220	20	210	95	295	410	405	175	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1844		1702	1528		1770	3539	1564	3427	1863	1583
Flt Permitted	0.24	1.00		0.24	1.00		0.60	1.00	1.00	0.38	1.00	1.00
Satd. Flow (perm)	451	1844		428	1528		1121	3539	1564	1353	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	73	250	32	250	51	362	108	393	547	526	236	431
RTOR Reduction (vph)	0	3	0	0	162	0	0	0	332	0	0	297
Lane Group Flow (vph)	73	279	0	250	251	0	108	393	215	526	236	134
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Effective Green, g (s)	28.7	21.5		40.8	28.6		38.6	29.6	43.9	48.7	34.7	34.7
Actuated g/C Ratio	0.26	0.19		0.37	0.26		0.35	0.27	0.39	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	202	355		320	391		440	939	615	853	579	492
v/s Ratio Prot	0.02	0.15		c0.10	0.16		0.02	0.11	0.04	c0.08	0.13	
v/s Ratio Perm	0.07			c0.19			0.07		0.09	c0.19		0.08
v/c Ratio	0.36	0.79		0.78	0.64		0.25	0.42	0.35	0.62	0.41	0.27
Uniform Delay, d1	32.7	42.8		27.7	36.9		25.4	33.8	23.8	21.5	30.3	28.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	10.9		11.7	3.6		0.2	1.4	0.3	1.3	2.1	1.4
Delay (s)	33.8	53.7		39.4	40.5		25.6	35.2	24.1	22.8	32.4	30.3
Level of Service	C	D		D	D		C	D	C	C	C	C
Approach Delay (s)		49.6			40.1			28.4			27.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.5	Sum of lost time (s)	26.5
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	57	139	1460	63	238	56	1403	476	29	63	863	133
v/c Ratio	0.25	0.60	0.92	0.17	0.62	0.04	0.89	0.24	0.02	0.30	0.87	0.18
Control Delay	46.3	56.0	11.8	41.2	49.9	0.0	35.8	5.0	0.0	48.6	46.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	56.0	11.8	41.2	49.9	0.0	35.8	5.0	0.0	48.6	46.2	3.7
Queue Length 50th (ft)	18	46	0	19	76	0	175	24	0	20	284	0
Queue Length 95th (ft)	36	70	0	38	106	0	183	38	m0	28	#284	32
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	381	393	1568	1680	2009	1568	215	995	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.92	0.17	0.61	0.04	0.84	0.24	0.02	0.29	0.87	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	115	730	55	195	45	870	400	20	40	630	120
Future Volume (veh/h)	50	115	730	55	195	45	870	400	20	40	630	120
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	57	139	0	62	238	0	1403	476	0	63	863	133
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	208		303	311		1538	2150		113	1143	602
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.31	0.61	0.00	0.03	0.32	0.32
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	57	139	0	62	238	0	1403	476	0	63	863	133
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.6	3.8	0.0	1.7	6.6	0.0	27.1	6.1	0.0	1.8	21.9	5.7
Cycle Q Clear(g_c), s	1.6	3.8	0.0	1.7	6.6	0.0	27.1	6.1	0.0	1.8	21.9	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	208		303	311		1538	2150		113	1143	602
V/C Ratio(X)	0.28	0.67		0.20	0.76		0.91	0.22		0.56	0.75	0.22
Avail Cap(c_a), veh/h	346	355		343	353		1694	2150		206	1143	602
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	46.1	0.0	42.3	44.6	0.0	33.3	8.8	0.0	47.6	30.2	20.8
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.3	8.5	0.0	7.0	0.2	0.0	4.2	4.6	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	0.7	3.2	0.0	11.2	2.1	0.0	0.8	9.4	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.3	47.5	0.0	42.7	53.1	0.0	40.3	9.0	0.0	51.8	34.9	21.6
LnGrp LOS	D	D		D	D		D	A		D	C	C
Approach Vol, veh/h		196			300			1879			1059	
Approach Delay, s/veh		46.9			50.9			32.4			34.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	67.0		10.9	36.9	38.4		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	8.1		5.8	29.1	23.9		8.6				
Green Ext Time (p_c), s	0.0	3.1		0.1	1.8	0.1		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		35.4
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	255	20	95	1452	200	76	1397	10
v/c Ratio	0.05	0.01	0.61	0.09	0.27	0.64	0.18	0.37	0.54	0.01
Control Delay	44.2	0.0	48.3	39.6	1.9	11.0	1.2	50.8	4.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	48.3	39.6	1.9	11.0	1.2	50.8	4.3	0.0
Queue Length 50th (ft)	3	0	79	11	0	272	9	25	97	0
Queue Length 95th (ft)	6	0	124	9	0	348	19	m28	m162	m0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	245	1615	425	230	358	2270	1086	217	2564	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.60	0.09	0.27	0.64	0.18	0.35	0.54	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	240	5	60	0	1220	190	60	1355	5
Future Volume (veh/h)	5	0	5	240	5	60	0	1220	190	60	1355	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	255	20	95	0	1452	200	76	1397	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		328	178	151	3	2240	999	126	2511	
Arrive On Green	0.01	0.00	0.00	0.10	0.10	0.10	0.00	0.64	0.64	0.04	0.71	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	255	20	95	0	1452	200	76	1397	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.3	1.0	5.8	0.0	25.5	5.3	2.2	18.9	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.3	1.0	5.8	0.0	25.5	5.3	2.2	18.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		328	178	151	3	2240	999	126	2511	
V/C Ratio(X)	0.23	0.00		0.78	0.11	0.63	0.00	0.65	0.20	0.60	0.56	
Avail Cap(c_a), veh/h	246	133		377	204	173	549	2240	999	206	2511	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	44.2	41.3	43.5	0.0	11.3	7.6	47.4	6.9	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	9.1	0.3	6.6	0.0	1.5	0.5	1.7	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	3.5	0.5	2.5	0.0	8.5	1.6	0.9	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	53.3	41.7	50.1	0.0	12.8	8.1	49.1	7.8	0.0
LnGrp LOS	D	A		D	D	D	A	B	A	D	A	
Approach Vol, veh/h		10			370			1652			1473	
Approach Delay, s/veh		52.3			51.8			12.2			9.9	
Approach LOS		D			D			B			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	69.5		7.2	0.0	77.2		15.6				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	54.0		7.0	16.0	44.0		11.0				
Max Q Clear Time (g_c+I1), s	4.2	27.5		2.3	0.0	20.9		9.3				
Green Ext Time (p_c), s	0.0	12.8		0.0	0.0	10.6		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		15.5
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	103	105	753	227	796	1287	542
v/c Ratio	0.59	0.59	0.48	0.62	0.29	0.40	0.45
Control Delay	55.2	55.5	1.1	29.1	2.7	6.9	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	55.5	1.1	29.1	2.7	6.9	2.3
Queue Length 50th (ft)	67	68	0	82	42	124	11
Queue Length 95th (ft)	106	98	0	176	63	155	15
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	413	2739	3220	1198
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.35	0.48	0.55	0.29	0.40	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	160	10	670	200	740	0	0	1145	450
Future Volume (vph)	0	0	0	160	10	670	200	740	0	0	1145	450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.17	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	314	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	195	13	753	227	796	0	0	1287	542
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	196
Lane Group Flow (vph)	0	0	0	103	105	753	227	796	0	0	1287	346
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.6	10.6	100.0	77.4	77.4			63.9	63.9
Effective Green, g (s)				10.6	10.6	100.0	77.4	77.4			63.9	63.9
Actuated g/C Ratio				0.11	0.11	1.00	0.77	0.77			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				176	177	1568	366	2739			3218	1001
v/s Ratio Prot							0.05	0.22			0.26	
v/s Ratio Perm				0.06	0.06	c0.48	c0.43					0.22
v/c Ratio				0.59	0.59	0.48	0.62	0.29			0.40	0.35
Uniform Delay, d1				42.6	42.6	0.0	4.7	3.3			8.8	8.4
Progression Factor				1.00	1.00	1.00	5.38	0.67			0.68	1.17
Incremental Delay, d2				3.2	3.5	1.1	2.2	0.3			0.3	0.8
Delay (s)				45.8	46.2	1.1	27.3	2.5			6.3	10.6
Level of Service				D	D	A	C	A			A	B
Approach Delay (s)		0.0			10.8			8.0			7.6	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	120	122	208	824	67	364	1049
v/c Ratio	0.62	0.63	0.13	0.41	0.07	0.72	0.39
Control Delay	55.7	55.7	0.2	14.3	2.2	50.5	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	55.7	0.2	14.3	2.2	50.5	4.4
Queue Length 50th (ft)	77	78	0	147	0	82	66
Queue Length 95th (ft)	127	90	0	237	11	131	77
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	1994	930	680	2675
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.39	0.13	0.41	0.07	0.54	0.39

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	15	175	0	0	0	0	750	55	335	965	0
Future Volume (vph)	190	15	175	0	0	0	0	750	55	335	965	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1669	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1669	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	218	24	208	0	0	0	0	824	67	364	1049	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	29	0	0	0
Lane Group Flow (vph)	120	122	208	0	0	0	0	824	38	364	1049	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	11.7	11.7	100.0					56.3	56.3	15.0	76.3	
Effective Green, g (s)	11.7	11.7	100.0					56.3	56.3	15.0	76.3	
Actuated g/C Ratio	0.12	0.12	1.00					0.56	0.56	0.15	0.76	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	192	195	1553					1992	891	510	2674	
v/s Ratio Prot								c0.23		c0.11	0.30	
v/s Ratio Perm	0.07	0.07	0.13						0.02			
v/c Ratio	0.62	0.63	0.13					0.41	0.04	0.71	0.39	
Uniform Delay, d1	42.1	42.1	0.0					12.4	9.8	40.5	4.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.06	0.92	
Incremental Delay, d2	4.5	4.4	0.2					0.6	0.1	3.7	0.4	
Delay (s)	46.6	46.5	0.2					13.1	9.9	46.7	4.1	
Level of Service	D	D	A					B	A	D	A	
Approach Delay (s)		25.1			0.0			12.8			15.1	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	621	654	421
Demand Flow Rate, veh/h	627	667	430
Vehicles Circulating, veh/h	247	436	168
Vehicles Exiting, veh/h	351	438	935
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.8	9.1	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.695	0.305	0.252	0.748	0.574	0.426
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	436	191	168	499	247	183
Cap Entry Lane, veh/h	1075	1151	904	980	1157	1231
Entry HV Adj Factor	0.991	0.990	0.980	0.980	0.980	0.978
Flow Entry, veh/h	432	189	165	489	242	179
Cap Entry, veh/h	1066	1140	886	960	1133	1204
V/C Ratio	0.405	0.166	0.186	0.509	0.214	0.149
Control Delay, s/veh	7.7	4.6	5.9	10.1	5.1	4.3
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	1	3	1	1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	81	138	628	93	119	153	887	494	236	1124	152
v/c Ratio	0.32	0.47	0.09	0.85	0.21	0.24	0.55	0.62	0.53	0.61	0.51	0.19
Control Delay	54.9	58.9	0.1	54.7	36.3	2.2	59.0	31.0	4.8	55.3	25.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	58.9	0.1	54.7	36.3	2.2	59.0	31.0	4.8	55.3	25.4	2.8
Queue Length 50th (ft)	29	58	0	229	55	0	57	283	0	88	229	0
Queue Length 95th (ft)	50	89	0	#311	78	3	93	391	60	131	291	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	398	242	1578	845	501	549	302	1435	929	494	2221	782
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.33	0.09	0.74	0.19	0.22	0.51	0.62	0.53	0.48	0.51	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	60	130	565	65	100	135	825	430	215	1045	85
Future Volume (veh/h)	65	60	130	565	65	100	135	825	430	215	1045	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	80	81	0	628	93	0	153	887	0	236	1124	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	230	132		710	391		228	1508		307	2284	
Arrive On Green	0.07	0.07	0.00	0.20	0.21	0.00	0.07	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	80	81	0	628	93	0	153	887	0	236	1124	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.3	4.4	0.0	18.5	4.4	0.0	4.5	20.2	0.0	7.0	16.5	0.0
Cycle Q Clear(g_c), s	2.3	4.4	0.0	18.5	4.4	0.0	4.5	20.2	0.0	7.0	16.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	132		710	391		228	1508		307	2284	
V/C Ratio(X)	0.35	0.61		0.88	0.24		0.67	0.59		0.77	0.49	
Avail Cap(c_a), veh/h	411	249		872	498		312	1508		510	2284	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.3	47.9	0.0	41.0	35.0	0.0	48.4	23.6	0.0	47.2	21.0	0.0
Incr Delay (d2), s/veh	0.7	4.6	0.0	8.8	0.3	0.0	2.6	1.7	0.0	3.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.2	0.0	8.6	2.0	0.0	2.0	8.6	0.0	3.1	6.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	52.4	0.0	49.8	35.3	0.0	50.9	25.3	0.0	50.3	21.7	0.0
LnGrp LOS	D	D		D	D		D	C		D	C	
Approach Vol, veh/h		161			721			1040			1360	
Approach Delay, s/veh		50.2			47.9			29.1			26.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	50.6	27.1	13.4	12.4	53.0	12.5	28.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.0	22.2	20.5	6.4	6.5	18.5	4.3	6.4
Green Ext Time (p_c), s	0.3	9.8	1.0	0.1	0.1	15.6	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.3
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	544	353	376	631	325	757
v/c Ratio	0.51	0.28	0.36	0.24	0.68	0.47
Control Delay	16.8	1.0	5.7	5.6	48.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	1.0	5.7	5.6	48.1	1.0
Queue Length 50th (ft)	182	0	28	55	103	0
Queue Length 95th (ft)	399	9	67	104	142	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1069	1467	1163	2586	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.24	0.32	0.24	0.34	0.47

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	275	335	505	315	515
Future Volume (vph)	495	275	335	505	315	515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.31	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1143	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	544	353	376	631	325	757
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	544	239	376	631	325	757
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.0	67.8	68.4	68.4	13.8	100.0
Effective Green, g (s)	54.0	67.8	68.4	68.4	13.8	100.0
Actuated g/C Ratio	0.54	0.68	0.68	0.68	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	996	1063	1000	2444	478	1599
v/s Ratio Prot	c0.29	0.03	0.04	0.18	c0.09	
v/s Ratio Perm		0.12	0.22			c0.47
v/c Ratio	0.55	0.23	0.38	0.26	0.68	0.47
Uniform Delay, d1	15.0	6.1	7.9	6.1	41.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.1	0.3	3.0	1.0
Delay (s)	17.2	6.2	8.0	6.3	44.0	1.0
Level of Service	B	A	A	A	D	A
Approach Delay (s)	12.8			6.9	13.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	494	428	201	511	523	150	80	758	198	154	680	328
v/c Ratio	0.56	0.35	0.30	0.52	0.42	0.23	0.33	0.79	0.12	0.66	0.65	0.38
Control Delay	20.4	32.5	5.3	19.9	33.7	5.8	28.4	50.9	0.2	39.1	43.3	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.4	32.5	5.3	19.9	33.7	5.8	28.4	50.9	0.2	39.1	43.3	7.2
Queue Length 50th (ft)	114	136	0	119	171	0	40	305	0	81	256	39
Queue Length 95th (ft)	139	198	38	163	233	33	59	408	0	118	347	105
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1100	1230	681	1175	1234	643	335	958	1599	280	1041	964
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.35	0.30	0.43	0.42	0.23	0.24	0.79	0.12	0.55	0.65	0.34

Intersection Summary

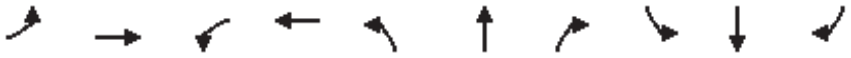
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	415	165	470	450	120	55	675	180	120	605	315
Future Volume (veh/h)	400	415	165	470	450	120	55	675	180	120	605	315
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	494	428	201	511	523	150	80	758	0	154	680	328
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	870	1264	564	926	1275	562	220	984		252	1090	663
Arrive On Green	0.11	0.36	0.36	0.11	0.36	0.36	0.05	0.27	0.00	0.08	0.31	0.31
Sat Flow, veh/h	3456	3554	1585	3456	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	494	428	201	511	523	150	80	758	0	154	680	328
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	11.0	10.9	11.6	11.4	13.7	8.4	3.9	24.1	0.0	7.5	20.3	18.8
Cycle Q Clear(g_c), s	11.0	10.9	11.6	11.4	13.7	8.4	3.9	24.1	0.0	7.5	20.3	18.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	870	1264	564	926	1275	562	220	984		252	1090	663
V/C Ratio(X)	0.57	0.34	0.36	0.55	0.41	0.27	0.36	0.77		0.61	0.62	0.49
Avail Cap(c_a), veh/h	1183	1264	564	1228	1275	562	356	984		331	1090	663
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	29.2	29.4	21.1	29.8	28.1	31.2	41.3	0.0	31.0	36.8	26.4
Incr Delay (d2), s/veh	0.2	0.7	1.8	0.2	1.0	1.2	0.4	5.8	0.0	0.9	2.7	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	4.8	4.6	4.5	6.0	3.3	1.7	11.2	0.0	3.2	9.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	29.9	31.2	21.3	30.8	29.3	31.6	47.1	0.0	31.9	39.5	29.0
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		1123			1184			838			1162	
Approach Delay, s/veh		26.6			26.5			45.6			35.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	50.0	14.5	40.0	18.8	50.4	10.6	43.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	13.4	13.6	9.5	26.1	13.0	15.7	5.9	22.3
Green Ext Time (p_c), s	0.8	3.6	0.1	3.0	0.8	4.2	0.0	4.3

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	284	220	352	378	20	329	106	117	407	77
v/c Ratio	0.71	0.65	0.81	0.76	0.05	0.30	0.12	0.13	0.54	0.11
Control Delay	37.2	17.0	42.6	16.9	20.7	28.5	4.6	18.3	29.3	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	17.0	42.6	16.9	20.7	28.5	4.6	18.3	29.3	0.3
Queue Length 50th (ft)	103	5	134	9	5	61	0	14	123	0
Queue Length 95th (ft)	209	0	#318	0	18	154	12	61	#536	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	398	514	433	645	534	1104	864	1070	753	705
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.43	0.81	0.59	0.04	0.30	0.12	0.11	0.54	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	5	145	250	5	265	10	250	70	110	350	60
Future Volume (vph)	190	5	145	250	5	265	10	250	70	110	350	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.97		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1768	1596		1752	1539		1770	3539	1566	3392	1845	1531
Flt Permitted	0.47	1.00		0.37	1.00		0.42	1.00	1.00	0.46	1.00	1.00
Satd. Flow (perm)	866	1596		690	1539		784	3539	1566	1655	1845	1531
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	284	10	210	352	20	358	20	329	106	117	407	77
RTOR Reduction (vph)	0	191	0	0	319	0	0	0	52	0	0	48
Lane Group Flow (vph)	284	29	0	352	59	0	20	329	54	117	407	29
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	24.3	8.6		28.5	10.7		34.1	31.8	49.6	44.4	37.1	37.1
Effective Green, g (s)	24.3	8.6		28.5	10.7		34.1	31.8	49.6	44.4	37.1	37.1
Actuated g/C Ratio	0.25	0.09		0.29	0.11		0.35	0.33	0.51	0.46	0.38	0.38
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	362	141		397	169		298	1159	799	892	704	584
v/s Ratio Prot	0.13	0.02		c0.16	0.04		0.00	0.09	0.01	c0.01	c0.22	
v/s Ratio Perm	0.07			c0.10			0.02		0.02	0.05		0.02
v/c Ratio	0.78	0.20		0.89	0.35		0.07	0.28	0.07	0.13	0.58	0.05
Uniform Delay, d1	32.6	41.1		30.6	40.0		20.9	24.2	12.0	15.0	23.8	18.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.6	0.7		20.5	1.3		0.1	0.6	0.0	0.1	3.4	0.2
Delay (s)	43.3	41.8		51.1	41.3		20.9	24.8	12.1	15.1	27.2	19.1
Level of Service	D	D		D	D		C	C	B	B	C	B
Approach Delay (s)		42.6			46.0			21.7			23.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	97.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	232	1072	42	182	96	1370	993	66	32	488	63
v/c Ratio	0.37	0.71	0.67	0.12	0.50	0.06	0.89	0.48	0.04	0.15	0.49	0.08
Control Delay	45.2	56.0	2.3	40.6	46.8	0.1	39.9	10.0	0.0	46.2	33.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	56.0	2.3	40.6	46.8	0.1	39.9	10.0	0.0	46.2	33.0	0.2
Queue Length 50th (ft)	36	76	0	12	58	0	238	159	0	10	141	0
Queue Length 95th (ft)	61	113	0	19	89	0	158	100	0	22	176	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	377	389	1599	1547	2063	1599	215	1003	857
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.43	0.67	0.11	0.47	0.06	0.89	0.48	0.04	0.15	0.49	0.07

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	220	890	25	160	75	685	715	45	25	400	60
Future Volume (veh/h)	115	220	890	25	160	75	685	715	45	25	400	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	116	232	0	42	182	0	1370	993	0	32	488	63
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	296	305		253	260		1454	2180		82	1200	671
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.34	0.34
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	116	232	0	42	182	0	1370	993	0	32	488	63
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.2	6.3	0.0	1.1	5.0	0.0	26.4	15.0	0.0	0.9	10.5	2.4
Cycle Q Clear(g_c), s	3.2	6.3	0.0	1.1	5.0	0.0	26.4	15.0	0.0	0.9	10.5	2.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	296	305		253	260		1454	2180		82	1200	671
V/C Ratio(X)	0.39	0.76		0.17	0.70		0.94	0.46		0.39	0.41	0.09
Avail Cap(c_a), veh/h	522	537		348	358		1468	2180		209	1200	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	44.8	0.0	43.5	45.3	0.0	34.8	10.6	0.0	48.1	25.6	17.5
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.3	3.6	0.0	12.1	0.7	0.0	3.0	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.8	0.0	0.5	2.3	0.0	11.8	5.2	0.0	0.4	4.4	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.6	46.2	0.0	43.8	48.9	0.0	46.9	11.3	0.0	51.1	26.6	17.8
LnGrp LOS	D	D		D	D		D	B		D	C	B
Approach Vol, veh/h		348			224			2363			583	
Approach Delay, s/veh		45.4			47.9			31.9			27.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.9		13.5	34.7	39.5		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	17.0		8.3	28.4	12.5		7.0				
Green Ext Time (p_c), s	0.0	7.4		0.2	0.3	2.4		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		33.5
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	258	10	66	20	1489	200	43	1325	10
v/c Ratio	0.08	0.00	0.61	0.04	0.18	0.09	0.62	0.18	0.22	0.54	0.01
Control Delay	44.8	0.0	47.9	38.6	1.1	50.4	8.2	1.6	50.8	7.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	47.9	38.6	1.1	50.4	8.2	1.6	50.8	7.7	0.0
Queue Length 50th (ft)	6	0	80	6	0	6	54	0	14	100	0
Queue Length 95th (ft)	13	0	121	12	0	4	386	22	20	244	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	443	240	365	554	2386	1134	274	2432	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.58	0.04	0.18	0.04	0.62	0.18	0.16	0.54	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	230	5	55	5	1385	180	25	1285	5
Future Volume (veh/h)	0	5	5	230	5	55	5	1385	180	25	1285	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	258	10	66	20	1489	200	43	1325	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		336	182	154	74	2324	1037	78	2311	
Arrive On Green	0.00	0.01	0.00	0.10	0.10	0.10	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	258	10	66	20	1489	200	43	1325	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.2	0.5	3.9	0.6	25.0	5.0	1.2	20.8	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.2	0.5	3.9	0.6	25.0	5.0	1.2	20.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		336	182	154	74	2324	1037	78	2311	
V/C Ratio(X)	0.00	0.43		0.77	0.06	0.43	0.27	0.64	0.19	0.55	0.57	
Avail Cap(c_a), veh/h	281	152		418	226	192	557	2324	1037	276	2311	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.1	41.0	42.6	48.2	10.5	7.0	48.4	9.8	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	7.2	0.2	2.3	1.9	1.4	0.4	2.2	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	3.4	0.2	1.6	0.3	8.4	1.5	0.5	6.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	51.3	41.2	44.9	50.1	11.9	7.5	50.6	10.8	0.0
LnGrp LOS	A	E		D	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			334			1709			1368	
Approach Delay, s/veh		63.8			49.7			11.8			12.0	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	70.9		7.2	6.1	71.0		15.6				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	50.0		8.0	16.0	42.0		12.0				
Max Q Clear Time (g_c+I1), s	3.2	27.0		2.5	2.6	22.8		9.2				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.0	9.0		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		15.8
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	99	101	450	224	1253	1302	307
v/c Ratio	0.57	0.58	0.28	0.58	0.46	0.41	0.28
Control Delay	54.8	55.1	0.4	24.5	5.6	6.3	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	54.8	55.1	0.4	24.5	5.8	6.3	1.5
Queue Length 50th (ft)	64	65	0	101	92	136	10
Queue Length 95th (ft)	114	46	0	157	234	68	13
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	605	2751	3192	1108
Starvation Cap Reductn	0	0	0	0	611	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.28	0.37	0.59	0.41	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	5	405	190	1165	0	0	1250	270
Future Volume (vph)	0	0	0	170	5	405	190	1165	0	0	1250	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.16	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	304	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	187	13	450	224	1253	0	0	1302	307
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	115
Lane Group Flow (vph)	0	0	0	99	101	450	224	1253	0	0	1302	192
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.3	10.3	100.0	77.7	77.7			62.7	62.7
Effective Green, g (s)				10.3	10.3	100.0	77.7	77.7			62.7	62.7
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.63	0.63
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				174	176	1599	382	2749			3188	992
v/s Ratio Prot							c0.06	0.35			0.26	
v/s Ratio Perm				0.06	0.06	0.28	c0.40					0.12
v/c Ratio				0.57	0.57	0.28	0.59	0.46			0.41	0.19
Uniform Delay, d1				42.7	42.8	0.0	4.8	3.8			9.4	7.9
Progression Factor				1.00	1.00	1.00	4.74	1.22			0.57	0.65
Incremental Delay, d2				2.5	2.8	0.4	1.2	0.4			0.3	0.4
Delay (s)				45.3	45.6	0.4	23.9	5.1			5.7	5.5
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.3			8.0			5.7	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	197	194	234	1068	192	582	880
v/c Ratio	0.77	0.75	0.15	0.63	0.22	0.87	0.34
Control Delay	60.2	58.6	0.2	22.3	3.2	52.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.2	58.6	0.2	22.3	3.2	52.5	6.4
Queue Length 50th (ft)	127	125	0	272	0	113	66
Queue Length 95th (ft)	200	101	0	354	17	#247	80
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1698	859	698	2566
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.62	0.15	0.63	0.22	0.83	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	330	10	185	0	0	0	0	1025	140	570	845	0
Future Volume (vph)	330	10	185	0	0	0	0	1025	140	570	845	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1661	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1661	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	371	20	234	0	0	0	0	1068	192	582	880	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	100	0	0	0
Lane Group Flow (vph)	197	194	234	0	0	0	0	1068	92	582	880	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Effective Green, g (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.48	0.48	0.20	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	255	257	1553					1698	759	669	2565	
v/s Ratio Prot								c0.30		c0.17	0.25	
v/s Ratio Perm	c0.12	0.12	0.15						0.06			
v/c Ratio	0.77	0.75	0.15					0.63	0.12	0.87	0.34	
Uniform Delay, d1	40.6	40.4	0.0					19.4	14.4	39.0	5.0	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.99	1.11	
Incremental Delay, d2	12.4	10.6	0.2					1.8	0.3	10.6	0.3	
Delay (s)	53.0	51.1	0.2					21.1	14.7	49.3	5.9	
Level of Service	D	D	A					C	B	D	A	
Approach Delay (s)		32.6			0.0			20.2			23.2	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	351	379	777
Demand Flow Rate, veh/h	358	386	793
Vehicles Circulating, veh/h	486	157	174
Vehicles Exiting, veh/h	481	687	369
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	6.1	4.5	6.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.451	0.549	0.613	0.387
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	168	190	174	212	486	307
Cap Entry Lane, veh/h	863	939	1168	1243	1150	1225
Entry HV Adj Factor	0.982	0.979	0.980	0.981	0.979	0.980
Flow Entry, veh/h	165	186	171	208	476	301
Cap Entry, veh/h	848	920	1139	1212	1127	1201
V/C Ratio	0.195	0.202	0.150	0.172	0.423	0.251
Control Delay, s/veh	6.2	5.9	4.5	4.4	7.6	5.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2	1

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2040 Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	22	49	397	49	168	125	935	500	185	729	54
v/c Ratio	0.21	0.20	0.03	0.72	0.19	0.46	0.47	0.50	0.47	0.57	0.26	0.06
Control Delay	56.0	57.5	0.0	55.3	44.6	10.4	58.5	21.1	3.5	58.8	16.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	57.5	0.0	55.3	44.6	10.4	58.5	21.1	3.5	58.8	16.2	0.1
Queue Length 50th (ft)	16	17	0	153	33	0	48	248	0	71	111	0
Queue Length 95th (ft)	36	44	0	197	66	59	78	369	64	107	165	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	547	357	1887	1064	370	2796	950
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.12	0.03	0.46	0.10	0.31	0.35	0.50	0.47	0.50	0.26	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	20	45	365	45	155	115	860	460	170	700	50
Future Volume (veh/h)	40	20	45	365	45	155	115	860	460	170	700	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	22	0	397	49	0	125	935	0	185	729	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		471	229		198	1976		243	2905	
Arrive On Green	0.06	0.04	0.00	0.14	0.12	0.00	0.06	0.56	0.00	0.07	0.57	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	43	22	0	397	49	0	125	935	0	185	729	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.4	1.3	0.0	13.6	2.9	0.0	4.2	19.0	0.0	6.3	8.6	0.0
Cycle Q Clear(g_c), s	1.4	1.3	0.0	13.6	2.9	0.0	4.2	19.0	0.0	6.3	8.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	85		471	229		198	1976		243	2905	
V/C Ratio(X)	0.21	0.26		0.84	0.21		0.63	0.47		0.76	0.25	
Avail Cap(c_a), veh/h	278	190		871	510		360	1976		360	2905	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	55.4	0.0	50.5	47.3	0.0	55.3	16.1	0.0	54.8	13.0	0.0
Incr Delay (d2), s/veh	0.4	1.6	0.0	3.2	0.5	0.0	2.4	0.8	0.0	4.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.0	5.9	1.3	0.0	1.9	7.6	0.0	2.9	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	57.0	0.0	53.7	47.8	0.0	57.7	16.9	0.0	58.9	13.2	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		65			446			1060			914	
Approach Delay, s/veh		55.2			53.0			21.7			22.5	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	72.7	22.0	11.4	12.4	74.3	12.5	20.8
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	8.3	21.0	15.6	3.3	6.2	10.6	3.4	4.9
Green Ext Time (p_c), s	0.2	11.0	0.9	0.0	0.1	10.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	28.5
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	397	505	533	418	304	543
v/c Ratio	0.63	0.40	0.66	0.23	0.27	0.35
Control Delay	39.4	1.8	20.2	16.1	33.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	1.8	20.2	16.1	33.9	0.6
Queue Length 50th (ft)	254	0	114	89	81	0
Queue Length 95th (ft)	396	32	150	121	#189	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	632	1258	1166	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.40	0.46	0.23	0.27	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	365	465	490	385	280	500
Future Volume (vph)	365	465	490	385	280	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.25	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	881	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	505	533	418	304	543
RTOR Reduction (vph)	0	184	0	0	0	0
Lane Group Flow (vph)	397	321	533	418	304	543
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	37.1	76.2	58.4	58.4	39.1	120.0
Effective Green, g (s)	37.1	76.2	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.31	0.64	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	570	995	770	1705	1107	1568
v/s Ratio Prot	0.22	0.10	c0.09	0.12	0.09	
v/s Ratio Perm		0.10	c0.24			c0.35
v/c Ratio	0.70	0.32	0.69	0.25	0.27	0.35
Uniform Delay, d1	36.5	10.1	21.7	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.9	0.9	2.2	0.3	0.6	0.6
Delay (s)	43.4	10.9	23.9	18.3	30.6	0.6
Level of Service	D	B	C	B	C	A
Approach Delay (s)	25.2			21.4	11.4	
Approach LOS	C			C	B	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	426	359	152	255	418	98	174	745	451	114	636	370
v/c Ratio	0.46	0.29	0.23	0.29	0.39	0.17	0.58	0.73	0.28	0.46	0.67	0.45
Control Delay	18.6	27.3	5.2	17.4	31.9	4.4	28.8	41.0	0.5	26.7	41.1	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	27.3	5.2	17.4	31.9	4.4	28.8	41.0	0.5	26.7	41.1	11.1
Queue Length 50th (ft)	88	95	0	50	120	0	76	246	0	48	210	72
Queue Length 95th (ft)	126	144	45	77	184	29	135	353	0	92	303	156
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1067	1241	654	1180	1077	563	355	1019	1583	346	946	905
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.29	0.23	0.22	0.39	0.17	0.49	0.73	0.28	0.33	0.67	0.41

Intersection Summary

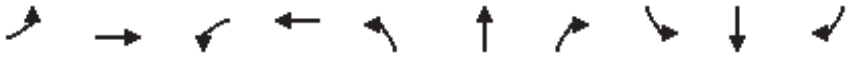
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	330	140	235	385	90	160	700	415	105	585	340
Future Volume (veh/h)	400	330	140	235	385	90	160	700	415	105	585	340
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	426	359	152	255	418	98	174	745	0	114	636	370
Peak Hour Factor	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	900	1274	568	862	1130	504	292	1072		264	987	607
Arrive On Green	0.10	0.36	0.36	0.07	0.32	0.32	0.09	0.30	0.00	0.06	0.28	0.28
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	426	359	152	255	418	98	174	745	0	114	636	370
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	8.3	7.6	7.1	5.2	9.7	4.8	7.2	19.5	0.0	4.7	16.5	19.7
Cycle Q Clear(g_c), s	8.3	7.6	7.1	5.2	9.7	4.8	7.2	19.5	0.0	4.7	16.5	19.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	900	1274	568	862	1130	504	292	1072		264	987	607
V/C Ratio(X)	0.47	0.28	0.27	0.30	0.37	0.19	0.59	0.70		0.43	0.64	0.61
Avail Cap(c_a), veh/h	1198	1274	568	1265	1130	504	389	1072		408	987	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	24.3	24.2	20.9	27.4	25.7	25.5	32.5	0.0	26.2	33.6	26.4
Incr Delay (d2), s/veh	0.1	0.6	1.2	0.1	0.9	0.9	0.7	3.7	0.0	0.4	3.2	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	3.2	2.8	2.0	4.1	1.8	3.0	8.6	0.0	2.0	7.3	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.2	24.8	25.3	21.0	28.3	26.6	26.2	36.2	0.0	26.6	36.8	30.9
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		937			771			919			1120	
Approach Delay, s/veh		22.8			25.7			34.3			33.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	43.4	11.6	37.7	16.0	40.0	14.3	35.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	15.0	29.0
Max Q Clear Time (g_c+I1), s	7.2	9.6	6.7	21.5	10.3	11.7	9.2	21.7
Green Ext Time (p_c), s	0.4	2.8	0.1	2.8	0.6	3.0	0.1	3.2

Intersection Summary	
HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	79	297	250	426	108	337	553	532	201	438
v/c Ratio	0.35	0.80	0.80	0.80	0.22	0.34	0.57	0.56	0.33	0.54
Control Delay	30.6	58.4	48.1	35.9	21.3	34.6	4.9	23.8	33.3	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	58.4	48.1	35.9	21.3	34.6	4.9	23.8	33.3	6.4
Queue Length 50th (ft)	31	175	109	154	35	87	0	98	91	0
Queue Length 95th (ft)	97	211	#369	49	112	194	5	201	249	2
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	333	372	312	534	589	978	966	970	604	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.80	0.80	0.80	0.18	0.34	0.57	0.55	0.33	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	140	30	220	25	210	95	310	415	410	185	315
Future Volume (vph)	70	140	30	220	25	210	95	310	415	410	185	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1839		1702	1535		1770	3539	1564	3426	1863	1583
Flt Permitted	0.20	1.00		0.23	1.00		0.63	1.00	1.00	0.42	1.00	1.00
Satd. Flow (perm)	370	1839		411	1535		1177	3539	1564	1526	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.92	0.75	0.77	0.92	0.72
Adj. Flow (vph)	79	259	38	250	64	362	108	337	553	532	201	438
RTOR Reduction (vph)	0	4	0	0	130	0	0	0	340	0	0	301
Lane Group Flow (vph)	79	293	0	250	296	0	108	337	213	532	201	137
Confl. Peds. (#/hr)			2	2					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	29.9	22.5		40.8	28.4		38.7	29.7	43.0	48.8	34.8	34.8
Effective Green, g (s)	29.9	22.5		40.8	28.4		38.7	29.7	43.0	48.8	34.8	34.8
Actuated g/C Ratio	0.27	0.20		0.37	0.25		0.35	0.27	0.39	0.44	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193	370		304	390		455	941	602	907	580	493
v/s Ratio Prot	0.03	0.16		c0.10	0.19		0.02	0.10	0.04	c0.07	0.11	
v/s Ratio Perm	0.08			c0.20			0.06		0.09	c0.18		0.09
v/c Ratio	0.41	0.79		0.82	0.76		0.24	0.36	0.35	0.59	0.35	0.28
Uniform Delay, d1	32.2	42.3		28.0	38.4		25.4	33.2	24.4	21.3	29.6	28.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	11.0		16.2	8.3		0.2	1.1	0.4	1.0	1.6	1.4
Delay (s)	33.6	53.4		44.2	46.7		25.6	34.3	24.8	22.3	31.3	30.3
Level of Service	C	D		D	D		C	C	C	C	C	C
Approach Delay (s)		49.2			45.8			28.1			26.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	60	136	837	65	223	54	995	478	27	49	755	141
v/c Ratio	0.27	0.60	0.53	0.18	0.59	0.03	0.80	0.24	0.02	0.24	0.60	0.17
Control Delay	46.7	56.0	1.3	41.4	49.2	0.0	41.5	3.5	0.0	47.7	30.3	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	56.0	1.3	41.4	49.2	0.0	41.5	3.5	0.0	47.7	30.3	3.5
Queue Length 50th (ft)	19	45	0	19	71	0	151	10	0	15	207	0
Queue Length 95th (ft)	38	75	0	40	111	0	210	30	m0	34	303	34
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	377	388	1568	1680	2025	1568	211	1252	879
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.39	0.53	0.17	0.57	0.03	0.59	0.24	0.02	0.23	0.60	0.16

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	125	770	60	205	50	915	440	25	45	695	130
Future Volume (veh/h)	55	125	770	60	205	50	915	440	25	45	695	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	60	136	0	65	223	0	995	478	0	49	755	141
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	206		290	298		1150	2178		102	1434	731
Arrive On Green	0.06	0.06	0.00	0.08	0.08	0.00	0.23	0.62	0.00	0.03	0.41	0.41
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	60	136	0	65	223	0	995	478	0	49	755	141
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.7	3.7	0.0	1.8	6.2	0.0	19.2	6.0	0.0	1.4	16.2	5.3
Cycle Q Clear(g_c), s	1.7	3.7	0.0	1.8	6.2	0.0	19.2	6.0	0.0	1.4	16.2	5.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	206		290	298		1150	2178		102	1434	731
V/C Ratio(X)	0.30	0.66		0.22	0.75		0.87	0.22		0.48	0.53	0.19
Avail Cap(c_a), veh/h	346	355		343	353		1694	2178		206	1434	731
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	46.1	0.0	42.7	44.7	0.0	37.0	8.4	0.0	47.8	22.4	15.7
Incr Delay (d2), s/veh	0.3	1.4	0.0	0.4	7.1	0.0	2.3	0.2	0.0	3.5	1.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.7	0.0	0.8	3.0	0.0	7.6	2.0	0.0	0.6	6.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.5	47.5	0.0	43.1	51.9	0.0	39.3	8.7	0.0	51.2	23.8	16.3
LnGrp LOS	D	D		D	D		D	A		D	C	B
Approach Vol, veh/h		196			288			1473			945	
Approach Delay, s/veh		46.9			49.9			29.4			24.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	67.8		10.8	29.1	46.7		13.5				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.4	8.0		5.7	21.2	18.2		8.2				
Green Ext Time (p_c), s	0.0	3.1		0.1	1.9	2.6		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		30.9
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	20	271	20	71	1413	216	71	1500	10
v/c Ratio	0.05	0.01	0.63	0.09	0.20	0.63	0.20	0.35	0.59	0.01
Control Delay	44.2	0.0	48.4	39.2	1.2	10.5	1.2	56.1	5.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.0	48.4	39.2	1.2	10.5	1.2	56.1	5.1	0.0
Queue Length 50th (ft)	3	0	84	11	0	270	11	24	97	0
Queue Length 95th (ft)	6	0	#138	9	0	355	19	m43	156	m0
Internal Link Dist (ft)				679		647			2055	
Turn Bay Length (ft)	125	125	250		500		250	550		550
Base Capacity (vph)	245	1615	438	237	363	2257	1086	216	2548	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.01	0.62	0.08	0.20	0.63	0.20	0.33	0.59	0.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	255	5	65	0	1300	205	65	1455	5
Future Volume (veh/h)	5	0	5	255	5	65	0	1300	205	65	1455	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	10	0	0	271	20	71	0	1413	216	71	1500	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.92	0.86	0.92	0.95	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	23		341	185	157	3	2233	996	120	2497	
Arrive On Green	0.01	0.00	0.00	0.10	0.10	0.10	0.00	0.63	0.63	0.03	0.71	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	10	0	0	271	20	71	0	1413	216	71	1500	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.3	0.0	0.0	7.7	1.0	4.3	0.0	24.5	5.8	2.0	21.6	0.0
Cycle Q Clear(g_c), s	0.3	0.0	0.0	7.7	1.0	4.3	0.0	24.5	5.8	2.0	21.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		341	185	157	3	2233	996	120	2497	
V/C Ratio(X)	0.23	0.00		0.79	0.11	0.45	0.00	0.63	0.22	0.59	0.60	
Avail Cap(c_a), veh/h	246	133		377	204	173	549	2233	996	206	2497	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.9	0.0	0.0	44.0	41.0	42.5	0.0	11.2	7.8	47.6	7.4	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.0	10.7	0.3	2.5	0.0	1.4	0.5	1.7	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	3.8	0.5	1.8	0.0	8.2	1.8	0.9	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	0.0	54.7	41.3	44.9	0.0	12.6	8.3	49.3	8.5	0.0
LnGrp LOS	D	A		D	D	D	A	B	A	D	A	
Approach Vol, veh/h		10			362			1629			1571	
Approach Delay, s/veh		52.3			52.0			12.0			10.3	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	69.3		7.2	0.0	76.8		16.0				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	6.0	54.0		7.0	16.0	44.0		11.0				
Max Q Clear Time (g_c+I1), s	4.0	26.5		2.3	0.0	23.6		9.7				
Green Ext Time (p_c), s	0.0	12.6		0.0	0.0	10.8		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			15.4									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	101	766	234	860	1337	516
v/c Ratio	0.58	0.58	0.49	0.65	0.31	0.42	0.43
Control Delay	55.3	55.3	1.1	31.2	3.0	6.3	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	55.3	1.1	31.2	3.0	6.3	2.1
Queue Length 50th (ft)	65	65	0	96	47	119	7
Queue Length 95th (ft)	115	116	0	192	81	154	19
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	402	2747	3212	1187
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.49	0.58	0.31	0.42	0.43

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	15	705	215	800	0	0	1230	475
Future Volume (vph)	0	0	0	170	15	705	215	800	0	0	1230	475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1682	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.16	1.00			1.00	1.00
Satd. Flow (perm)				1665	1682	1568	294	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	185	16	766	234	860	0	0	1337	516
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	187
Lane Group Flow (vph)	0	0	0	100	101	766	234	860	0	0	1337	329
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.4	10.4	100.0	77.6	77.6			63.8	63.8
Effective Green, g (s)				10.4	10.4	100.0	77.6	77.6			63.8	63.8
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				173	174	1568	358	2746			3212	1000
v/s Ratio Prot							0.06	0.24			0.27	
v/s Ratio Perm				0.06	0.06	c0.49	c0.45					0.21
v/c Ratio				0.58	0.58	0.49	0.65	0.31			0.42	0.33
Uniform Delay, d1				42.7	42.7	0.0	5.1	3.3			8.9	8.3
Progression Factor				1.00	1.00	1.00	4.70	0.76			0.61	1.00
Incremental Delay, d2				2.9	3.2	1.1	3.0	0.3			0.3	0.7
Delay (s)				45.6	45.9	1.1	27.2	2.8			5.8	9.1
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			10.4			8.0			6.7	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	119	120	201	880	65	386	1136
v/c Ratio	0.63	0.62	0.13	0.45	0.07	0.73	0.42
Control Delay	55.8	55.5	0.2	15.1	2.1	51.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	55.5	0.2	15.1	2.1	51.2	4.3
Queue Length 50th (ft)	76	77	0	163	0	86	67
Queue Length 95th (ft)	131	132	0	261	15	138	78
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	1974	921	680	2678
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.38	0.13	0.45	0.07	0.57	0.42

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	200	20	185	0	0	0	0	810	60	355	1045	0
Future Volume (vph)	200	20	185	0	0	0	0	810	60	355	1045	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1667	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1667	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	22	201	0	0	0	0	880	65	386	1136	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	29	0	0	0
Lane Group Flow (vph)	119	120	201	0	0	0	0	880	36	386	1136	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	11.6	11.6	100.0					55.8	55.8	15.6	76.4	
Effective Green, g (s)	11.6	11.6	100.0					55.8	55.8	15.6	76.4	
Actuated g/C Ratio	0.12	0.12	1.00					0.56	0.56	0.16	0.76	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	191	193	1553					1974	883	530	2677	
v/s Ratio Prot								c0.25		c0.11	0.32	
v/s Ratio Perm	c0.07	0.07	0.13						0.02			
v/c Ratio	0.62	0.62	0.13					0.45	0.04	0.73	0.42	
Uniform Delay, d1	42.1	42.1	0.0					13.0	10.0	40.2	4.1	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.09	0.84	
Incremental Delay, d2	4.5	4.4	0.2					0.7	0.1	3.9	0.5	
Delay (s)	46.6	46.5	0.2					13.7	10.1	47.8	3.9	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		25.4			0.0			13.5			15.0	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	473	657	424
Demand Flow Rate, veh/h	477	670	432
Vehicles Circulating, veh/h	255	329	155
Vehicles Exiting, veh/h	332	403	844
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	5.8	8.1	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.690	0.310	0.231	0.769	0.590	0.410
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	329	148	155	515	255	177
Cap Entry Lane, veh/h	1068	1143	997	1074	1170	1245
Entry HV Adj Factor	0.991	0.990	0.980	0.981	0.980	0.983
Flow Entry, veh/h	326	147	152	505	250	174
Cap Entry, veh/h	1058	1132	977	1052	1148	1224
V/C Ratio	0.308	0.129	0.156	0.480	0.218	0.142
Control Delay, s/veh	6.5	4.3	5.1	8.9	5.1	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	3	1	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	71	149	647	76	114	158	941	495	250	1188	98
v/c Ratio	0.31	0.44	0.09	0.86	0.17	0.23	0.57	0.66	0.53	0.64	0.54	0.13
Control Delay	54.8	58.4	0.1	55.0	35.7	1.8	59.3	32.2	4.8	55.6	25.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	58.4	0.1	55.0	35.7	1.8	59.3	32.2	4.8	55.6	25.8	0.3
Queue Length 50th (ft)	28	51	0	236	45	0	59	309	0	93	246	0
Queue Length 95th (ft)	54	99	0	#334	87	7	97	419	76	138	309	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	398	241	1578	844	498	547	302	1424	926	493	2218	781
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.29	0.09	0.77	0.15	0.21	0.52	0.66	0.53	0.51	0.54	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	65	140	595	70	105	145	875	455	230	1105	90
Future Volume (veh/h)	70	65	140	595	70	105	145	875	455	230	1105	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	76	71	0	647	76	0	158	941	0	250	1188	0
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	230	123		727	392		228	1493		321	2283	
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.07	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	76	71	0	647	76	0	158	941	0	250	1188	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.2	3.9	0.0	19.1	3.5	0.0	4.7	22.0	0.0	7.4	17.7	0.0
Cycle Q Clear(g_c), s	2.2	3.9	0.0	19.1	3.5	0.0	4.7	22.0	0.0	7.4	17.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	123		727	392		228	1493		321	2283	
V/C Ratio(X)	0.33	0.58		0.89	0.19		0.69	0.63		0.78	0.52	
Avail Cap(c_a), veh/h	411	249		871	498		312	1493		510	2283	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.2	48.1	0.0	40.7	34.6	0.0	48.5	24.4	0.0	47.0	21.3	0.0
Incr Delay (d2), s/veh	0.6	4.2	0.0	9.5	0.2	0.0	3.0	2.0	0.0	3.1	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.9	0.0	8.9	1.6	0.0	2.1	9.4	0.0	3.3	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	52.4	0.0	50.2	34.9	0.0	51.4	26.5	0.0	50.1	22.2	0.0
LnGrp LOS	D	D		D	C		D	C		D	C	
Approach Vol, veh/h		147			723			1099			1438	
Approach Delay, s/veh		50.0			48.6			30.1			27.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	50.2	27.6	12.9	12.4	53.0	12.5	28.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.4	24.0	21.1	5.9	6.7	19.7	4.2	5.5
Green Ext Time (p_c), s	0.3	9.6	1.0	0.1	0.1	16.1	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	571	315	386	576	345	592
v/c Ratio	0.54	0.25	0.39	0.22	0.69	0.37
Control Delay	18.1	1.0	6.1	5.7	48.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.1	1.0	6.1	5.7	48.0	0.7
Queue Length 50th (ft)	201	0	30	51	109	0
Queue Length 95th (ft)	437	18	71	112	148	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1053	1439	1105	2566	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.22	0.35	0.22	0.36	0.37

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	525	290	355	530	335	545
Future Volume (vph)	525	290	355	530	335	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.29	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1054	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	571	315	386	576	345	592
RTOR Reduction (vph)	0	102	0	0	0	0
Lane Group Flow (vph)	571	213	386	576	345	592
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	53.1	67.5	67.8	67.8	14.4	100.0
Effective Green, g (s)	53.1	67.5	67.8	67.8	14.4	100.0
Actuated g/C Ratio	0.53	0.68	0.68	0.68	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	979	1058	948	2423	499	1599
v/s Ratio Prot	c0.31	0.03	0.04	0.16	c0.10	
v/s Ratio Perm		0.11	0.24			c0.37
v/c Ratio	0.58	0.20	0.41	0.24	0.69	0.37
Uniform Delay, d1	15.9	6.1	8.7	6.2	40.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.0	0.1	0.2	3.3	0.7
Delay (s)	18.5	6.1	8.8	6.4	44.0	0.7
Level of Service	B	A	A	A	D	A
Approach Delay (s)	14.1			7.4	16.6	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	462	454	190	538	516	141	65	772	207	136	696	344
v/c Ratio	0.52	0.37	0.28	0.56	0.41	0.22	0.28	0.81	0.13	0.61	0.63	0.39
Control Delay	19.7	32.9	5.4	20.1	32.4	5.6	27.7	51.5	0.2	37.1	41.7	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	32.9	5.4	20.1	32.4	5.6	27.7	51.5	0.2	37.1	41.7	6.7
Queue Length 50th (ft)	104	145	0	125	165	0	33	311	0	71	262	36
Queue Length 95th (ft)	147	213	54	172	239	47	67	#432	0	125	358	103
Internal Link Dist (ft)		605			645			489			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1128	1229	674	1143	1274	652	340	959	1599	276	1105	999
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.37	0.28	0.47	0.41	0.22	0.19	0.81	0.13	0.49	0.63	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

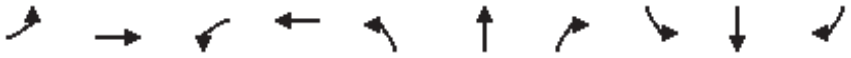
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	425	440	175	495	475	130	60	710	190	125	640	330
Future Volume (veh/h)	425	440	175	495	475	130	60	710	190	125	640	330
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	462	454	190	538	516	141	65	772	0	136	696	344
Peak Hour Factor	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	879	1267	565	931	1319	581	202	987		236	1093	655
Arrive On Green	0.11	0.36	0.36	0.12	0.37	0.37	0.04	0.28	0.00	0.07	0.31	0.31
Sat Flow, veh/h	3456	3554	1585	3456	3554	1565	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	462	454	190	538	516	141	65	772	0	136	696	344
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1565	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	10.2	11.6	10.8	11.9	13.2	7.7	3.2	24.6	0.0	6.6	20.8	20.1
Cycle Q Clear(g_c), s	10.2	11.6	10.8	11.9	13.2	7.7	3.2	24.6	0.0	6.6	20.8	20.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	879	1267	565	931	1319	581	202	987		236	1093	655
V/C Ratio(X)	0.53	0.36	0.34	0.58	0.39	0.24	0.32	0.78		0.58	0.64	0.53
Avail Cap(c_a), veh/h	1215	1267	565	1217	1319	581	353	987		328	1093	655
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	29.3	29.0	20.9	28.6	26.8	31.5	41.3	0.0	31.2	36.8	27.2
Incr Delay (d2), s/veh	0.2	0.8	1.6	0.2	0.9	1.0	0.3	6.2	0.0	0.8	2.8	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	5.1	4.3	4.7	5.7	3.0	1.4	11.4	0.0	2.8	9.3	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	30.1	30.6	21.1	29.4	27.8	31.8	47.4	0.0	32.1	39.6	30.2
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		1106			1195			837			1176	
Approach Delay, s/veh		26.6			25.5			46.2			36.0	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.8	50.0	13.6	40.0	18.0	51.8	9.7	43.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	13.9	13.6	8.6	26.6	12.2	15.2	5.2	22.8
Green Ext Time (p_c), s	0.9	3.8	0.1	2.9	0.8	4.1	0.0	4.3

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	291	237	359	398	30	288	106	122	402	83
v/c Ratio	0.77	0.61	0.84	0.83	0.09	0.27	0.13	0.14	0.60	0.13
Control Delay	40.7	15.5	43.9	28.7	22.1	30.4	4.7	20.0	34.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	15.5	43.9	28.7	22.1	30.4	4.7	20.0	34.5	0.7
Queue Length 50th (ft)	107	10	139	58	8	61	0	18	184	0
Queue Length 95th (ft)	#223	0	#316	0	23	164	12	63	#579	0
Internal Link Dist (ft)		538		1696		1320			1541	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	376	491	429	574	484	1048	842	1058	670	643
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.48	0.84	0.69	0.06	0.27	0.13	0.12	0.60	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	195	10	150	255	10	265	15	265	70	115	370	65
Future Volume (vph)	195	10	150	255	10	265	15	265	70	115	370	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.86		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1769	1607		1752	1558		1770	3539	1567	3390	1845	1530
Flt Permitted	0.34	1.00		0.27	1.00		0.37	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	637	1607		499	1558		694	3539	1567	1791	1845	1530
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.92	0.66	0.94	0.92	0.78
Adj. Flow (vph)	291	20	217	359	40	358	30	288	106	122	402	83
RTOR Reduction (vph)	0	192	0	0	239	0	0	0	54	0	0	54
Lane Group Flow (vph)	291	45	0	359	159	0	30	288	52	122	402	29
Confl. Peds. (#/hr)	2					2			8	8		
Confl. Bikes (#/hr)												4
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	27.3	11.7		33.5	14.8		34.3	30.5	49.2	42.3	34.5	34.5
Effective Green, g (s)	27.3	11.7		33.5	14.8		34.3	30.5	49.2	42.3	34.5	34.5
Actuated g/C Ratio	0.27	0.12		0.33	0.15		0.34	0.30	0.49	0.42	0.34	0.34
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	349	187		400	230		278	1077	769	880	635	526
v/s Ratio Prot	0.13	0.03		c0.17	0.10		0.00	0.08	0.01	c0.01	c0.22	
v/s Ratio Perm	0.10			c0.13			0.03		0.02	0.05		0.02
v/c Ratio	0.83	0.24		0.90	0.69		0.11	0.27	0.07	0.14	0.63	0.05
Uniform Delay, d1	32.1	40.2		28.6	40.5		22.5	26.4	13.4	17.5	27.5	21.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	15.6	0.7		22.0	8.7		0.1	0.6	0.0	0.1	4.8	0.2
Delay (s)	47.7	40.9		50.6	49.2		22.6	27.0	13.5	17.5	32.3	22.1
Level of Service	D	D		D	D		C	C	B	B	C	C
Approach Delay (s)		44.6			49.9			23.3			27.9	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.2	Sum of lost time (s)	26.5
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	126	247	1022	33	185	87	788	853	54	33	478	68
v/c Ratio	0.38	0.72	0.64	0.09	0.51	0.05	0.78	0.42	0.03	0.16	0.35	0.07
Control Delay	45.0	55.8	2.0	40.4	47.3	0.1	45.1	7.1	0.0	46.1	24.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	55.8	2.0	40.4	47.3	0.1	45.1	7.1	0.0	46.1	24.6	0.2
Queue Length 50th (ft)	39	82	0	9	59	0	132	103	0	10	113	0
Queue Length 95th (ft)	65	119	0	24	93	0	191	56	m0	26	181	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	375	386	1599	1461	2049	1599	217	1362	1003
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.46	0.64	0.09	0.48	0.05	0.54	0.42	0.03	0.15	0.35	0.07

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	235	940	30	170	80	725	785	50	30	440	65
Future Volume (veh/h)	125	235	940	30	170	80	725	785	50	30	440	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	126	247	0	33	185	0	788	853	0	33	478	68
Peak Hour Factor	0.99	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	311	320		256	263		934	2161		84	1551	834
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.18	0.60	0.00	0.02	0.43	0.43
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	126	247	0	33	185	0	788	853	0	33	478	68
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	3.4	6.7	0.0	0.9	5.0	0.0	15.0	12.4	0.0	0.9	8.7	2.1
Cycle Q Clear(g_c), s	3.4	6.7	0.0	0.9	5.0	0.0	15.0	12.4	0.0	0.9	8.7	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	320		256	263		934	2161		84	1551	834
V/C Ratio(X)	0.41	0.77		0.13	0.70		0.84	0.39		0.39	0.31	0.08
Avail Cap(c_a), veh/h	522	537		348	358		1468	2161		209	1551	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	44.5	0.0	43.3	45.3	0.0	39.4	10.3	0.0	48.1	18.5	11.9
Incr Delay (d2), s/veh	0.3	1.5	0.0	0.2	3.8	0.0	1.5	0.5	0.0	3.0	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	0.0	0.4	2.4	0.0	6.1	4.3	0.0	0.4	3.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.3	46.1	0.0	43.6	49.1	0.0	40.9	10.9	0.0	51.1	19.1	12.1
LnGrp LOS	D	D		D	D		D	B		D	B	B
Approach Vol, veh/h		373			218			1641			579	
Approach Delay, s/veh		45.1			48.3			25.3			20.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.3		13.9	24.4	49.3		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	14.4		8.7	17.0	10.7		7.0				
Green Ext Time (p_c), s	0.0	6.2		0.2	1.4	2.5		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			28.6									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	10	5	266	10	65	20	1608	212	33	1412	10
v/c Ratio	0.08	0.00	0.62	0.04	0.18	0.09	0.67	0.19	0.18	0.58	0.01
Control Delay	44.8	0.0	48.1	38.6	1.1	49.6	10.0	2.4	53.5	8.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.8	0.0	48.1	38.6	1.1	49.6	10.0	2.4	53.5	8.5	0.0
Queue Length 50th (ft)	6	0	83	6	0	6	57	0	10	106	0
Queue Length 95th (ft)	13	0	126	12	0	4	437	32	m20	503	m0
Internal Link Dist (ft)	697			679			647			2055	
Turn Bay Length (ft)		125	250		500	455		250	550		550
Base Capacity (vph)	152	1615	446	241	366	554	2388	1134	274	2426	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.00	0.60	0.04	0.18	0.04	0.67	0.19	0.12	0.58	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	5	5	245	5	60	5	1495	195	30	1370	5
Future Volume (veh/h)	0	5	5	245	5	60	5	1495	195	30	1370	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	0	10	0	266	10	65	20	1608	212	33	1412	0
Peak Hour Factor	0.75	0.50	1.00	0.92	0.50	0.92	0.25	0.93	0.92	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	43	23		343	186	157	74	2333	1041	62	2303	
Arrive On Green	0.00	0.01	0.00	0.10	0.10	0.10	0.02	0.65	0.65	0.02	0.65	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	0	10	0	266	10	65	20	1608	212	33	1412	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	0.0	0.5	0.0	7.5	0.5	3.8	0.6	28.4	5.3	0.9	23.2	0.0
Cycle Q Clear(g_c), s	0.0	0.5	0.0	7.5	0.5	3.8	0.6	28.4	5.3	0.9	23.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	43	23		343	186	157	74	2333	1041	62	2303	
V/C Ratio(X)	0.00	0.43		0.78	0.05	0.41	0.27	0.69	0.20	0.53	0.61	
Avail Cap(c_a), veh/h	281	152		418	226	192	557	2333	1041	276	2303	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	49.1	0.0	44.0	40.9	42.4	48.2	11.0	7.0	48.7	10.3	0.0
Incr Delay (d2), s/veh	0.0	14.8	0.0	7.8	0.1	2.1	1.9	1.7	0.4	2.6	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	3.6	0.2	1.6	0.3	9.5	1.6	0.4	7.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	63.8	0.0	51.8	41.0	44.5	50.1	12.7	7.4	51.3	11.5	0.0
LnGrp LOS	A	E		D	D	D	D	B	A	D	B	
Approach Vol, veh/h		10			341			1840			1445	
Approach Delay, s/veh		63.8			50.1			12.5			12.4	
Approach LOS		E			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.8	71.1		7.2	6.1	70.8		15.8				
Change Period (Y+Rc), s	4.0	6.0		6.0	4.0	6.0		6.0				
Max Green Setting (Gmax), s	8.0	50.0		8.0	16.0	42.0		12.0				
Max Q Clear Time (g_c+I1), s	2.9	30.4		2.5	2.6	25.2		9.5				
Green Ext Time (p_c), s	0.0	12.1		0.0	0.0	8.9		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		16.1
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	104	103	467	223	1360	1391	280
v/c Ratio	0.58	0.58	0.29	0.60	0.50	0.44	0.26
Control Delay	55.2	54.5	0.5	25.4	7.0	6.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	55.2	54.5	0.5	25.4	7.3	6.6	1.4
Queue Length 50th (ft)	67	67	0	108	136	147	11
Queue Length 95th (ft)	120	117	0	m166	326	69	12
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	324	1599	585	2742	3145	1086
Starvation Cap Reductn	0	0	0	0	613	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.32	0.29	0.38	0.64	0.44	0.26

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	180	10	430	205	1265	0	0	1335	258
Future Volume (vph)	0	0	0	180	10	430	205	1265	0	0	1335	258
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1711	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.14	1.00			1.00	1.00
Satd. Flow (perm)				1698	1711	1599	268	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.96	0.92
Adj. Flow (vph)	0	0	0	196	11	467	223	1360	0	0	1391	280
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	107
Lane Group Flow (vph)	0	0	0	104	103	467	223	1360	0	0	1391	173
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.5	10.5	100.0	77.5	77.5			61.9	61.9
Effective Green, g (s)				10.5	10.5	100.0	77.5	77.5			61.9	61.9
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.62	0.62
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				178	179	1599	366	2742			3147	979
v/s Ratio Prot							c0.06	0.38			0.27	
v/s Ratio Perm				c0.06	0.06	0.29	c0.41					0.11
v/c Ratio				0.58	0.58	0.29	0.61	0.50			0.44	0.18
Uniform Delay, d1				42.7	42.6	0.0	5.8	4.1			10.0	8.2
Progression Factor				1.00	1.00	1.00	3.77	1.44			0.55	0.56
Incremental Delay, d2				3.1	2.8	0.5	1.5	0.5			0.4	0.3
Delay (s)				45.8	45.4	0.5	23.3	6.4			5.9	4.9
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			14.3			8.8			5.7	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	198	198	217	1161	163	612	948
v/c Ratio	0.78	0.77	0.14	0.70	0.20	0.88	0.37
Control Delay	60.4	59.8	0.2	24.3	3.3	52.8	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	59.8	0.2	24.3	3.3	52.8	6.2
Queue Length 50th (ft)	128	127	0	315	0	98	70
Queue Length 95th (ft)	204	203	0	397	36	#271	83
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1670	833	712	2564
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.63	0.14	0.70	0.20	0.86	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	350	15	200	0	0	0	0	1115	150	600	910	0
Future Volume (vph)	350	15	200	0	0	0	0	1115	150	600	910	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1659	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1659	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92	0.98	0.96	0.92
Adj. Flow (vph)	380	16	217	0	0	0	0	1161	163	612	948	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	86	0	0	0
Lane Group Flow (vph)	198	198	217	0	0	0	0	1161	77	612	948	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.5	15.5	100.0					47.2	47.2	20.3	72.5	
Effective Green, g (s)	15.5	15.5	100.0					47.2	47.2	20.3	72.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.47	0.47	0.20	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	255	257	1553					1670	747	696	2565	
v/s Ratio Prot								c0.33		c0.18	0.27	
v/s Ratio Perm	c0.12	0.12	0.14						0.05			
v/c Ratio	0.78	0.77	0.14					0.70	0.10	0.88	0.37	
Uniform Delay, d1	40.6	40.5	0.0					20.7	14.7	38.7	5.2	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.99	1.04	
Incremental Delay, d2	12.6	12.2	0.2					2.4	0.3	11.0	0.4	
Delay (s)	53.2	52.7	0.2					23.2	14.9	49.4	5.8	
Level of Service	D	D	A					C	B	D	A	
Approach Delay (s)		34.3			0.0			22.1			22.9	
Approach LOS		C			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.8
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	366	385	723
Demand Flow Rate, veh/h	373	392	737
Vehicles Circulating, veh/h	466	168	171
Vehicles Exiting, veh/h	442	671	389
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	6.0	4.5	6.5
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.436	0.564	0.632	0.368
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	175	198	171	221	466	271
Cap Entry Lane, veh/h	879	956	1157	1231	1153	1228
Entry HV Adj Factor	0.983	0.980	0.980	0.982	0.981	0.982
Flow Entry, veh/h	172	194	168	217	457	266
Cap Entry, veh/h	864	936	1127	1202	1131	1205
V/C Ratio	0.199	0.207	0.149	0.181	0.404	0.221
Control Delay, s/veh	6.2	5.9	4.5	4.6	7.3	4.9
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	397	505	533	418	304	543
v/c Ratio	0.32	0.40	0.53	0.23	0.27	0.35
Control Delay	29.8	1.7	18.0	16.1	33.9	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	1.7	18.0	16.1	33.9	0.6
Queue Length 50th (ft)	117	0	114	89	81	0
Queue Length 95th (ft)	168	32	150	121	#189	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1235	1268	1306	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.40	0.41	0.23	0.27	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	365	465	490	385	280	500
Future Volume (vph)	365	465	490	385	280	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3505	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.40	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1437	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	397	505	533	418	304	543
RTOR Reduction (vph)	0	179	0	0	0	0
Lane Group Flow (vph)	397	326	533	418	304	543
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	38.3	77.4	58.4	58.4	39.1	120.0
Effective Green, g (s)	38.3	77.4	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.32	0.65	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1118	1011	946	1705	1107	1568
v/s Ratio Prot	0.11	0.10	c0.07	0.12	0.09	
v/s Ratio Perm		0.10	c0.20			c0.35
v/c Ratio	0.36	0.32	0.56	0.25	0.27	0.35
Uniform Delay, d1	31.4	9.5	19.3	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.8	0.5	0.3	0.6	0.6
Delay (s)	32.3	10.4	19.8	18.3	30.6	0.6
Level of Service	C	B	B	B	C	A
Approach Delay (s)	20.0			19.1	11.4	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	571	315	386	576	345	592
v/c Ratio	0.28	0.24	0.33	0.22	0.69	0.37
Control Delay	12.0	0.9	5.7	5.7	48.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	0.9	5.7	5.7	48.0	0.7
Queue Length 50th (ft)	82	0	30	51	109	0
Queue Length 95th (ft)	167	16	71	112	148	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	2058	1459	1297	2566	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.22	0.30	0.22	0.36	0.37

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	525	290	355	530	335	545
Future Volume (vph)	525	290	355	530	335	545
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3505	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.38	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1380	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	571	315	386	576	345	592
RTOR Reduction (vph)	0	97	0	0	0	0
Lane Group Flow (vph)	571	218	386	576	345	592
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	54.7	69.1	67.8	67.8	14.4	100.0
Effective Green, g (s)	54.7	69.1	67.8	67.8	14.4	100.0
Actuated g/C Ratio	0.55	0.69	0.68	0.68	0.14	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1917	1083	1104	2423	499	1599
v/s Ratio Prot	0.16	0.03	0.03	0.16	c0.10	
v/s Ratio Perm		0.11	0.21			c0.37
v/c Ratio	0.30	0.20	0.35	0.24	0.69	0.37
Uniform Delay, d1	12.3	5.5	6.3	6.2	40.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	0.1	0.2	3.3	0.7
Delay (s)	12.7	5.6	6.3	6.4	44.0	0.7
Level of Service	B	A	A	A	D	A
Approach Delay (s)	10.1			6.4	16.6	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2025 + Project

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	22	55	407	47	180	127	898	552	240	667	75
v/c Ratio	0.19	0.15	0.03	0.60	0.18	0.49	0.39	0.60	0.56	0.57	0.29	0.10
Control Delay	42.7	44.0	0.1	37.0	36.0	10.0	43.5	23.2	4.5	44.0	17.0	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	44.0	0.1	37.0	36.0	10.0	43.5	23.2	4.5	44.0	17.0	1.0
Queue Length 50th (ft)	14	11	0	97	24	0	33	186	0	63	77	0
Queue Length 95th (ft)	25	29	0	157	54	44	60	312	38	92	138	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	683	611	1595	781	652	665	390	1508	981	477	2310	788
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.04	0.03	0.52	0.07	0.27	0.33	0.60	0.56	0.50	0.29	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	15	40	338	40	151	100	790	453	175	640	45
Future Volume (veh/h)	35	15	40	338	40	151	100	790	453	175	640	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	22	0	407	47	0	127	898	0	240	667	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	280	128		500	247		263	1504		330	2289	
Arrive On Green	0.08	0.07	0.00	0.15	0.13	0.00	0.08	0.42	0.00	0.10	0.45	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	22	0	407	47	0	127	898	0	240	667	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.3	1.0	0.0	10.1	2.0	0.0	3.1	17.1	0.0	5.9	7.3	0.0
Cycle Q Clear(g_c), s	1.3	1.0	0.0	10.1	2.0	0.0	3.1	17.1	0.0	5.9	7.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	128		500	247		263	1504		330	2289	
V/C Ratio(X)	0.20	0.17		0.81	0.19		0.48	0.60		0.73	0.29	
Avail Cap(c_a), veh/h	681	607		774	652		390	1504		477	2289	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.7	38.6	0.0	36.3	33.8	0.0	38.8	19.5	0.0	38.5	15.3	0.0
Incr Delay (d2), s/veh	0.3	0.6	0.0	3.1	0.4	0.0	1.0	1.8	0.0	2.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.5	0.0	4.2	0.9	0.0	1.3	6.9	0.0	2.5	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	39.2	0.0	39.4	34.2	0.0	39.8	21.3	0.0	40.9	15.7	0.0
LnGrp LOS	D	D		D	C		D	C		D	B	
Approach Vol, veh/h		78			454			1025			907	
Approach Delay, s/veh		38.3			38.8			23.6			22.3	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	43.1	18.3	11.9	12.2	45.3	12.5	17.7
Change Period (Y+Rc), s	6.0	* 6	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.1	* 37	19.8	28.0	9.9	39.3	17.0	30.8
Max Q Clear Time (g_c+I1), s	7.9	19.1	12.1	3.0	5.1	9.3	3.3	4.0
Green Ext Time (p_c), s	0.2	9.6	0.7	0.1	0.1	9.0	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	411	511	160	507	434	176
v/c Ratio	0.50	0.41	0.31	0.24	0.71	0.11
Control Delay	23.4	1.8	11.4	10.2	41.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	1.8	11.4	10.2	41.2	0.1
Queue Length 50th (ft)	122	0	24	45	96	0
Queue Length 95th (ft)	411	34	102	131	152	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	828	1291	654	2577	762	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.40	0.24	0.20	0.57	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	366	455	128	365	269	153
Future Volume (vph)	366	455	128	365	269	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1752	3505	3400	1568
Flt Permitted	1.00	1.00	0.35	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	654	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	411	511	160	507	434	176
RTOR Reduction (vph)	0	202	0	0	0	0
Lane Group Flow (vph)	411	309	160	507	434	176
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	37.8	52.9	51.1	51.1	15.1	87.4
Effective Green, g (s)	37.8	52.9	51.1	51.1	15.1	87.4
Actuated g/C Ratio	0.43	0.61	0.58	0.58	0.17	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	797	949	486	2049	587	1568
v/s Ratio Prot	c0.22	0.06	c0.03	0.14	c0.13	
v/s Ratio Perm		0.14	0.16			c0.11
v/c Ratio	0.52	0.33	0.33	0.25	0.74	0.11
Uniform Delay, d1	18.1	8.5	9.6	8.8	34.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.1	0.1	4.2	0.1
Delay (s)	20.5	8.6	9.7	8.9	38.5	0.1
Level of Service	C	A	A	A	D	A
Approach Delay (s)	13.9			9.1	27.4	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	22.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	276	176	139	463	328	98	118	845	599	119	838	266
v/c Ratio	0.61	0.24	0.30	0.77	0.33	0.18	0.46	0.64	0.38	0.47	0.63	0.35
Control Delay	33.8	49.9	5.1	40.4	43.2	3.2	27.8	40.9	0.7	28.2	41.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	49.9	5.1	40.4	43.2	3.2	27.8	40.9	0.7	28.2	41.0	4.9
Queue Length 50th (ft)	168	75	0	324	131	0	63	356	0	64	352	0
Queue Length 95th (ft)	246	104	20	401	137	10	69	440	0	97	434	16
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	494	742	464	612	982	533	354	1319	1583	281	1323	759
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.24	0.30	0.76	0.33	0.18	0.33	0.64	0.38	0.42	0.63	0.35

Intersection Summary

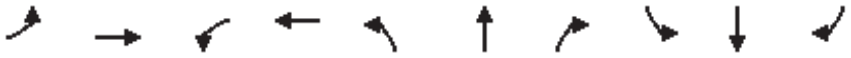
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
Future Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	491	739	330	602	1009	450	238	1320		262	1330	593
Arrive On Green	0.13	0.21	0.21	0.22	0.29	0.29	0.05	0.37	0.00	0.05	0.37	0.37
Sat Flow, veh/h	1795	3582	1598	1753	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1753	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	17.4	6.0	11.0	29.4	10.7	6.9	5.9	28.5	0.0	5.9	27.9	18.3
Cycle Q Clear(g_c), s	17.4	6.0	11.0	29.4	10.7	6.9	5.9	28.5	0.0	5.9	27.9	18.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	491	739	330	602	1009	450	238	1320		262	1330	593
V/C Ratio(X)	0.56	0.24	0.42	0.77	0.33	0.22	0.49	0.64		0.45	0.63	0.45
Avail Cap(c_a), veh/h	521	739	330	609	1009	450	374	1320		313	1330	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	48.1	50.1	31.7	40.6	39.3	29.1	37.7	0.0	29.1	37.5	34.5
Incr Delay (d2), s/veh	0.6	0.8	3.9	5.3	0.9	1.1	0.6	2.4	0.0	0.5	2.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	2.8	4.7	13.2	4.8	2.8	2.5	12.7	0.0	2.6	12.5	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.0	48.9	54.1	37.0	41.5	40.4	29.7	40.1	0.0	29.5	39.8	36.9
LnGrp LOS	D	D	D	D	D	D	C	D		C	D	D
Approach Vol, veh/h		591			889			963			1223	
Approach Delay, s/veh		45.0			39.0			38.8			38.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	36.5	36.0	12.9	60.0	24.5	47.9	12.9	60.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	32.0	30.0	12.0	54.0	22.0	40.0	19.0	47.0
Max Q Clear Time (g_c+I1), s	31.4	13.0	7.9	30.5	19.4	12.7	7.9	29.9
Green Ext Time (p_c), s	0.1	1.3	0.0	5.8	0.1	2.4	0.1	6.0

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



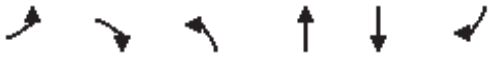
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	39	88	303	401	108	184	768	460	181	139
v/c Ratio	0.22	0.62	0.56	0.78	0.23	0.35	0.65	0.47	0.29	0.22
Control Delay	39.7	75.3	40.4	56.4	29.6	46.8	6.2	29.3	39.7	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.7	75.3	40.4	56.4	29.6	46.8	6.2	29.3	39.7	5.6
Queue Length 50th (ft)	18	57	165	269	44	109	20	105	99	0
Queue Length 95th (ft)	59	76	365	190	123	210	26	195	188	10
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	213	170	542	516	482	531	1178	1033	627	634
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.52	0.56	0.78	0.22	0.35	0.65	0.45	0.29	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Future Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1758		1701	1687		1770	1863	1570	3423	1863	1583
Flt Permitted	0.53	1.00		0.46	1.00		0.64	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	990	1758		816	1687		1198	1863	1570	1757	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	39	56	32	303	244	157	108	184	768	460	181	139
RTOR Reduction (vph)	0	13	0	0	13	0	0	0	323	0	0	93
Lane Group Flow (vph)	39	75	0	303	388	0	108	184	445	460	181	46
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.4	11.2		52.1	40.9		48.0	39.1	75.0	60.1	46.2	46.2
Effective Green, g (s)	17.4	11.2		52.1	40.9		48.0	39.1	75.0	60.1	46.2	46.2
Actuated g/C Ratio	0.12	0.08		0.37	0.29		0.34	0.28	0.53	0.43	0.33	0.33
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	157	139		527	490		444	517	836	939	611	519
v/s Ratio Prot	0.01	0.04		c0.15	c0.23		0.02	0.10	c0.14	c0.06	0.10	
v/s Ratio Perm	0.02			0.07			0.07		0.15	0.15		0.03
v/c Ratio	0.25	0.54		0.57	0.79		0.24	0.36	0.53	0.49	0.30	0.09
Uniform Delay, d1	55.2	62.3		34.1	46.0		32.5	40.7	21.4	27.2	35.2	32.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	4.2		1.5	8.5		0.2	1.9	0.7	0.4	1.2	0.3
Delay (s)	56.1	66.5		35.6	54.4		32.7	42.6	22.1	27.6	36.4	33.0
Level of Service	E	E		D	D		C	D	C	C	D	C
Approach Delay (s)		63.3			46.3			26.7			30.6	
Approach LOS		E			D			C			C	

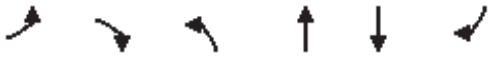
Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.7	Sum of lost time (s)	26.5
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	396	85	225	1074	910	479
v/c Ratio	0.66	0.24	0.59	0.31	0.50	0.46
Control Delay	39.5	8.8	45.0	6.1	16.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	8.8	45.0	6.1	16.2	3.0
Queue Length 50th (ft)	109	0	63	75	168	0
Queue Length 95th (ft)	136	32	101	115	250	39
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	534	381	3510	1814	1044
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.16	0.59	0.31	0.50	0.46

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	337	72	207	1074	837	407
Future Volume (veh/h)	337	72	207	1074	837	407
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	396	85	225	1074	910	479
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	516	237	905	3663	1382	616
Arrive On Green	0.15	0.15	0.26	0.72	0.39	0.39
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	396	85	225	1074	910	479
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	9.9	4.3	4.6	6.8	18.9	23.8
Cycle Q Clear(g_c), s	9.9	4.3	4.6	6.8	18.9	23.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	516	237	905	3663	1382	616
V/C Ratio(X)	0.77	0.36	0.25	0.29	0.66	0.78
Avail Cap(c_a), veh/h	1037	476	905	3663	1382	616
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	36.8	34.4	26.2	4.6	22.6	24.1
Incr Delay (d2), s/veh	2.4	0.9	0.0	0.0	2.5	9.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	4.0	1.8	1.7	7.8	9.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.2	35.3	26.2	4.6	25.1	33.4
LnGrp LOS	D	D	C	A	C	C
Approach Vol, veh/h	481			1299	1389	
Approach Delay, s/veh	38.5			8.3	27.9	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		70.6		19.4	29.6	41.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	10.0	35.0
Max Q Clear Time (g_c+I1), s		8.8		11.9	6.6	25.8
Green Ext Time (p_c), s		8.9		1.5	0.2	5.1

Intersection Summary		
HCM 6th Ctrl Delay		21.5
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	137	1474	64	235	53	1518	439	29	63	822	167
v/c Ratio	0.33	0.66	0.93	0.18	0.66	0.03	1.17	0.20	0.02	0.33	0.82	0.11
Control Delay	52.3	64.5	29.0	54.2	65.2	0.0	113.0	5.4	0.0	63.8	50.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	64.5	29.0	54.2	65.2	0.0	113.0	5.4	0.0	63.8	50.1	0.1
Queue Length 50th (ft)	27	60	1119	25	101	0	~807	67	0	26	339	0
Queue Length 95th (ft)	51	87	362	47	133	0	#568	57	m0	35	291	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	290	299	1583	356	367	1568	1299	2259	1568	195	1240	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.46	0.93	0.18	0.64	0.03	1.17	0.19	0.02	0.32	0.66	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
Future Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	66	137	0	64	235	0	1518	439	0	63	822	0
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	191		283	291		1028	2368		104	1390	
Arrive On Green	0.05	0.05	0.00	0.08	0.08	0.00	0.30	0.67	0.00	0.03	0.39	0.00
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	66	137	0	64	235	0	1518	439	0	63	822	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	0.0
Cycle Q Clear(g_c), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	186	191		283	291		1028	2368		104	1390	
V/C Ratio(X)	0.36	0.72		0.23	0.81		1.48	0.19		0.61	0.59	
Avail Cap(c_a), veh/h	292	301		316	325		1028	2368		185	1390	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	59.3	60.5	0.0	55.7	58.6	0.0	45.5	8.0	0.0	62.3	31.1	0.0
Incr Delay (d2), s/veh	0.4	1.7	0.0	0.4	12.7	0.0	219.5	0.2	0.0	5.6	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.2	0.0	1.0	4.3	0.0	47.3	2.1	0.0	1.1	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	62.2	0.0	56.1	71.3	0.0	265.0	8.2	0.0	67.9	32.9	0.0
LnGrp LOS	E	E		E	E		F	A		E	C	
Approach Vol, veh/h		203			299			1957			885	
Approach Delay, s/veh		61.4			68.0			207.4			35.4	
Approach LOS		E			E			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	93.3		12.0	45.0	57.3		15.7				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	79.0		11.0	39.0	46.0		12.0				
Max Q Clear Time (g_c+I1), s	4.4	8.1		6.9	41.0	25.9		10.5				
Green Ext Time (p_c), s	0.0	2.9		0.1	0.0	5.2		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	140.5	
HCM 6th LOS	F	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	14	5	83	251	5	98	314	1488	195	70	1338	38
v/c Ratio	0.10	0.04	0.05	0.74	0.03	0.27	0.65	0.63	0.17	0.62	0.69	0.02
Control Delay	40.0	39.4	0.1	53.6	37.6	1.9	43.0	11.1	1.7	67.2	18.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	39.4	0.1	53.6	37.6	1.9	43.0	11.1	1.7	67.2	18.6	0.0
Queue Length 50th (ft)	8	3	0	72	3	0	87	207	0	20	258	0
Queue Length 95th (ft)	26	14	0	#125	13	0	124	371	29	#41	#471	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125			250		500	455		250	550		550
Base Capacity (vph)	180	190	1615	340	184	363	492	2367	1122	113	1929	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.03	0.05	0.74	0.03	0.27	0.64	0.63	0.17	0.62	0.69	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	5	76	236	5	62	270	1250	185	55	1298	35
Future Volume (veh/h)	13	5	76	236	5	62	270	1250	185	55	1298	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	14	5	0	251	5	98	314	1488	195	70	1338	0
Peak Hour Factor	0.92	0.92	0.92	0.94	0.92	0.63	0.86	0.84	0.95	0.79	0.97	0.92
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	101		324	170	144	387	1841	821	219	1746	
Arrive On Green	0.06	0.05	0.00	0.09	0.09	0.09	0.11	0.52	0.52	0.06	0.50	0.00
Sat Flow, veh/h	1810	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	14	5	0	251	5	98	314	1488	195	70	1338	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	0.7	0.2	0.0	6.4	0.2	4.3	8.0	31.4	3.2	1.8	27.8	0.0
Cycle Q Clear(g_c), s	0.7	0.2	0.0	6.4	0.2	4.3	8.0	31.4	3.2	1.8	27.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	100	101		324	170	144	387	1841	821	219	1746	
V/C Ratio(X)	0.14	0.05		0.78	0.03	0.68	0.81	0.81	0.24	0.32	0.77	
Avail Cap(c_a), veh/h	181	190		343	186	157	419	1841	821	219	1746	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.5	40.5	0.0	39.8	37.2	24.3	39.0	17.8	3.2	40.3	18.5	0.0
Incr Delay (d2), s/veh	0.8	0.2	0.0	10.5	0.1	10.8	10.8	3.9	0.7	0.3	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	3.1	0.1	2.5	3.8	11.8	2.0	0.7	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.2	40.7	0.0	50.3	37.3	35.1	49.8	21.7	3.9	40.6	21.8	0.0
LnGrp LOS	D	D		D	D	D	D	C	A	D	C	
Approach Vol, veh/h		19			354			1997			1408	
Approach Delay, s/veh		41.1			45.9			24.4			22.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	53.0	14.5	10.8	14.2	50.6	11.0	14.3
Change Period (Y+Rc), s	6.0	* 6	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	3.0	* 47	9.0	9.0	11.0	39.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	3.8	33.4	8.4	2.2	10.0	29.8	2.7	6.3
Green Ext Time (p_c), s	0.0	8.7	0.1	0.0	0.1	5.6	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	25.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	102	1037	222	841	1291	549
v/c Ratio	0.58	0.58	0.66	0.61	0.31	0.40	0.46
Control Delay	55.1	55.3	2.2	32.6	0.3	9.8	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	55.3	2.2	32.6	0.3	9.8	2.3
Queue Length 50th (ft)	65	66	0	65	0	127	0
Queue Length 95th (ft)	104	96	0	128	0	205	28
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	412	2744	3238	1204
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.34	0.66	0.54	0.31	0.40	0.46

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	155	10	923	195	782	0	0	1149	456
Future Volume (vph)	0	0	0	155	10	923	195	782	0	0	1149	456
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.17	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	313	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	189	13	1037	222	841	0	0	1291	549
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	196
Lane Group Flow (vph)	0	0	0	100	102	1037	222	841	0	0	1291	353
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.4	10.4	100.0	77.6	77.6			64.3	64.3
Effective Green, g (s)				10.4	10.4	100.0	77.6	77.6			64.3	64.3
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.64	0.64
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				173	174	1568	363	2746			3238	1008
v/s Ratio Prot							0.05	0.24			0.26	
v/s Ratio Perm				0.06	0.06	c0.66	0.42					0.23
v/c Ratio				0.58	0.59	0.66	0.61	0.31			0.40	0.35
Uniform Delay, d1				42.7	42.7	0.0	4.5	3.3			8.6	8.2
Progression Factor				1.00	1.00	1.00	6.70	0.02			1.00	1.00
Incremental Delay, d2				2.9	3.2	2.2	1.9	0.3			0.4	1.0
Delay (s)				45.6	46.0	2.2	32.4	0.3			8.9	9.2
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			9.3			7.0			9.0	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	155	10	923	195	782	0	0	1149	456
Future Volume (veh/h)	0	0	0	155	10	923	195	782	0	0	1149	456
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1870	1870	0	0	1856	1856
Adj Flow Rate, veh/h				198	0	0	222	841	0	0	1291	0
Peak Hour Factor				0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				272	0		426	2854	0	0	3527	
Arrive On Green				0.08	0.00	0.00	0.11	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				198	0	0	222	841	0	0	1291	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	10.4	0.0
Cycle Q Clear(g_c), s				5.5	0.0	0.0	3.5	0.0	0.0	0.0	10.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				272	0		426	2854	0	0	3527	
V/C Ratio(X)				0.73	0.00		0.52	0.29	0.00	0.00	0.37	
Avail Cap(c_a), veh/h				636	0		521	2854	0	0	3527	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.86	0.86	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	4.2	0.0	0.0	0.0	6.2	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	0.3	0.2	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.4	0.0	0.0	0.7	0.1	0.0	0.0	2.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.5	0.0	0.0	4.5	0.2	0.0	0.0	6.5	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					198			1063			1291	
Approach Delay, s/veh					46.5			1.1			6.5	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	86.3		10.7	75.6		13.7						
Change Period (Y+Rc), s	6.0		5.0	6.0		6.0						
Max Green Setting (Gmax), s	70.0		11.0	54.0		18.0						
Max Q Clear Time (g_c+I1), s	2.0		5.5	12.4		7.5						
Green Ext Time (p_c), s	6.4		0.1	11.1		0.3						

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	151	153	202	805	61	435	983
v/c Ratio	0.68	0.68	0.13	0.46	0.07	0.64	0.38
Control Delay	56.0	56.0	0.2	18.3	1.4	33.3	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	56.0	0.2	18.3	1.4	33.3	4.1
Queue Length 50th (ft)	97	98	0	169	0	135	65
Queue Length 95th (ft)	151	105	0	246	5	187	77
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	316	1553	1752	833	680	2611
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.48	0.13	0.46	0.07	0.64	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	15	170	0	0	0	0	733	50	400	904	0
Future Volume (vph)	244	15	170	0	0	0	0	733	50	400	904	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1665	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1665	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	280	24	202	0	0	0	0	805	61	435	983	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	31	0	0	0
Lane Group Flow (vph)	151	153	202	0	0	0	0	805	30	435	983	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	13.5	13.5	100.0					49.5	49.5	20.0	74.5	
Effective Green, g (s)	13.5	13.5	100.0					49.5	49.5	20.0	74.5	
Actuated g/C Ratio	0.14	0.14	1.00					0.50	0.50	0.20	0.74	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	222	224	1553					1751	783	680	2611	
v/s Ratio Prot								c0.23		c0.13	0.28	
v/s Ratio Perm	0.09	0.09	0.13						0.02			
v/c Ratio	0.68	0.68	0.13					0.46	0.04	0.64	0.38	
Uniform Delay, d1	41.2	41.2	0.0					16.5	13.0	36.7	4.5	
Progression Factor	1.00	1.00	1.00					1.00	1.00	0.78	0.74	
Incremental Delay, d2	6.7	6.7	0.2					0.9	0.1	1.4	0.4	
Delay (s)	47.9	47.9	0.2					17.4	13.1	30.1	3.7	
Level of Service	D	D	A					B	B	C	A	
Approach Delay (s)		28.8			0.0			17.1			11.8	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	15	170	0	0	0	0	733	50	400	904	0
Future Volume (veh/h)	244	15	170	0	0	0	0	733	50	400	904	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1870	1870	1856	1856	0
Adj Flow Rate, veh/h	297	0	0				0	805	0	435	983	0
Peak Hour Factor	0.87	0.63	0.84				0.92	0.91	0.82	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4				0	2	2	3	3	0
Cap, veh/h	374	0					0	1564		937	2727	0
Arrive On Green	0.11	0.00	0.00				0.00	0.44	0.00	0.55	1.00	0.00
Sat Flow, veh/h	3506	0	1560				0	3647	1585	3428	3618	0
Grp Volume(v), veh/h	297	0	0				0	805	0	435	983	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	1585	1714	1763	0
Q Serve(g_s), s	8.3	0.0	0.0				0.0	16.4	0.0	7.7	0.0	0.0
Cycle Q Clear(g_c), s	8.3	0.0	0.0				0.0	16.4	0.0	7.7	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	374	0					0	1564		937	2727	0
V/C Ratio(X)	0.79	0.00					0.00	0.51		0.46	0.36	0.00
Avail Cap(c_a), veh/h	666	0					0	1564		937	2727	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.92	0.92	0.00
Uniform Delay (d), s/veh	43.6	0.0	0.0				0.0	20.3	0.0	18.2	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0				0.0	1.2	0.0	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	0.0				0.0	6.5	0.0	2.5	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.1	0.0	0.0				0.0	21.5	0.0	18.3	0.3	0.0
LnGrp LOS	D	A					A	C		B	A	A
Approach Vol, veh/h		297						805			1418	
Approach Delay, s/veh		45.1						21.5			5.9	
Approach LOS		D						C			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	33.3	50.0		16.7		83.3
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0
Max Green Setting (Gmax), s	20.0	* 44		19.0		69.0
Max Q Clear Time (g_c+I1), s	9.7	18.4		10.3		2.0
Green Ext Time (p_c), s	0.6	5.4		0.4		8.0

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	622	647	411
Demand Flow Rate, veh/h	628	660	419
Vehicles Circulating, veh/h	242	437	168
Vehicles Exiting, veh/h	345	433	929
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.7	9.0	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.696	0.304	0.255	0.745	0.578	0.422
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	437	191	168	492	242	177
Cap Entry Lane, veh/h	1080	1156	903	979	1157	1231
Entry HV Adj Factor	0.991	0.990	0.980	0.980	0.979	0.983
Flow Entry, veh/h	433	189	165	482	237	174
Cap Entry, veh/h	1071	1145	885	959	1133	1210
V/C Ratio	0.404	0.165	0.186	0.503	0.209	0.144
Control Delay, s/veh	7.6	4.6	5.9	10.0	5.1	4.2
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	1	3	1	1

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	352	18	120	343	5	32
Future Vol, veh/h	352	18	120	343	5	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	503	20	130	490	5	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	523	0	1263	513
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	750	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1038	-	186	559
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	465	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1038	-	163	559
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	421	-	-	1038	-
HCM Lane V/C Ratio	0.096	-	-	0.126	-
HCM Control Delay (s)	14.5	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	523	813	40
Demand Flow Rate, veh/h	539	838	41
Vehicles Circulating, veh/h	162	5	518
Vehicles Exiting, veh/h	681	554	183
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.2	6.6	4.5
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.193	0.807	0.122	0.878
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	539	162	676	5	36
Cap Entry Lane, veh/h	1170	1414	1414	886	886
Entry HV Adj Factor	0.970	0.969	0.971	1.000	0.972
Flow Entry, veh/h	523	157	656	5	35
Cap Entry, veh/h	1135	1370	1372	886	862
V/C Ratio	0.461	0.115	0.478	0.006	0.041
Control Delay, s/veh	8.2	3.5	7.4	4.1	4.6
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	3	0	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	72	0	0	0	19	0	0
Future Vol, veh/h	0	0	0	0	0	72	0	0	0	19	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	0	0	78	0	0	0	21	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	1	0	0	40	79	1	40	40	39
Stage 1	-	-	-	-	-	-	1	1	-	39	39	-
Stage 2	-	-	-	-	-	-	39	78	-	1	1	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1514	-	-	1615	-	-	962	809	1081	962	850	1030
Stage 1	-	-	-	-	-	-	1019	893	-	973	860	-
Stage 2	-	-	-	-	-	-	973	828	-	1019	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1615	-	-	962	809	1081	962	850	1030
Mov Cap-2 Maneuver	-	-	-	-	-	-	962	809	-	962	850	-
Stage 1	-	-	-	-	-	-	1019	893	-	973	860	-
Stage 2	-	-	-	-	-	-	973	828	-	1019	893	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1514	-	-	1615	-	-	962
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.021
HCM Control Delay (s)	0	0	-	-	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	19	0	0	72	30	0	0	0	8	0	1
Future Vol, veh/h	1	19	0	0	72	30	0	0	0	8	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	21	0	0	78	33	0	0	0	9	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	21	0	0	118	134	21	118	118	95
Stage 1	-	-	-	-	-	-	23	23	-	95	95	-
Stage 2	-	-	-	-	-	-	95	111	-	23	23	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1588	-	-	856	757	1054	858	772	962
Stage 1	-	-	-	-	-	-	993	876	-	912	816	-
Stage 2	-	-	-	-	-	-	909	804	-	995	876	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1588	-	-	854	756	1054	857	771	962
Mov Cap-2 Maneuver	-	-	-	-	-	-	854	756	-	857	771	-
Stage 1	-	-	-	-	-	-	992	875	-	911	816	-
Stage 2	-	-	-	-	-	-	908	804	-	994	875	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1479	-	-	1588	-	-	868
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.011
HCM Control Delay (s)	0	7.4	-	-	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Intersection Delay, s/veh	3.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	30	326	0	58
Demand Flow Rate, veh/h	31	335	0	60
Vehicles Circulating, veh/h	59	1	90	114
Vehicles Exiting, veh/h	115	89	0	222
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	2.9	3.7	0.0	3.3
Approach LOS	A	A	-	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.484	0.516	0.340	0.660	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	15	16	114	221	0	60
Cap Entry Lane, veh/h	1279	1351	1349	1419	1316	1289
Entry HV Adj Factor	0.944	0.998	0.971	0.973	1.000	0.967
Flow Entry, veh/h	14	16	111	215	0	58
Cap Entry, veh/h	1207	1348	1309	1380	1316	1246
V/C Ratio	0.012	0.012	0.085	0.156	0.000	0.047
Control Delay, s/veh	3.1	2.8	3.4	3.9	2.7	3.3
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	1	0	0

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	12	0	19	0	0	0	72	126	0	0	33	48
Future Vol, veh/h	12	0	19	0	0	0	72	126	0	0	33	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	0	21	0	0	0	78	137	0	0	36	52

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	355	355	62	366	381	137	88	0	0	137	0	0
Stage 1	62	62	-	293	293	-	-	-	-	-	-	-
Stage 2	293	293	-	73	88	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	598	569	1000	588	550	909	1501	-	-	1441	-	-
Stage 1	947	841	-	713	668	-	-	-	-	-	-	-
Stage 2	713	668	-	934	820	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	574	539	1000	553	521	909	1501	-	-	1441	-	-
Mov Cap-2 Maneuver	574	539	-	553	521	-	-	-	-	-	-	-
Stage 1	898	841	-	676	633	-	-	-	-	-	-	-
Stage 2	676	633	-	915	820	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	0	2.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1501	-	-	777	-	1441	-	-
HCM Lane V/C Ratio	0.052	-	-	0.043	-	-	-	-
HCM Control Delay (s)	7.5	-	-	9.8	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-	0	-	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	25	0	0	0	96	42	0	0	56	60
Future Vol, veh/h	16	0	25	0	0	0	96	42	0	0	56	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	0	27	0	0	0	104	46	0	0	61	65
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	0	8.2	7.5
HCM LOS	A	-	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	70%	39%	0%	0%
Vol Thru, %	30%	0%	100%	48%
Vol Right, %	0%	61%	0%	52%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	138	41	0	116
LT Vol	96	16	0	0
Through Vol	42	0	0	56
RT Vol	0	25	0	60
Lane Flow Rate	150	45	0	126
Geometry Grp	1	1	1	1
Degree of Util (X)	0.178	0.053	0	0.134
Departure Headway (Hd)	4.264	4.255	4.597	3.832
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	837	847	0	925
Service Time	2.31	2.255	2.599	1.897
HCM Lane V/C Ratio	0.179	0.053	0	0.136
HCM Control Delay	8.2	7.5	7.6	7.5
HCM Lane LOS	A	A	N	A
HCM 95th-tile Q	0.6	0.2	0	0.5

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	3	1	30	2	12	30	1	6	30	12
Future Vol, veh/h	3	7	3	1	30	2	12	30	1	6	30	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	3	8	3	1	33	2	13	33	1	7	33	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.3	7.4	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	28%	23%	3%	12%
Vol Thru, %	70%	54%	91%	62%
Vol Right, %	2%	23%	6%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	13	33	48
LT Vol	12	3	1	6
Through Vol	30	7	30	30
RT Vol	1	3	2	12
Lane Flow Rate	47	14	36	52
Geometry Grp	1	1	1	1
Degree of Util (X)	0.053	0.016	0.041	0.057
Departure Headway (Hd)	4.103	4.041	4.103	3.95
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	871	880	868	905
Service Time	2.136	2.091	2.148	1.983
HCM Lane V/C Ratio	0.054	0.016	0.041	0.057
HCM Control Delay	7.4	7.2	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	30	28	108	54
Future Vol, veh/h	14	8	30	28	108	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	9	33	30	117	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	243	147	176	0	-	0
Stage 1	147	-	-	-	-	-
Stage 2	96	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	743	897	1394	-	-	-
Stage 1	878	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	725	897	1394	-	-	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	925	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1394	-	779	-	-
HCM Lane V/C Ratio	0.023	-	0.031	-	-
HCM Control Delay (s)	7.6	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	411	511	160	507	434	176
v/c Ratio	0.52	0.41	0.18	0.25	0.70	0.11
Control Delay	22.0	1.9	9.5	10.2	38.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	1.9	9.5	10.2	38.0	0.1
Queue Length 50th (ft)	109	0	10	41	84	0
Queue Length 95th (ft)	#367	37	46	123	138	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	793	1235	1739	3094	622	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.41	0.09	0.16	0.70	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	366	455	128	365	269	153
Future Volume (vph)	366	455	128	365	269	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.34	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1232	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	411	511	160	507	434	176
RTOR Reduction (vph)	0	212	0	0	0	0
Lane Group Flow (vph)	411	299	160	507	434	176
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	32.3	46.0	43.5	43.5	13.7	78.5
Effective Green, g (s)	32.3	46.0	43.5	43.5	13.7	78.5
Actuated g/C Ratio	0.41	0.59	0.55	0.55	0.17	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	759	918	853	1942	593	1568
v/s Ratio Prot	c0.22	0.06	0.01	c0.14	c0.13	
v/s Ratio Perm		0.13	0.09			c0.11
v/c Ratio	0.54	0.33	0.19	0.26	0.73	0.11
Uniform Delay, d1	17.5	8.3	9.3	9.1	30.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	0.1	0.0	0.1	4.0	0.1
Delay (s)	20.3	8.4	9.3	9.2	34.7	0.1
Level of Service	C	A	A	A	C	A
Approach Delay (s)	13.7			9.2	24.7	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	276	176	139	463	328	98	118	845	599	119	838	266
v/c Ratio	0.34	0.20	0.26	0.46	0.32	0.18	0.43	0.61	0.38	0.44	0.60	0.28
Control Delay	26.8	42.1	4.4	28.4	39.6	3.1	23.5	35.7	0.7	23.6	35.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	42.1	4.4	28.4	39.6	3.1	23.5	35.7	0.7	23.6	35.6	2.7
Queue Length 50th (ft)	78	65	0	140	120	0	54	312	0	55	308	0
Queue Length 95th (ft)	113	96	20	171	128	10	63	408	0	88	400	12
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1063	900	527	1159	1014	546	385	1396	1583	309	1406	1063
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.20	0.26	0.40	0.32	0.18	0.31	0.61	0.38	0.39	0.60	0.25

Intersection Summary

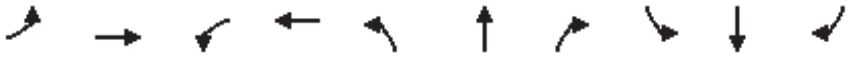
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
Future Volume (veh/h)	259	146	114	384	226	79	73	794	545	100	746	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	800	926	413	955	1051	469	264	1442		294	1452	768
Arrive On Green	0.08	0.26	0.26	0.12	0.30	0.30	0.05	0.41	0.00	0.05	0.41	0.41
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	276	176	139	463	328	98	118	845	0	119	838	266
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	7.6	5.1	9.4	12.8	9.6	6.2	5.1	24.7	0.0	5.1	24.2	13.8
Cycle Q Clear(g_c), s	7.6	5.1	9.4	12.8	9.6	6.2	5.1	24.7	0.0	5.1	24.2	13.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	800	926	413	955	1051	469	264	1442		294	1452	768
V/C Ratio(X)	0.35	0.19	0.34	0.48	0.31	0.21	0.45	0.59		0.40	0.58	0.35
Avail Cap(c_a), veh/h	1113	926	413	1374	1051	469	423	1442		361	1452	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	38.5	40.1	28.8	35.9	34.8	23.7	30.8	0.0	23.7	30.7	21.5
Incr Delay (d2), s/veh	0.1	0.5	2.2	0.1	0.8	1.0	0.4	1.8	0.0	0.3	1.7	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.3	3.9	5.2	4.2	2.5	2.1	10.7	0.0	2.1	10.5	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	38.9	42.3	29.0	36.7	35.8	24.2	32.6	0.0	24.0	32.4	22.8
LnGrp LOS	C	D	D	C	D	D	C	C		C	C	C
Approach Vol, veh/h		591			889			963			1223	
Approach Delay, s/veh		36.6			32.6			31.6			29.5	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	40.4	12.1	60.0	15.0	46.0	12.1	60.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	32.0	30.0	12.0	54.0	22.0	40.0	19.0	47.0
Max Q Clear Time (g_c+I1), s	14.8	11.4	7.1	26.7	9.6	11.6	7.1	26.2
Green Ext Time (p_c), s	0.8	1.4	0.1	6.1	0.4	2.5	0.1	6.6

Intersection Summary	
HCM 6th Ctrl Delay	31.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	39	88	303	401	108	184	768	460	181	139
v/c Ratio	0.16	0.35	0.63	0.83	0.21	0.18	0.68	0.41	0.30	0.22
Control Delay	27.3	38.5	34.4	50.2	21.1	32.3	6.3	20.8	32.8	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	38.5	34.4	50.2	21.1	32.3	6.3	20.8	32.8	3.3
Queue Length 50th (ft)	14	37	128	217	34	44	11	81	80	0
Queue Length 95th (ft)	55	60	#370	173	115	93	13	177	183	0
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	301	383	481	485	627	1001	1137	1163	601	633
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.23	0.63	0.83	0.17	0.18	0.68	0.40	0.30	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Future Volume (vph)	35	30	25	267	95	91	95	138	576	354	134	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.95		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1760		1701	1687		1770	3539	1567	3420	1863	1583
Flt Permitted	0.48	1.00		0.50	1.00		0.64	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	904	1760		899	1687		1198	3539	1567	2011	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	39	56	32	303	244	157	108	184	768	460	181	139
RTOR Reduction (vph)	0	16	0	0	15	0	0	0	397	0	0	96
Lane Group Flow (vph)	39	72	0	303	386	0	108	184	371	460	181	43
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	17.1	12.7		37.1	27.7		37.2	28.2	47.6	45.0	32.1	32.1
Effective Green, g (s)	17.1	12.7		37.1	27.7		37.2	28.2	47.6	45.0	32.1	32.1
Actuated g/C Ratio	0.16	0.12		0.35	0.26		0.35	0.27	0.45	0.43	0.31	0.31
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	184	213		466	445		474	952	711	1036	570	484
v/s Ratio Prot	0.01	0.04		c0.12	c0.23		0.02	0.05	c0.10	c0.05	0.10	
v/s Ratio Perm	0.03			0.11			0.06		0.14	0.14		0.03
v/c Ratio	0.21	0.34		0.65	0.87		0.23	0.19	0.52	0.44	0.32	0.09
Uniform Delay, d1	37.5	42.2		26.8	36.8		23.2	29.5	20.5	19.8	27.9	25.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.9		3.2	16.1		0.2	0.5	0.7	0.3	1.5	0.4
Delay (s)	38.1	43.2		30.0	52.8		23.4	30.0	21.1	20.1	29.4	26.3
Level of Service	D	D		C	D		C	C	C	C	C	C
Approach Delay (s)		41.6			43.0			22.9			23.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	26.5
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	137	1474	64	235	53	1518	439	29	63	822	167
v/c Ratio	0.33	0.66	0.93	0.18	0.65	0.03	0.90	0.20	0.02	0.33	0.72	0.23
Control Delay	62.1	74.4	12.5	54.1	65.1	0.0	48.8	11.0	0.0	63.8	43.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	74.4	12.5	54.1	65.1	0.0	48.8	11.0	0.0	63.8	43.0	9.0
Queue Length 50th (ft)	27	60	0	25	101	0	416	81	0	26	332	30
Queue Length 95th (ft)	50	86	0	47	133	0	313	104	0	35	292	69
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	316	326	1583	356	367	1568	1694	2249	1568	195	1216	786
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.42	0.93	0.18	0.64	0.03	0.90	0.20	0.02	0.32	0.68	0.21

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
Future Volume (veh/h)	58	114	737	56	193	43	941	369	20	40	600	150
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	66	137	0	64	235	0	1518	439	0	63	822	167
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	186	191		283	291		1495	2368		104	1390	705
Arrive On Green	0.05	0.05	0.00	0.08	0.08	0.00	0.30	0.67	0.00	0.03	0.39	0.39
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	66	137	0	64	235	0	1518	439	0	63	822	167
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	8.5
Cycle Q Clear(g_c), s	2.4	4.9	0.0	2.3	8.5	0.0	39.0	6.1	0.0	2.4	23.9	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	186	191		283	291		1495	2368		104	1390	705
V/C Ratio(X)	0.35	0.72		0.23	0.81		1.02	0.19		0.61	0.59	0.24
Avail Cap(c_a), veh/h	319	328		316	325		1495	2368		185	1390	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.3	60.5	0.0	55.7	58.6	0.0	45.5	8.0	0.0	62.3	31.1	22.2
Incr Delay (d2), s/veh	0.4	1.6	0.0	0.4	12.7	0.0	27.2	0.2	0.0	5.6	1.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.2	0.0	1.0	4.3	0.0	19.2	2.1	0.0	1.1	10.2	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.7	62.2	0.0	56.1	71.3	0.0	72.7	8.2	0.0	67.9	33.0	22.9
LnGrp LOS	E	E		E	E		F	A		E	C	C
Approach Vol, veh/h		203			299			1957			1052	
Approach Delay, s/veh		61.4			68.0			58.2			33.5	
Approach LOS		E			E			E			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	93.3		12.0	45.0	57.3		15.7				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	7.0	78.0		12.0	39.0	45.0		12.0				
Max Q Clear Time (g_c+I1), s	4.4	8.1		6.9	41.0	25.9		10.5				
Green Ext Time (p_c), s	0.0	2.9		0.1	0.0	5.6		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	51.8	
HCM 6th LOS	D	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	74	74	138	650	93	137	153	866	492	237	1091	152
v/c Ratio	0.30	0.45	0.09	0.87	0.21	0.27	0.55	0.61	0.53	0.62	0.49	0.19
Control Delay	54.9	58.5	0.1	55.5	36.1	3.5	59.0	30.8	4.8	55.5	25.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	58.5	0.1	55.5	36.1	3.5	59.0	30.8	4.8	55.5	25.2	2.8
Queue Length 50th (ft)	27	54	0	238	55	0	57	276	0	88	221	0
Queue Length 95th (ft)	47	83	0	#338	78	16	93	378	60	131	280	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	397	241	1578	842	501	549	302	1431	926	493	2214	781
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.31	0.09	0.77	0.19	0.25	0.51	0.61	0.53	0.48	0.49	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	55	130	585	65	115	135	805	428	216	1015	85
Future Volume (veh/h)	60	55	130	585	65	115	135	805	428	216	1015	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	74	74	0	650	93	0	153	866	0	237	1091	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	229	125		730	396		227	1502		308	2277	
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.07	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	74	74	0	650	93	0	153	866	0	237	1091	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.2	4.1	0.0	19.3	4.4	0.0	4.6	19.7	0.0	7.1	15.9	0.0
Cycle Q Clear(g_c), s	2.2	4.1	0.0	19.3	4.4	0.0	4.6	19.7	0.0	7.1	15.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	125		730	396		227	1502		308	2277	
V/C Ratio(X)	0.32	0.59		0.89	0.23		0.67	0.58		0.77	0.48	
Avail Cap(c_a), veh/h	410	248		869	497		311	1502		508	2277	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.4	48.2	0.0	40.8	34.9	0.0	48.6	23.6	0.0	47.4	21.0	0.0
Incr Delay (d2), s/veh	0.6	4.4	0.0	9.7	0.3	0.0	2.6	1.6	0.0	3.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.0	0.0	9.0	2.0	0.0	2.0	8.4	0.0	3.2	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.0	52.5	0.0	50.5	35.2	0.0	51.1	25.3	0.0	50.4	21.7	0.0
LnGrp LOS	D	D		D	D		D	C		D	C	
Approach Vol, veh/h		148			743			1019			1328	
Approach Delay, s/veh		50.3			48.6			29.1			26.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	50.5	27.8	13.1	12.4	53.0	12.5	28.3
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.1	21.7	21.3	6.1	6.6	17.9	4.2	6.4
Green Ext Time (p_c), s	0.3	9.7	1.0	0.1	0.1	15.3	0.1	0.4

Intersection Summary	
HCM 6th Ctrl Delay	33.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	587	308	204	659	188	313
v/c Ratio	0.53	0.24	0.37	0.24	0.50	0.20
Control Delay	15.7	1.0	5.7	4.4	46.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	1.0	5.7	4.4	46.8	0.3
Queue Length 50th (ft)	184	0	24	47	59	0
Queue Length 95th (ft)	420	10	69	93	92	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1111	1477	603	2694	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.21	0.34	0.24	0.19	0.20

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	534	240	182	527	182	213
Future Volume (vph)	534	240	182	527	182	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	1787	3574	3467	1599
Flt Permitted	1.00	1.00	0.30	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	560	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	587	308	204	659	188	313
RTOR Reduction (vph)	0	101	0	0	0	0
Lane Group Flow (vph)	587	207	204	659	188	313
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	56.3	67.1	71.4	71.4	10.8	100.0
Effective Green, g (s)	56.3	67.1	71.4	71.4	10.8	100.0
Actuated g/C Ratio	0.56	0.67	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1038	1052	523	2551	374	1599
v/s Ratio Prot	c0.32	0.02	c0.04	0.18	c0.05	
v/s Ratio Perm		0.11	0.24			c0.20
v/c Ratio	0.57	0.20	0.39	0.26	0.50	0.20
Uniform Delay, d1	14.0	6.2	7.3	5.0	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.2	0.2	0.4	0.3
Delay (s)	16.2	6.3	7.5	5.3	42.5	0.3
Level of Service	B	A	A	A	D	A
Approach Delay (s)	12.8			5.8	16.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	354	311	150	559	417	133	80	826	332	128	742	280
v/c Ratio	0.63	0.27	0.24	0.88	0.32	0.20	0.42	0.92	0.21	0.64	0.78	0.44
Control Delay	23.7	35.3	6.1	39.4	33.3	6.1	34.9	66.5	0.3	44.1	52.8	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	35.3	6.1	39.4	33.3	6.1	34.9	66.5	0.3	44.1	52.8	6.7
Queue Length 50th (ft)	169	107	0	313	139	0	46	377	0	76	320	0
Queue Length 95th (ft)	222	153	37	#448	193	32	63	#512	0	105	402	71
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	634	1146	614	636	1286	660	275	894	1599	248	952	630
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.27	0.24	0.88	0.32	0.20	0.29	0.92	0.21	0.52	0.78	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

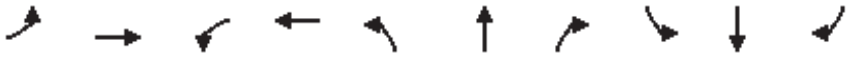
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
Future Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	559	1167	520	632	1306	583	182	909		194	979	437
Arrive On Green	0.15	0.33	0.33	0.19	0.37	0.37	0.05	0.25	0.00	0.07	0.28	0.28
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	17.4	8.6	9.4	25.0	11.3	7.7	4.4	30.0	0.0	7.0	25.6	20.8
Cycle Q Clear(g_c), s	17.4	8.6	9.4	25.0	11.3	7.7	4.4	30.0	0.0	7.0	25.6	20.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	559	1167	520	632	1306	583	182	909		194	979	437
V/C Ratio(X)	0.63	0.27	0.29	0.89	0.32	0.23	0.44	0.91		0.66	0.76	0.64
Avail Cap(c_a), veh/h	629	1167	520	632	1306	583	302	909		273	979	437
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	33.1	33.4	24.6	30.4	29.2	36.7	48.5	0.0	37.3	44.5	42.7
Incr Delay (d2), s/veh	1.1	0.6	1.4	13.7	0.6	0.9	0.6	14.6	0.0	1.4	5.5	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	3.8	3.8	14.1	4.9	3.1	1.9	15.0	0.0	3.1	11.8	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.3	33.7	34.8	38.3	31.0	30.1	37.3	63.1	0.0	38.7	49.9	49.8
LnGrp LOS	C	C	C	D	C	C	D	E		D	D	D
Approach Vol, veh/h		815			1108			906			1150	
Approach Delay, s/veh		29.8			34.6			60.8			48.6	
Approach LOS		C			C			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.0	50.0	14.0	40.0	24.7	55.3	11.1	42.9
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	27.0	11.4	9.0	32.0	19.4	13.3	6.4	27.6
Green Ext Time (p_c), s	0.0	2.6	0.1	1.0	0.3	3.3	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	43.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	314	238	120	10	205	173	50	337	45
v/c Ratio	0.43	0.84	0.66	0.27	0.03	0.36	0.21	0.06	0.48	0.07
Control Delay	26.3	55.6	33.7	13.6	23.0	32.6	4.0	21.0	29.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	55.6	33.7	13.6	23.0	32.6	4.0	21.0	29.5	0.2
Queue Length 50th (ft)	74	154	87	9	3	90	0	8	129	0
Queue Length 95th (ft)	155	169	#202	0	11	197	8	30	#377	0
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	547	373	361	447	499	571	834	989	705	686
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.84	0.66	0.27	0.02	0.36	0.21	0.05	0.48	0.07

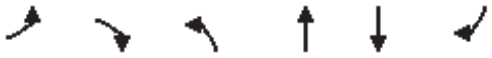
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Future Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1766	1708		1752	1581		1770	1863	1565	3389	1845	1568
Flt Permitted	0.68	1.00		0.19	1.00		0.47	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)	1264	1708		345	1581		868	1863	1565	1795	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	209	140	174	238	20	100	10	205	173	50	337	45
RTOR Reduction (vph)	0	31	0	0	78	0	0	0	93	0	0	29
Lane Group Flow (vph)	209	283	0	238	42	0	10	205	80	50	337	16
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	31.8	19.6		38.4	22.9		34.1	33.1	48.6	42.5	37.3	37.3
Effective Green, g (s)	31.8	19.6		38.4	22.9		34.1	33.1	48.6	42.5	37.3	37.3
Actuated g/C Ratio	0.30	0.19		0.37	0.22		0.32	0.31	0.46	0.40	0.35	0.35
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	440	318		333	344		289	586	722	803	654	555
v/s Ratio Prot	0.06	c0.17		c0.11	0.03		0.00	0.11	0.02	c0.00	c0.18	
v/s Ratio Perm	0.09			0.16			0.01		0.03	0.02		0.01
v/c Ratio	0.47	0.89		0.71	0.12		0.03	0.35	0.11	0.06	0.52	0.03
Uniform Delay, d1	29.0	41.8		26.0	33.1		24.3	27.8	16.0	19.2	26.8	22.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	25.1		7.1	0.2		0.0	1.6	0.1	0.0	2.9	0.1
Delay (s)	29.9	66.8		33.1	33.2		24.3	29.4	16.1	19.3	29.7	22.2
Level of Service	C	E		C	C		C	C	B	B	C	C
Approach Delay (s)		52.1			33.1			23.3			27.7	
Approach LOS		D			C			C			C	

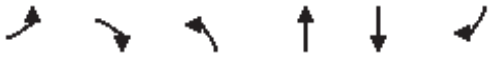
Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	105.2	Sum of lost time (s)	26.5
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	360	191	71	856	1205	221
v/c Ratio	0.64	0.38	0.27	0.24	0.61	0.23
Control Delay	40.3	23.1	41.8	5.2	15.5	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.3	23.1	41.8	5.2	15.5	2.2
Queue Length 50th (ft)	99	74	20	54	226	0
Queue Length 95th (ft)	128	115	41	82	322	28
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	503	267	3574	1976	981
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.38	0.27	0.24	0.61	0.23

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	306	162	65	856	1109	188
Future Volume (veh/h)	306	162	65	856	1109	188
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	360	191	71	856	1205	221
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	491	599	815	3700	1500	669
Arrive On Green	0.14	0.14	0.24	0.72	0.42	0.42
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	360	191	71	856	1205	221
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	9.0	0.0	1.4	5.0	26.7	8.4
Cycle Q Clear(g_c), s	9.0	0.0	1.4	5.0	26.7	8.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	491	599	815	3700	1500	669
V/C Ratio(X)	0.73	0.32	0.09	0.23	0.80	0.33
Avail Cap(c_a), veh/h	1037	849	815	3700	1500	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	37.0	19.8	26.8	4.1	22.7	17.5
Incr Delay (d2), s/veh	2.1	0.3	0.0	0.0	4.6	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.8	0.6	1.2	11.1	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.1	20.1	26.8	4.1	27.4	18.8
LnGrp LOS	D	C	C	A	C	B
Approach Vol, veh/h	551			927	1426	
Approach Delay, s/veh	32.5			5.9	26.0	
Approach LOS	C			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		71.2		18.8	27.2	44.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s		7.0		11.0	3.4	28.7
Green Ext Time (p_c), s		6.7		1.8	0.0	5.7

Intersection Summary	
HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	147	225	1152	40	182	88	1392	938	66	32	451	68
v/c Ratio	0.47	0.70	0.72	0.11	0.49	0.06	1.16	0.45	0.04	0.15	0.53	0.04
Control Delay	47.8	56.0	2.8	40.4	46.7	0.1	111.9	9.0	0.0	46.2	35.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	56.0	2.8	40.4	46.7	0.1	111.9	9.0	0.0	46.2	35.7	0.0
Queue Length 50th (ft)	46	74	0	12	58	0	~530	89	0	10	132	0
Queue Length 95th (ft)	75	111	0	18	88	0	232	98	0	22	163	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1203	2069	1599	215	857	1599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.42	0.72	0.11	0.47	0.06	1.16	0.45	0.04	0.15	0.53	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
Future Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	225	0	40	182	0	1392	938	0	32	451	0
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	290	298		253	260		1010	2188		82	1198	
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.00
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	3483	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	147	225	0	40	182	0	1392	938	0	32	451	0
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1742	1791	1598	1742	1791	1598
Q Serve(g_s), s	4.0	6.1	0.0	1.1	5.0	0.0	29.0	13.8	0.0	0.9	9.6	0.0
Cycle Q Clear(g_c), s	4.0	6.1	0.0	1.1	5.0	0.0	29.0	13.8	0.0	0.9	9.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	298		253	260		1010	2188		82	1198	
V/C Ratio(X)	0.51	0.76		0.16	0.70		1.38	0.43		0.39	0.38	
Avail Cap(c_a), veh/h	522	537		348	358		1010	2188		209	1198	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.9	44.9	0.0	43.5	45.3	0.0	35.5	10.3	0.0	48.1	25.3	0.0
Incr Delay (d2), s/veh	0.4	1.2	0.0	0.3	3.6	0.0	176.4	0.6	0.0	3.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.7	0.0	0.5	2.3	0.0	36.2	4.8	0.0	0.4	4.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.3	46.1	0.0	43.8	48.9	0.0	211.9	10.9	0.0	51.1	26.2	0.0
LnGrp LOS	D	D		D	D		F	B		D	C	
Approach Vol, veh/h		372			222			2330			483	
Approach Delay, s/veh		45.4			48.0			131.0			27.9	
Approach LOS		D			D			F			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	35.0	39.4		12.2				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.8		8.1	31.0	11.6		7.0				
Green Ext Time (p_c), s	0.0	6.9		0.2	0.0	2.1		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	101.6	
HCM 6th LOS	F	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	40	10	279	252	12	67	368	1430	194	43	1351	30
v/c Ratio	0.16	0.06	0.85	0.47	0.04	0.17	0.75	0.68	0.19	0.23	0.82	0.02
Control Delay	31.5	42.6	36.0	34.8	41.8	0.9	49.8	11.4	1.2	52.7	22.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	42.6	36.0	34.8	41.8	0.9	49.8	11.4	1.2	52.7	22.4	0.0
Queue Length 50th (ft)	20	6	41	68	7	0	101	291	4	14	420	0
Queue Length 95th (ft)	39	13	#176	102	14	0	38	355	9	m20	522	m0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125			250		500	455		250	550		550
Base Capacity (vph)	282	171	338	537	277	393	520	2094	1017	205	1642	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.06	0.83	0.47	0.04	0.17	0.71	0.68	0.19	0.21	0.82	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	5	279	224	6	56	92	1330	175	25	1310	15
Future Volume (veh/h)	30	5	279	224	6	56	92	1330	175	25	1310	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	40	10	0	252	12	67	368	1430	194	43	1351	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	228	92		569	163	138	442	2225	992	78	1837	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.13	0.62	0.62	0.02	0.52	0.00
Sat Flow, veh/h	1810	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	40	10	0	252	12	67	368	1430	194	43	1351	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	2.0	0.5	0.0	6.7	0.6	4.0	10.3	25.2	5.2	1.2	29.6	0.0
Cycle Q Clear(g_c), s	2.0	0.5	0.0	6.7	0.6	4.0	10.3	25.2	5.2	1.2	29.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	92		569	163	138	442	2225	992	78	1837	
V/C Ratio(X)	0.18	0.11		0.44	0.07	0.49	0.83	0.64	0.20	0.55	0.74	
Avail Cap(c_a), veh/h	300	171		577	170	144	522	2225	992	207	1837	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.5	45.5	0.0	40.2	42.0	43.6	42.6	11.9	8.2	48.4	18.8	0.0
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.7	0.2	3.2	9.7	1.4	0.4	2.2	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.3	0.0	2.9	0.3	1.7	4.9	8.7	1.8	0.5	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	46.1	0.0	40.9	42.2	46.7	52.3	13.4	8.6	50.6	21.5	0.0
LnGrp LOS	D	D		D	D	D	D	B	A	D	C	
Approach Vol, veh/h		50			331			1992			1394	
Approach Delay, s/veh		42.8			42.1			20.1			22.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	68.1	14.8	10.9	16.7	57.7	11.0	14.6
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	15.0	45.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	3.2	27.2	8.7	2.5	12.3	31.6	4.0	6.0
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.4	7.4	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	96	98	553	229	1112	1502	376
v/c Ratio	0.56	0.57	0.35	0.65	0.40	0.48	0.33
Control Delay	54.7	55.0	0.6	31.5	4.0	6.7	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	55.0	0.6	31.5	4.0	6.7	1.0
Queue Length 50th (ft)	62	64	0	115	57	85	0
Queue Length 95th (ft)	112	45	0	165	121	117	m6
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	567	2756	3151	1124
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.35	0.40	0.40	0.48	0.33

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	165	5	498	195	1034	0	0	1442	331
Future Volume (vph)	0	0	0	165	5	498	195	1034	0	0	1442	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.12	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	231	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	181	13	553	229	1112	0	0	1502	376
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	143
Lane Group Flow (vph)	0	0	0	96	98	553	229	1112	0	0	1502	233
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.1	10.1	100.0	77.9	77.9			62.0	62.0
Effective Green, g (s)				10.1	10.1	100.0	77.9	77.9			62.0	62.0
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.62	0.62
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				171	173	1599	347	2756			3152	981
v/s Ratio Prot							c0.07	0.31			0.30	
v/s Ratio Perm				0.06	0.06	0.35	c0.44					0.15
v/c Ratio				0.56	0.57	0.35	0.66	0.40			0.48	0.24
Uniform Delay, d1				42.8	42.9	0.0	8.0	3.6			10.2	8.5
Progression Factor				1.00	1.00	1.00	2.96	0.93			0.55	0.39
Incremental Delay, d2				2.5	2.5	0.6	2.9	0.4			0.3	0.3
Delay (s)				45.3	45.4	0.6	26.5	3.7			6.0	3.6
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			12.2			7.6			5.5	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	191	234	938	171	821	835
v/c Ratio	0.77	0.75	0.15	0.60	0.22	1.01	0.32
Control Delay	59.9	58.6	0.2	23.4	3.4	83.8	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	58.6	0.2	23.4	3.4	83.8	6.1
Queue Length 50th (ft)	124	123	0	233	0	~302	63
Queue Length 95th (ft)	195	100	0	297	17	#423	76
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1557	792	813	2572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.61	0.15	0.60	0.22	1.01	0.32

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	324	10	185	0	0	0	0	900	125	805	802	0
Future Volume (vph)	324	10	185	0	0	0	0	900	125	805	802	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1661	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1661	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	364	20	234	0	0	0	0	938	171	821	835	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	0	0
Lane Group Flow (vph)	193	191	234	0	0	0	0	938	75	821	835	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.3	15.3	100.0					44.0	44.0	23.7	72.7	
Effective Green, g (s)	15.3	15.3	100.0					44.0	44.0	23.7	72.7	
Actuated g/C Ratio	0.15	0.15	1.00					0.44	0.44	0.24	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	252	254	1553					1557	696	813	2572	
v/s Ratio Prot								c0.27		c0.24	0.24	
v/s Ratio Perm	c0.12	0.11	0.15						0.05			
v/c Ratio	0.77	0.75	0.15					0.60	0.11	1.01	0.32	
Uniform Delay, d1	40.6	40.5	0.0					21.3	16.5	38.1	4.9	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.37	1.09	
Incremental Delay, d2	11.8	10.6	0.2					1.7	0.3	32.3	0.3	
Delay (s)	52.4	51.1	0.2					23.1	16.8	84.6	5.6	
Level of Service	D	D	A					C	B	F	A	
Approach Delay (s)		32.2			0.0			22.1			44.8	
Approach LOS		C			A			C			D	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	355	355	671
Demand Flow Rate, veh/h	363	362	685
Vehicles Circulating, veh/h	433	133	168
Vehicles Exiting, veh/h	419	662	327
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.8	4.3	6.1
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.471	0.529	0.464	0.536	0.634	0.366
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	171	192	168	194	434	251
Cap Entry Lane, veh/h	906	983	1194	1268	1157	1231
Entry HV Adj Factor	0.977	0.981	0.980	0.979	0.979	0.980
Flow Entry, veh/h	167	188	165	190	425	246
Cap Entry, veh/h	886	964	1164	1234	1133	1207
V/C Ratio	0.189	0.195	0.142	0.154	0.375	0.204
Control Delay, s/veh	6.0	5.6	4.3	4.2	7.0	4.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	2	1

Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	201	5	39	175	18	122
Future Vol, veh/h	201	5	39	175	18	122
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	287	5	42	250	20	133

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	292	0	624	290
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1264	-	448	747
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1264	-	433	747
Mov Cap-2 Maneuver	-	-	-	-	433	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	699	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	683	-	-	1264	-
HCM Lane V/C Ratio	0.223	-	-	0.034	-
HCM Control Delay (s)	11.8	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	460	331	179
Demand Flow Rate, veh/h	474	341	185
Vehicles Circulating, veh/h	53	21	467
Vehicles Exiting, veh/h	309	631	60
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.3	4.2	5.6
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.155	0.845	0.114	0.886
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	474	53	288	21	164
Cap Entry Lane, veh/h	1307	1393	1393	928	928
Entry HV Adj Factor	0.971	0.962	0.971	0.952	0.970
Flow Entry, veh/h	460	51	280	20	159
Cap Entry, veh/h	1270	1341	1353	884	900
V/C Ratio	0.363	0.038	0.207	0.023	0.177
Control Delay, s/veh	6.3	3.0	4.4	4.3	5.7
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	1	0	1

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	0	0	23	0	0	0	73	0	0
Future Vol, veh/h	0	0	0	0	0	23	0	0	0	73	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	0	0	0	0	25	0	0	0	79	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	25	0	0	1	0	0	14	26	1	14	14	13
Stage 1	-	-	-	-	-	-	1	1	-	13	13	-
Stage 2	-	-	-	-	-	-	13	25	-	1	1	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1583	-	-	1615	-	-	1000	865	1081	1000	878	1064
Stage 1	-	-	-	-	-	-	1019	893	-	1005	883	-
Stage 2	-	-	-	-	-	-	1005	872	-	1019	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1615	-	-	1000	865	1081	1000	878	1064
Mov Cap-2 Maneuver	-	-	-	-	-	-	1000	865	-	1000	878	-
Stage 1	-	-	-	-	-	-	1019	893	-	1005	883	-
Stage 2	-	-	-	-	-	-	1005	872	-	1019	893	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	8.9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1583	-	-	1615	-	-	1000
HCM Lane V/C Ratio	-	-	-	-	-	-	-	0.079
HCM Control Delay (s)	0	0	-	-	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	73	0	0	23	10	0	0	0	30	0	1
Future Vol, veh/h	1	73	0	0	23	10	0	0	0	30	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	79	0	0	25	11	0	0	0	33	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	36	0	0	79	0	0	112	117	79	112	112	31
Stage 1	-	-	-	-	-	-	81	81	-	31	31	-
Stage 2	-	-	-	-	-	-	31	36	-	81	81	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1575	-	-	1513	-	-	863	773	979	866	778	1043
Stage 1	-	-	-	-	-	-	925	828	-	986	869	-
Stage 2	-	-	-	-	-	-	983	865	-	927	828	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1575	-	-	1513	-	-	861	772	979	866	777	1043
Mov Cap-2 Maneuver	-	-	-	-	-	-	861	772	-	866	777	-
Stage 1	-	-	-	-	-	-	924	827	-	985	869	-
Stage 2	-	-	-	-	-	-	982	865	-	926	827	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1575	-	-	1513	-	-	871
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.039
HCM Control Delay (s)	0	7.3	-	-	0	-	-	9.3
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection	
Intersection Delay, s/veh	3.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	113	106	0	219
Demand Flow Rate, veh/h	116	109	0	226
Vehicles Circulating, veh/h	225	1	341	37
Vehicles Exiting, veh/h	38	340	0	73
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	3.0	0.0	4.1
Approach LOS	A	A	-	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.474	0.526	0.339	0.661	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	55	61	37	72	0	226
Cap Entry Lane, veh/h	1097	1173	1349	1419	1063	1376
Entry HV Adj Factor	0.963	0.979	0.971	0.972	1.000	0.969
Flow Entry, veh/h	53	60	36	70	0	219
Cap Entry, veh/h	1056	1148	1309	1379	1063	1334
V/C Ratio	0.050	0.052	0.027	0.051	0.000	0.164
Control Delay, s/veh	3.8	3.6	3.0	3.0	3.4	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	0	1

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱		↰	↱	
Traffic Vol, veh/h	49	0	73	0	0	0	23	41	0	0	128	16
Future Vol, veh/h	49	0	73	0	0	0	23	41	0	0	128	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	300	-	-	300	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	0	79	0	0	0	25	45	0	0	139	17

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	243	243	148	282	251	45	156	0	0	45	0	0
Stage 1	148	148	-	95	95	-	-	-	-	-	-	-
Stage 2	95	95	-	187	156	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	709	657	896	668	650	1022	1418	-	-	1557	-	-
Stage 1	852	773	-	909	814	-	-	-	-	-	-	-
Stage 2	909	814	-	812	767	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	700	645	896	601	638	1022	1418	-	-	1557	-	-
Mov Cap-2 Maneuver	700	645	-	601	638	-	-	-	-	-	-	-
Stage 1	837	773	-	893	799	-	-	-	-	-	-	-
Stage 2	893	799	-	740	767	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	0	2.7	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	805	-	1557	-	-
HCM Lane V/C Ratio	0.018	-	-	0.165	-	-	-	-
HCM Control Delay (s)	7.6	-	-	10.4	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	-	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	0	97	0	0	0	31	59	0	0	47	19
Future Vol, veh/h	61	0	97	0	0	0	31	59	0	0	47	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	0	105	0	0	0	34	64	0	0	51	21
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.1	0	8.3	8
HCM LOS	A	-	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	39%	0%	0%	0%
Vol Thru, %	0%	100%	0%	100%	100%	71%
Vol Right, %	0%	0%	61%	0%	0%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	59	158	0	0	66
LT Vol	31	0	61	0	0	0
Through Vol	0	59	0	0	0	47
RT Vol	0	0	97	0	0	19
Lane Flow Rate	34	64	172	0	0	72
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.052	0.089	0.195	0	0	0.096
Departure Headway (Hd)	5.506	5.003	4.09	4.562	5.02	4.818
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	654	721	881	0	0	746
Service Time	3.206	2.703	2.099	2.578	2.737	2.534
HCM Lane V/C Ratio	0.052	0.089	0.195	0	0	0.097
HCM Control Delay	8.5	8.2	8.1	7.6	7.7	8
HCM Lane LOS	A	A	A	N	N	A
HCM 95th-tile Q	0.2	0.3	0.7	0	0	0.3

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	30	12	1	10	6	4	32	1	2	32	4
Future Vol, veh/h	12	30	12	1	10	6	4	32	1	2	32	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	13	33	13	1	11	7	4	35	1	2	35	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.1	7.3	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	22%	6%	5%
Vol Thru, %	86%	56%	59%	84%
Vol Right, %	3%	22%	35%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	37	54	17	38
LT Vol	4	12	1	2
Through Vol	32	30	10	32
RT Vol	1	12	6	4
Lane Flow Rate	40	59	18	41
Geometry Grp	1	1	1	1
Degree of Util (X)	0.046	0.065	0.02	0.047
Departure Headway (Hd)	4.104	4.001	3.938	4.062
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	869	892	903	878
Service Time	2.146	2.043	1.988	2.104
HCM Lane V/C Ratio	0.046	0.066	0.02	0.047
HCM Control Delay	7.3	7.3	7.1	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1	0.1

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	54	31	10	110	35	18
Future Vol, veh/h	54	31	10	110	35	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	59	34	11	120	38	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	190	48	58	0	-	0
Stage 1	48	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	797	1018	1540	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	791	1018	1540	-	-	-
Mov Cap-2 Maneuver	791	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	883	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1540	-	861	-	-
HCM Lane V/C Ratio	0.007	-	0.107	-	-
HCM Control Delay (s)	7.4	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	587	308	204	659	188	313
v/c Ratio	0.49	0.23	0.20	0.24	0.50	0.20
Control Delay	12.2	0.8	3.9	4.4	46.8	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	0.8	3.9	4.4	46.8	0.3
Queue Length 50th (ft)	160	0	11	47	59	0
Queue Length 95th (ft)	351	6	32	93	92	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1187	1520	1214	2694	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.20	0.17	0.24	0.19	0.20

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	534	240	182	527	182	213
Future Volume (vph)	534	240	182	527	182	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.32	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1168	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	587	308	204	659	188	313
RTOR Reduction (vph)	0	89	0	0	0	0
Lane Group Flow (vph)	587	219	204	659	188	313
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.4	71.2	71.4	71.4	10.8	100.0
Effective Green, g (s)	60.4	71.2	71.4	71.4	10.8	100.0
Actuated g/C Ratio	0.60	0.71	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1114	1116	971	2551	374	1599
v/s Ratio Prot	c0.32	0.02	0.01	c0.18	c0.05	
v/s Ratio Perm		0.12	0.14			c0.20
v/c Ratio	0.53	0.20	0.21	0.26	0.50	0.20
Uniform Delay, d1	11.5	4.8	6.2	5.0	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8	0.0	0.0	0.2	0.4	0.3
Delay (s)	13.3	4.9	6.3	5.3	42.5	0.3
Level of Service	B	A	A	A	D	A
Approach Delay (s)	10.4			5.5	16.1	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	354	311	150	559	417	133	80	826	332	128	742	280
v/c Ratio	0.37	0.25	0.23	0.50	0.31	0.19	0.38	0.86	0.21	0.62	0.73	0.34
Control Delay	18.0	31.3	5.8	19.2	28.6	5.2	30.3	55.3	0.3	39.2	46.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	31.3	5.8	19.2	28.6	5.2	30.3	55.3	0.3	39.2	46.5	3.7
Queue Length 50th (ft)	76	95	0	130	124	0	41	340	0	67	289	0
Queue Length 95th (ft)	100	148	36	179	172	29	60	#490	0	102	388	53
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1270	1228	647	1243	1361	691	307	958	1599	266	1015	972
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.25	0.23	0.45	0.31	0.19	0.26	0.86	0.21	0.48	0.73	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

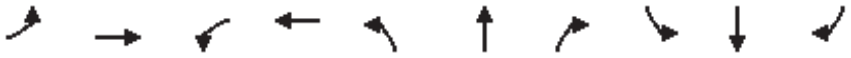
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
Future Volume (veh/h)	287	302	123	514	359	106	55	735	302	100	660	269
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	932	1269	566	1071	1400	625	202	988		217	1058	606
Arrive On Green	0.08	0.36	0.36	0.12	0.39	0.39	0.05	0.28	0.00	0.07	0.30	0.30
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	354	311	150	559	417	132	80	826	0	128	742	280
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	7.9	7.6	8.3	12.1	9.9	6.8	3.9	26.8	0.0	6.3	22.8	16.3
Cycle Q Clear(g_c), s	7.9	7.6	8.3	12.1	9.9	6.8	3.9	26.8	0.0	6.3	22.8	16.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	932	1269	566	1071	1400	625	202	988		217	1058	606
V/C Ratio(X)	0.38	0.25	0.27	0.52	0.30	0.21	0.40	0.84		0.59	0.70	0.46
Avail Cap(c_a), veh/h	1340	1269	566	1351	1400	625	339	988		314	1058	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	27.9	28.1	19.5	25.6	24.7	31.7	42.0	0.0	32.3	38.4	28.6
Incr Delay (d2), s/veh	0.1	0.5	1.1	0.1	0.5	0.8	0.5	8.3	0.0	1.0	3.9	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.3	3.3	4.8	4.3	2.6	1.7	12.7	0.0	2.7	10.3	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.6	28.4	29.3	19.7	26.2	25.5	32.1	50.3	0.0	33.2	42.3	31.1
LnGrp LOS	C	C	C	B	C	C	C	D		C	D	C
Approach Vol, veh/h		815			1108			906			1150	
Approach Delay, s/veh		25.6			22.8			48.7			38.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	50.0	13.2	40.0	15.4	54.6	10.6	42.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	44.0	15.0	34.0	25.0	44.0	15.0	34.0
Max Q Clear Time (g_c+I1), s	14.1	10.3	8.3	28.8	9.9	11.9	5.9	24.8
Green Ext Time (p_c), s	0.9	2.6	0.1	2.4	0.6	3.3	0.0	3.9

Intersection Summary	
HCM 6th Ctrl Delay	33.8
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	209	314	238	120	10	205	173	50	337	45
v/c Ratio	0.41	0.77	0.61	0.25	0.03	0.20	0.21	0.06	0.51	0.07
Control Delay	24.3	47.0	30.3	13.2	24.2	30.8	4.2	22.2	31.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.3	47.0	30.3	13.2	24.2	30.8	4.2	22.2	31.4	0.2
Queue Length 50th (ft)	71	148	83	9	3	46	0	8	135	0
Queue Length 95th (ft)	151	165	#188	0	12	98	8	31	#410	0
Internal Link Dist (ft)		538		1917		2380			851	
Turn Bay Length (ft)	125				170		170	400		200
Base Capacity (vph)	611	409	387	477	475	1010	805	988	667	656
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.77	0.61	0.25	0.02	0.20	0.21	0.05	0.51	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Future Volume (vph)	140	70	120	169	5	74	5	156	114	47	290	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.92		1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1767	1708		1752	1582		1770	3539	1565	3386	1845	1568
Flt Permitted	0.68	1.00		0.23	1.00		0.45	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1264	1708		421	1582		842	3539	1565	1956	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	209	140	174	238	20	100	10	205	173	50	337	45
RTOR Reduction (vph)	0	31	0	0	76	0	0	0	96	0	0	30
Lane Group Flow (vph)	209	283	0	238	44	0	10	205	77	50	337	15
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	33.8	21.6		40.4	24.9		32.0	31.0	46.5	40.4	35.2	35.2
Effective Green, g (s)	33.8	21.6		40.4	24.9		32.0	31.0	46.5	40.4	35.2	35.2
Actuated g/C Ratio	0.32	0.21		0.38	0.24		0.30	0.30	0.44	0.38	0.34	0.34
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	465	351		358	375		265	1044	693	823	618	525
v/s Ratio Prot	0.05	c0.17		c0.10	0.03		0.00	0.06	0.02	c0.00	c0.18	
v/s Ratio Perm	0.09			0.16			0.01		0.03	0.02		0.01
v/c Ratio	0.45	0.81		0.66	0.12		0.04	0.20	0.11	0.06	0.55	0.03
Uniform Delay, d1	27.4	39.7		24.4	31.4		25.7	27.7	17.1	20.3	28.4	23.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	12.7		4.6	0.1		0.0	0.4	0.1	0.0	3.4	0.1
Delay (s)	28.1	52.4		29.0	31.6		25.7	28.1	17.2	20.3	31.8	23.5
Level of Service	C	D		C	C		C	C	B	C	C	C
Approach Delay (s)		42.7			29.8			23.2			29.6	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	105.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	147	225	1152	40	182	88	1392	938	66	32	451	68
v/c Ratio	0.47	0.70	0.72	0.11	0.49	0.06	0.89	0.45	0.04	0.15	0.46	0.09
Control Delay	47.8	56.0	2.8	40.4	46.7	0.1	40.2	9.2	0.0	46.2	32.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	56.0	2.8	40.4	46.7	0.1	40.2	9.2	0.0	46.2	32.8	0.2
Queue Length 50th (ft)	46	74	0	12	58	0	230	92	0	10	130	0
Queue Length 95th (ft)	75	111	0	18	88	0	151	104	m0	22	163	0
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	379	391	1599	1566	2069	1599	215	989	851
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.42	0.72	0.11	0.47	0.06	0.89	0.45	0.04	0.15	0.46	0.08

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
Future Volume (veh/h)	146	214	956	24	160	69	696	675	45	25	370	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	147	225	0	40	182	0	1392	938	0	32	451	68
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	290	298		253	260		1467	2188		82	1199	668
Arrive On Green	0.08	0.08	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.33
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	147	225	0	40	182	0	1392	938	0	32	451	68
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	4.0	6.1	0.0	1.1	5.0	0.0	26.9	13.8	0.0	0.9	9.6	2.6
Cycle Q Clear(g_c), s	4.0	6.1	0.0	1.1	5.0	0.0	26.9	13.8	0.0	0.9	9.6	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	298		253	260		1467	2188		82	1199	668
V/C Ratio(X)	0.51	0.76		0.16	0.70		0.95	0.43		0.39	0.38	0.10
Avail Cap(c_a), veh/h	522	537		348	358		1468	2188		209	1199	668
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.9	44.9	0.0	43.5	45.3	0.0	34.8	10.3	0.0	48.1	25.3	17.7
Incr Delay (d2), s/veh	0.4	1.2	0.0	0.3	3.6	0.0	13.1	0.6	0.0	3.0	0.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.7	0.0	0.5	2.3	0.0	12.1	4.8	0.0	0.4	4.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.3	46.0	0.0	43.8	48.9	0.0	47.9	10.9	0.0	51.1	26.2	18.0
LnGrp LOS	D	D		D	D		D	B		D	C	B
Approach Vol, veh/h		372			222			2330			551	
Approach Delay, s/veh		45.3			48.0			33.0			26.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	67.1		13.3	35.0	39.5		12.2				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	15.8		8.1	28.9	11.6		7.0				
Green Ext Time (p_c), s	0.0	6.9		0.2	0.0	2.3		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		34.3
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	193	191	234	938	171	821	835
v/c Ratio	0.77	0.75	0.15	0.64	0.23	0.91	0.32
Control Delay	59.9	58.6	0.2	26.8	4.1	59.0	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	58.6	0.2	26.8	4.1	59.0	6.1
Queue Length 50th (ft)	124	123	0	261	0	257	63
Queue Length 95th (ft)	195	100	0	333	19	#351	76
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1462	754	922	2572
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.61	0.15	0.64	0.23	0.89	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	10	185	0	0	0	0	900	125	805	802	0
Future Volume (veh/h)	324	10	185	0	0	0	0	900	125	805	802	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	378	0	0				0	938	0	821	835	0
Peak Hour Factor	0.89	0.50	0.79				0.92	0.96	0.73	0.98	0.96	0.92
Percent Heavy Veh, %	4	4	4				0	2	2	2	2	0
Cap, veh/h	455	0					0	1580		884	2666	0
Arrive On Green	0.13	0.00	0.00				0.00	0.44	0.00	0.17	0.50	0.00
Sat Flow, veh/h	3506	0	1560				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	378	0	0				0	938	0	821	835	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	1585	1728	1777	0
Q Serve(g_s), s	10.5	0.0	0.0				0.0	19.9	0.0	23.4	13.9	0.0
Cycle Q Clear(g_c), s	10.5	0.0	0.0				0.0	19.9	0.0	23.4	13.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	455	0					0	1580		884	2666	0
V/C Ratio(X)	0.83	0.00					0.00	0.59		0.93	0.31	0.00
Avail Cap(c_a), veh/h	666	0					0	1580		898	2666	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.87	0.87	0.00
Uniform Delay (d), s/veh	42.4	0.0	0.0				0.0	21.0	0.0	40.5	9.7	0.0
Incr Delay (d2), s/veh	3.8	0.0	0.0				0.0	1.7	0.0	13.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.0	0.0				0.0	7.9	0.0	11.8	5.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	0.0				0.0	22.6	0.0	54.2	9.9	0.0
LnGrp LOS	D	A					A	C		D	A	A
Approach Vol, veh/h		378						938			1656	
Approach Delay, s/veh		46.2						22.6			31.9	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.6	50.5		19.0		81.0
Change Period (Y+Rc), s	5.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	26.0	38.0		19.0		69.0
Max Q Clear Time (g_c+I1), s	25.4	21.9		12.5		15.9
Green Ext Time (p_c), s	0.2	5.5		0.5		6.3

Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2030 + Project

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	56	19	55	412	44	176	133	920	541	245	688	75
v/c Ratio	0.26	0.18	0.03	0.72	0.19	0.51	0.49	0.49	0.50	0.64	0.24	0.08
Control Delay	56.5	57.2	0.1	54.3	46.7	11.4	58.6	21.3	3.7	58.8	15.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	57.2	0.1	54.3	46.7	11.4	58.6	21.3	3.7	58.8	15.3	0.2
Queue Length 50th (ft)	21	14	0	155	33	0	51	207	0	95	84	0
Queue Length 95th (ft)	29	30	0	185	58	48	72	365	37	106	157	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	553	357	1881	1082	401	2862	968
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.10	0.03	0.48	0.09	0.32	0.37	0.49	0.50	0.61	0.24	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	13	40	342	38	148	105	810	444	179	660	45
Future Volume (veh/h)	35	13	40	342	38	148	105	810	444	179	660	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	56	19	0	412	44	0	133	920	0	245	688	0
Peak Hour Factor	0.63	0.69	0.73	0.83	0.86	0.84	0.79	0.88	0.82	0.73	0.96	0.60
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		486	238		199	1899		302	2881	
Arrive On Green	0.06	0.04	0.00	0.14	0.13	0.00	0.06	0.53	0.00	0.09	0.56	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	56	19	0	412	44	0	133	920	0	245	688	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.8	1.2	0.0	14.1	2.5	0.0	4.5	19.5	0.0	8.4	8.1	0.0
Cycle Q Clear(g_c), s	1.8	1.2	0.0	14.1	2.5	0.0	4.5	19.5	0.0	8.4	8.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	85		486	238		199	1899		302	2881	
V/C Ratio(X)	0.27	0.22		0.85	0.18		0.67	0.48		0.81	0.24	
Avail Cap(c_a), veh/h	278	190		871	510		360	1899		360	2881	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.1	55.3	0.0	50.2	46.7	0.0	55.4	17.6	0.0	53.8	13.2	0.0
Incr Delay (d2), s/veh	0.5	1.3	0.0	3.2	0.4	0.0	2.9	0.9	0.0	10.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.6	0.0	6.1	1.2	0.0	2.0	7.9	0.0	4.0	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	56.6	0.0	53.4	47.1	0.0	58.3	18.4	0.0	64.3	13.4	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		75			456			1053			933	
Approach Delay, s/veh		55.1			52.8			23.5			26.7	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	70.1	22.5	11.4	12.4	73.7	12.5	21.4
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	10.4	21.5	16.1	3.2	6.5	10.1	3.8	4.5
Green Ext Time (p_c), s	0.1	10.7	0.9	0.0	0.1	9.6	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	438	479	144	521	416	167
v/c Ratio	0.41	0.36	0.14	0.22	0.70	0.11
Control Delay	17.3	1.3	7.9	8.8	54.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.3	1.3	7.9	8.8	54.3	0.1
Queue Length 50th (ft)	156	0	14	63	156	0
Queue Length 95th (ft)	354	29	38	113	151	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1068	1343	1507	2359	594	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.36	0.10	0.22	0.70	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	390	426	115	375	258	145
Future Volume (vph)	390	426	115	375	258	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.39	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1393	3505	3400	1568
Peak-hour factor, PHF	0.89	0.89	0.80	0.72	0.62	0.87
Adj. Flow (vph)	438	479	144	521	416	167
RTOR Reduction (vph)	0	134	0	0	0	0
Lane Group Flow (vph)	438	345	144	521	416	167
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	65.5	86.5	76.8	76.8	21.0	120.0
Effective Green, g (s)	65.5	86.5	76.8	76.8	21.0	120.0
Actuated g/C Ratio	0.55	0.72	0.64	0.64	0.18	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1007	1130	996	2243	595	1568
v/s Ratio Prot	c0.24	0.05	0.01	c0.15	c0.12	
v/s Ratio Perm		0.17	0.08			c0.11
v/c Ratio	0.43	0.31	0.14	0.23	0.70	0.11
Uniform Delay, d1	16.2	6.0	9.4	9.1	46.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1	0.0	0.2	2.9	0.1
Delay (s)	17.6	6.1	9.4	9.4	49.4	0.1
Level of Service	B	A	A	A	D	A
Approach Delay (s)	11.6			9.4	35.3	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	277	175	165	513	314	105	129	891	624	119	980	264
v/c Ratio	0.30	0.16	0.28	0.45	0.26	0.17	0.59	0.87	0.39	0.56	0.96	0.32
Control Delay	17.7	30.3	6.1	18.9	27.3	4.4	33.5	49.6	0.7	31.2	61.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	30.3	6.1	18.9	27.3	4.4	33.5	49.6	0.7	31.2	61.2	3.7
Queue Length 50th (ft)	56	48	0	112	85	0	57	321	0	52	368	0
Queue Length 95th (ft)	83	76	37	140	95	22	69	#494	0	90	#544	16
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1230	1081	598	1213	1215	620	256	1019	1583	305	1017	953
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.16	0.28	0.42	0.26	0.17	0.50	0.87	0.39	0.39	0.96	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

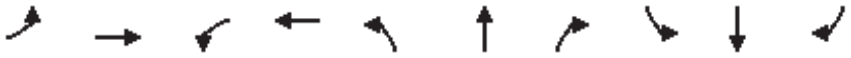
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	145	135	426	217	85	80	838	568	100	872	193
Future Volume (veh/h)	260	145	135	426	217	85	80	838	568	100	872	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	277	175	165	513	314	105	129	891	0	119	980	264
Peak Hour Factor	0.94	0.83	0.82	0.83	0.69	0.81	0.62	0.94	0.91	0.84	0.89	0.73
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	956	1122	500	1100	1260	562	199	1063		220	1056	591
Arrive On Green	0.08	0.31	0.31	0.12	0.36	0.36	0.07	0.30	0.00	0.06	0.29	0.29
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	277	175	165	513	314	105	129	891	0	119	980	264
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	5.7	3.8	8.6	10.5	6.9	5.0	5.4	25.5	0.0	4.9	28.8	13.5
Cycle Q Clear(g_c), s	5.7	3.8	8.6	10.5	6.9	5.0	5.4	25.5	0.0	4.9	28.8	13.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	956	1122	500	1100	1260	562	199	1063		220	1056	591
V/C Ratio(X)	0.29	0.16	0.33	0.47	0.25	0.19	0.65	0.84		0.54	0.93	0.45
Avail Cap(c_a), veh/h	1336	1122	500	1311	1260	562	276	1063		355	1056	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	26.9	28.5	19.3	24.4	23.8	28.4	35.6	0.0	27.5	37.2	25.8
Incr Delay (d2), s/veh	0.1	0.3	1.8	0.1	0.5	0.7	1.3	7.9	0.0	0.8	15.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	1.7	3.4	4.0	2.9	1.9	2.3	11.7	0.0	2.1	14.3	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	27.2	30.3	19.4	24.9	24.6	29.7	43.5	0.0	28.3	52.2	28.3
LnGrp LOS	C	C	C	B	C	C	C	D		C	D	C
Approach Vol, veh/h		617			932			1020			1363	
Approach Delay, s/veh		25.8			21.8			41.7			45.5	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.2	40.0	11.8	38.5	13.1	45.1	12.3	38.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	12.0	32.0
Max Q Clear Time (g_c+I1), s	12.5	10.6	6.9	27.5	7.7	8.9	7.4	30.8
Green Ext Time (p_c), s	0.7	1.6	0.1	0.9	0.4	2.3	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	35.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	38	305	217	11	195	769	471	219	21
v/c Ratio	0.10	0.23	0.82	0.53	0.02	0.16	0.65	0.37	0.23	0.02
Control Delay	29.9	32.2	49.3	25.4	18.7	26.4	4.6	15.5	19.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	32.2	49.3	25.4	18.7	26.4	4.6	15.5	19.4	0.1
Queue Length 50th (ft)	8	9	128	44	2	36	0	61	56	0
Queue Length 95th (ft)	37	24	#365	26	19	91	0	165	187	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	432	430	372	468	721	1200	1192	1342	965	887
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.09	0.82	0.46	0.02	0.16	0.65	0.35	0.23	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	10	15	268	20	96	10	146	577	363	162	15
Future Volume (vph)	20	10	15	268	20	96	10	146	577	363	162	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1706		1701	1587		1770	3539	1565	3423	1863	1583
Flt Permitted	0.80	1.00		0.40	1.00		0.62	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1505	1706		716	1587		1157	3539	1565	1979	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.75	0.75	0.77	0.74	0.72
Adj. Flow (vph)	22	19	19	305	51	166	11	195	769	471	219	21
RTOR Reduction (vph)	0	18	0	0	81	0	0	0	376	0	0	11
Lane Group Flow (vph)	22	20	0	305	136	0	11	195	393	471	219	10
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	7.5	5.0		25.9	18.4		35.3	34.4	50.3	51.3	45.4	45.4
Effective Green, g (s)	7.5	5.0		25.9	18.4		35.3	34.4	50.3	51.3	45.4	45.4
Actuated g/C Ratio	0.08	0.05		0.26	0.19		0.36	0.35	0.51	0.52	0.46	0.46
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	121	86		347	296		420	1237	799	1206	859	730
v/s Ratio Prot	0.00	0.01		c0.14	0.09		0.00	0.06	c0.08	c0.05	0.12	
v/s Ratio Perm	0.01			c0.09			0.01		0.17	0.16		0.01
v/c Ratio	0.18	0.23		0.88	0.46		0.03	0.16	0.49	0.39	0.25	0.01
Uniform Delay, d1	42.5	44.9		32.7	35.6		20.4	22.0	15.7	13.2	16.2	14.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.4		21.4	1.1		0.0	0.3	0.5	0.2	0.7	0.0
Delay (s)	43.2	46.2		54.1	36.7		20.4	22.3	16.2	13.4	16.9	14.4
Level of Service	D	D		D	D		C	C	B	B	B	B
Approach Delay (s)		45.1			46.9			17.5			14.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	26.5
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

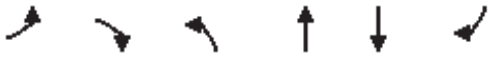
Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	6	732	15	27	406
Future Vol, veh/h	4	6	732	15	27	406
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	7	832	17	31	461

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1364	841	0	0	849	0
Stage 1	841	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	163	365	-	-	789	-
Stage 1	423	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	157	365	-	-	789	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	423	-	-	-	-	-
Stage 2	572	-	-	-	-	-

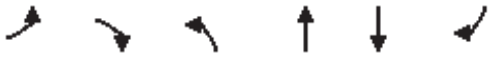
Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	239	789	-
HCM Lane V/C Ratio	-	-	0.045	0.039	-
HCM Control Delay (s)	-	-	20.8	9.7	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	460	56	152	1100	929	674
v/c Ratio	0.59	0.14	0.50	0.34	0.54	0.54
Control Delay	33.7	7.8	45.1	8.4	18.7	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	7.8	45.1	8.4	18.7	4.8
Queue Length 50th (ft)	122	0	43	92	183	87
Queue Length 95th (ft)	142	24	73	147	281	127
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	514	305	3256	1716	1246
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.11	0.50	0.34	0.54	0.54

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	391	48	140	1100	855	573
Future Volume (veh/h)	391	48	140	1100	855	573
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	460	56	152	1100	929	674
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	580	266	764	3568	1461	918
Arrive On Green	0.17	0.17	0.22	0.70	0.41	0.41
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	460	56	152	1100	929	674
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	11.5	2.7	3.2	7.4	18.8	28.0
Cycle Q Clear(g_c), s	11.5	2.7	3.2	7.4	18.8	28.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	580	266	764	3568	1461	918
V/C Ratio(X)	0.79	0.21	0.20	0.31	0.64	0.73
Avail Cap(c_a), veh/h	1037	476	764	3568	1461	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.53	0.53	1.00	1.00
Uniform Delay (d), s/veh	35.9	32.3	28.6	5.2	21.1	13.9
Incr Delay (d2), s/veh	2.5	0.4	0.1	0.1	2.1	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	2.6	1.3	2.0	7.6	14.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.4	32.7	28.6	5.3	23.3	19.1
LnGrp LOS	D	C	C	A	C	B
Approach Vol, veh/h	516			1252	1603	
Approach Delay, s/veh	37.8			8.2	21.5	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		68.9		21.1	25.9	43.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	8.0	37.0
Max Q Clear Time (g_c+I1), s		9.4		13.5	5.2	30.0
Green Ext Time (p_c), s		9.2		1.6	0.1	4.6

Intersection Summary		
HCM 6th Ctrl Delay		19.0
HCM 6th LOS		B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	73	139	1448	63	238	56	1400	501	29	63	966	197
v/c Ratio	0.32	0.60	0.91	0.17	0.62	0.04	0.88	0.25	0.02	0.30	0.97	0.27
Control Delay	47.7	56.0	11.0	41.2	49.9	0.0	42.6	6.4	0.0	48.6	59.6	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	56.0	11.0	41.2	49.9	0.0	42.6	6.4	0.0	48.6	59.6	7.8
Queue Length 50th (ft)	23	46	0	19	76	0	235	35	0	20	~355	22
Queue Length 95th (ft)	43	70	0	38	106	0	184	47	m0	28	#356	68
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	381	393	1568	1680	2009	1568	215	997	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.39	0.91	0.17	0.61	0.04	0.83	0.25	0.02	0.29	0.97	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	115	724	55	195	45	868	421	20	40	705	177
Future Volume (veh/h)	64	115	724	55	195	45	868	421	20	40	705	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	73	139	0	62	238	0	1400	501	0	63	966	197
Peak Hour Factor	0.88	0.83	0.50	0.88	0.82	0.81	0.62	0.84	0.68	0.63	0.73	0.90
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	203	209		303	311		1536	2150		113	1145	603
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.31	0.61	0.00	0.03	0.32	0.32
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	73	139	0	62	238	0	1400	501	0	63	966	197
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.0	3.8	0.0	1.7	6.6	0.0	27.0	6.5	0.0	1.8	25.5	8.8
Cycle Q Clear(g_c), s	2.0	3.8	0.0	1.7	6.6	0.0	27.0	6.5	0.0	1.8	25.5	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	209		303	311		1536	2150		113	1145	603
V/C Ratio(X)	0.36	0.67		0.20	0.76		0.91	0.23		0.56	0.84	0.33
Avail Cap(c_a), veh/h	346	355		343	353		1694	2150		206	1145	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.3	46.1	0.0	42.3	44.6	0.0	33.3	8.9	0.0	47.6	31.4	21.7
Incr Delay (d2), s/veh	0.3	1.2	0.0	0.3	8.5	0.0	7.0	0.3	0.0	4.2	7.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.7	0.0	0.7	3.2	0.0	11.2	2.2	0.0	0.8	11.3	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	47.3	0.0	42.7	53.1	0.0	40.3	9.1	0.0	51.8	39.1	23.2
LnGrp LOS	D	D		D	D		D	A		D	D	C
Approach Vol, veh/h		212			300			1901			1226	
Approach Delay, s/veh		46.7			50.9			32.1			37.2	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	67.0		10.9	36.8	38.5		13.8				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.8	8.5		5.8	29.0	27.5		8.6				
Green Ext Time (p_c), s	0.0	3.3		0.1	1.8	0.0		0.2				

Intersection Summary		
HCM 6th Ctrl Delay		36.2
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	42	15	752	255	20	95	815	1450	200	76	1391	150
v/c Ratio	0.10	0.11	1.77	0.45	0.07	0.23	1.09	0.74	0.21	0.39	1.05	0.10
Control Delay	30.4	45.4	372.3	34.1	40.2	1.3	92.8	15.3	1.2	54.2	53.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	45.4	372.3	34.1	40.2	1.3	92.8	15.3	1.2	54.2	53.0	0.0
Queue Length 50th (ft)	10	9	~518	69	12	0	~307	308	6	25	~518	0
Queue Length 95th (ft)	13	10	0	104	9	0	m#389	338	m5	m28	m#590	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	449	141	426	570	298	409	748	1963	966	204	1331	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.11	1.77	0.45	0.07	0.23	1.09	0.74	0.21	0.37	1.05	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	5	188	240	5	60	701	1218	190	60	1349	75
Future Volume (veh/h)	21	5	188	240	5	60	701	1218	190	60	1349	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	42	15	0	255	20	95	815	1450	200	76	1391	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.63	0.86	0.84	0.95	0.79	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	444	94		570	168	143	754	2124	947	126	1478	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.22	0.60	0.60	0.04	0.42	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	42	15	0	255	20	95	815	1450	200	76	1391	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.1	0.8	0.0	6.9	1.0	5.8	22.0	27.8	5.8	2.2	37.8	0.0
Cycle Q Clear(g_c), s	1.1	0.8	0.0	6.9	1.0	5.8	22.0	27.8	5.8	2.2	37.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	444	94		570	168	143	754	2124	947	126	1478	
V/C Ratio(X)	0.09	0.16		0.45	0.12	0.67	1.08	0.68	0.21	0.60	0.94	
Avail Cap(c_a), veh/h	515	133		634	204	173	754	2124	947	206	1478	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.0	45.5	0.0	39.8	41.8	44.0	39.0	13.4	9.1	47.4	27.9	0.0
Incr Delay (d2), s/veh	0.1	0.9	0.0	0.7	0.4	7.9	56.7	1.8	0.5	1.7	13.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	0.0	2.9	0.5	2.6	14.7	9.8	2.0	0.9	17.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.1	46.5	0.0	40.4	42.2	51.9	95.7	15.2	9.6	49.1	40.9	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	D	
Approach Vol, veh/h		57			370			2465			1467	
Approach Delay, s/veh		42.5			43.5			41.4			41.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	66.2	15.1	11.0	26.0	47.9	11.0	15.1
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	11.0	7.0	22.0	38.0	7.0	11.0
Max Q Clear Time (g_c+I1), s	4.2	29.8	8.9	2.8	24.0	39.8	3.1	7.8
Green Ext Time (p_c), s	0.0	12.2	0.2	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.6
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	103	105	1370	227	957	1461	575
v/c Ratio	0.59	0.59	0.87	0.67	0.35	0.46	0.48
Control Delay	55.2	55.5	7.8	34.7	3.2	7.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	55.5	7.8	34.7	3.2	7.4	0.6
Queue Length 50th (ft)	67	68	0	116	44	112	1
Queue Length 95th (ft)	106	98	0	190	92	m102	m1
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	372	2739	3173	1200
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.35	0.87	0.61	0.35	0.46	0.48

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	160	10	1219	200	890	0	0	1300	477
Future Volume (vph)	0	0	0	160	10	1219	200	890	0	0	1300	477
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1679	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.13	1.00			1.00	1.00
Satd. Flow (perm)				1665	1679	1568	247	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.82	0.75	0.89	0.88	0.93	0.92	0.92	0.89	0.83
Adj. Flow (vph)	0	0	0	195	13	1370	227	957	0	0	1461	575
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	213
Lane Group Flow (vph)	0	0	0	103	105	1370	227	957	0	0	1461	362
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.6	10.6	100.0	77.4	77.4			63.0	63.0
Effective Green, g (s)				10.6	10.6	100.0	77.4	77.4			63.0	63.0
Actuated g/C Ratio				0.11	0.11	1.00	0.77	0.77			0.63	0.63
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				176	177	1568	334	2739			3172	987
v/s Ratio Prot							0.06	0.27			0.29	
v/s Ratio Perm				0.06	0.06	c0.87	0.46					0.23
v/c Ratio				0.59	0.59	0.87	0.68	0.35			0.46	0.37
Uniform Delay, d1				42.6	42.6	0.0	6.8	3.5			9.6	8.9
Progression Factor				1.00	1.00	1.00	3.51	0.74			0.69	0.49
Incremental Delay, d2				3.2	3.5	7.1	3.8	0.3			0.0	0.1
Delay (s)				45.8	46.2	7.1	27.6	2.9			6.7	4.4
Level of Service				D	D	A	C	A			A	A
Approach Delay (s)		0.0			12.2			7.6			6.1	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	191	194	208	853	67	537	1067
v/c Ratio	0.76	0.77	0.13	0.49	0.08	0.84	0.42
Control Delay	59.3	59.7	0.2	19.4	2.5	53.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	59.7	0.2	19.4	2.5	53.1	5.5
Queue Length 50th (ft)	123	125	0	193	0	155	68
Queue Length 95th (ft)	188	130	0	264	12	#170	80
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1732	819	685	2548
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.62	0.13	0.49	0.08	0.78	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	314	15	175	0	0	0	0	776	55	494	982	0
Future Volume (vph)	314	15	175	0	0	0	0	776	55	494	982	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1663	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1663	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.87	0.63	0.84	0.92	0.92	0.92	0.92	0.91	0.82	0.92	0.92	0.92
Adj. Flow (vph)	361	24	208	0	0	0	0	853	67	537	1067	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	191	194	208	0	0	0	0	853	33	537	1067	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.3	15.3	100.0					48.9	48.9	18.8	72.7	
Effective Green, g (s)	15.3	15.3	100.0					48.9	48.9	18.8	72.7	
Actuated g/C Ratio	0.15	0.15	1.00					0.49	0.49	0.19	0.73	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	252	254	1553					1730	774	639	2548	
v/s Ratio Prot								c0.24		c0.16	0.30	
v/s Ratio Perm	0.12	0.12	0.13						0.02			
v/c Ratio	0.76	0.76	0.13					0.49	0.04	0.84	0.42	
Uniform Delay, d1	40.6	40.6	0.0					17.2	13.3	39.2	5.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.06	0.87	
Incremental Delay, d2	11.0	11.6	0.2					1.0	0.1	8.5	0.5	
Delay (s)	51.5	52.2	0.2					18.2	13.4	49.9	5.1	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		33.7			0.0			17.9			20.1	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.5
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	592	599	403
Demand Flow Rate, veh/h	598	611	411
Vehicles Circulating, veh/h	235	407	168
Vehicles Exiting, veh/h	344	426	850
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	6.4	7.9	4.7
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.681	0.319	0.275	0.725	0.572	0.428
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	407	191	168	443	235	176
Cap Entry Lane, veh/h	1087	1163	928	1005	1157	1231
Entry HV Adj Factor	0.990	0.990	0.980	0.980	0.979	0.983
Flow Entry, veh/h	403	189	165	434	230	173
Cap Entry, veh/h	1077	1151	909	984	1132	1210
V/C Ratio	0.374	0.164	0.181	0.441	0.203	0.143
Control Delay, s/veh	7.2	4.6	5.7	8.7	5.0	4.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	1	1	2	1	0

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	347	18	147	267	5	38
Future Vol, veh/h	347	18	147	267	5	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	496	20	160	381	5	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	516	0	1207	506
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	701	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1045	-	202	564
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1045	-	171	564
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	415	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	14
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	445	-	-	1045	-
HCM Lane V/C Ratio	0.105	-	-	0.153	-
HCM Control Delay (s)	14	-	-	9.1	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.5	-

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	539	908	98
Demand Flow Rate, veh/h	555	935	101
Vehicles Circulating, veh/h	339	10	519
Vehicles Exiting, veh/h	606	610	375
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.5	5.9	5.1
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.363	0.637	0.099	0.901
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	555	339	596	10	91
Cap Entry Lane, veh/h	977	1407	1407	885	885
Entry HV Adj Factor	0.971	0.971	0.971	1.000	0.967
Flow Entry, veh/h	539	329	579	10	88
Cap Entry, veh/h	948	1366	1366	885	856
V/C Ratio	0.568	0.241	0.424	0.011	0.103
Control Delay, s/veh	11.5	4.7	6.7	4.2	5.2
LOS	B	A	A	A	A
95th %tile Queue, veh	4	1	2	0	0

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	29	6	32	8	104	1	3	7	27	11	2
Future Vol, veh/h	7	29	6	32	8	104	1	3	7	27	11	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	32	7	35	9	113	1	3	8	29	12	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	122	0	0	39	0	0	195	244	36	193	191	66
Stage 1	-	-	-	-	-	-	52	52	-	136	136	-
Stage 2	-	-	-	-	-	-	143	192	-	57	55	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1459	-	-	1565	-	-	762	656	1034	764	702	995
Stage 1	-	-	-	-	-	-	958	850	-	865	782	-
Stage 2	-	-	-	-	-	-	857	740	-	952	847	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1459	-	-	1565	-	-	733	636	1034	738	681	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	733	636	-	738	681	-
Stage 1	-	-	-	-	-	-	952	845	-	860	763	-
Stage 2	-	-	-	-	-	-	822	722	-	936	842	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.6	9.3	10.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	856	1459	-	-	1565	-	-	731
HCM Lane V/C Ratio	0.014	0.005	-	-	0.022	-	-	0.059
HCM Control Delay (s)	9.3	7.5	0	-	7.4	0	-	10.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	61	0	0	143	30	0	0	0	8	0	1
Future Vol, veh/h	2	61	0	0	143	30	0	0	0	8	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	2	66	0	0	155	33	0	0	0	9	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	66	0	0	242	258	66	242	242	172
Stage 1	-	-	-	-	-	-	70	70	-	172	172	-
Stage 2	-	-	-	-	-	-	172	188	-	70	70	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1386	-	-	1529	-	-	710	646	995	712	660	872
Stage 1	-	-	-	-	-	-	937	837	-	830	756	-
Stage 2	-	-	-	-	-	-	828	745	-	940	837	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1386	-	-	1529	-	-	709	645	995	711	659	872
Mov Cap-2 Maneuver	-	-	-	-	-	-	709	645	-	711	659	-
Stage 1	-	-	-	-	-	-	936	836	-	829	756	-
Stage 2	-	-	-	-	-	-	827	745	-	939	836	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	0	10
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1386	-	-	1529	-	-	726
HCM Lane V/C Ratio	-	0.002	-	-	-	-	-	0.013
HCM Control Delay (s)	0	7.6	-	-	0	-	-	10
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Intersection Delay, s/veh	5.4
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	75	763	16	193
Demand Flow Rate, veh/h	77	785	16	199
Vehicles Circulating, veh/h	242	30	248	236
Vehicles Exiting, veh/h	193	234	71	579
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.6	5.8	3.3	4.7
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.468	0.532	0.299	0.701	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	36	41	235	550	16	199
Cap Entry Lane, veh/h	1080	1156	1313	1384	1150	1162
Entry HV Adj Factor	0.974	0.965	0.973	0.971	0.993	0.972
Flow Entry, veh/h	35	40	229	534	16	193
Cap Entry, veh/h	1053	1115	1277	1344	1142	1130
V/C Ratio	0.033	0.035	0.179	0.397	0.014	0.171
Control Delay, s/veh	3.7	3.5	4.3	6.4	3.3	4.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	1

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Future Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	2	21	63	1	25	78	357	127	87	110	52
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.1	9.9	16.1	9.6
HCM LOS	A	A	C	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	36%	71%	100%	0%
Vol Thru, %	0%	74%	6%	1%	0%	68%
Vol Right, %	0%	26%	58%	28%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	445	33	82	80	149
LT Vol	72	0	12	58	80	0
Through Vol	0	328	2	1	0	101
RT Vol	0	117	19	23	0	48
Lane Flow Rate	78	484	36	89	87	162
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.123	0.667	0.057	0.143	0.143	0.234
Departure Headway (Hd)	5.649	4.961	5.757	5.781	5.931	5.199
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	726	626	614	601	685
Service Time	3.412	2.723	3.757	3.874	3.708	2.976
HCM Lane V/C Ratio	0.123	0.667	0.058	0.145	0.145	0.236
HCM Control Delay	9.2	17.2	9.1	9.9	9.7	9.6
HCM Lane LOS	A	C	A	A	A	A
HCM 95th-tile Q	0.4	5.1	0.2	0.5	0.5	0.9

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Future Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	2	27	57	1	10	104	88	202	84	165	65
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.8	9.4	10	10
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	37%	84%	100%	0%
Vol Thru, %	0%	30%	5%	2%	0%	72%
Vol Right, %	0%	70%	58%	15%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	267	43	62	77	212
LT Vol	96	0	16	52	77	0
Through Vol	0	81	2	1	0	152
RT Vol	0	186	25	9	0	60
Lane Flow Rate	104	290	47	67	84	230
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.164	0.376	0.069	0.106	0.133	0.321
Departure Headway (Hd)	5.662	4.669	5.329	5.641	5.723	5.02
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	766	667	631	624	714
Service Time	3.411	2.417	3.405	3.712	3.475	2.772
HCM Lane V/C Ratio	0.165	0.379	0.07	0.106	0.135	0.322
HCM Control Delay	9.5	10.2	8.8	9.4	9.4	10.2
HCM Lane LOS	A	B	A	A	A	B
HCM 95th-tile Q	0.6	1.8	0.2	0.4	0.5	1.4

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	3	1	30	2	12	36	2	6	57	12
Future Vol, veh/h	3	7	3	1	30	2	12	36	2	6	57	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	3	8	3	1	33	2	13	39	2	7	62	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.2	7.4	7.4	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	23%	3%	8%
Vol Thru, %	72%	54%	91%	76%
Vol Right, %	4%	23%	6%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	13	33	75
LT Vol	12	3	1	6
Through Vol	36	7	30	57
RT Vol	2	3	2	12
Lane Flow Rate	54	14	36	82
Geometry Grp	1	1	1	1
Degree of Util (X)	0.062	0.016	0.041	0.091
Departure Headway (Hd)	4.107	4.103	4.165	4
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	869	863	852	893
Service Time	2.147	2.175	2.231	2.035
HCM Lane V/C Ratio	0.062	0.016	0.042	0.092
HCM Control Delay	7.4	7.2	7.4	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.3

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	30	76	281	54
Future Vol, veh/h	14	8	30	76	281	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	9	33	83	305	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	484	335	364	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	540	705	1189	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	525	705	1189	-	-	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	579	-	-
HCM Lane V/C Ratio	0.027	-	0.041	-	-
HCM Control Delay (s)	8.1	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	80	78	138	651	84	162	153	887	508	245	1124	152
v/c Ratio	0.32	0.46	0.09	0.87	0.19	0.32	0.55	0.62	0.54	0.63	0.51	0.19
Control Delay	55.0	58.9	0.1	55.7	35.9	5.9	59.1	31.4	4.9	55.7	25.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.0	58.9	0.1	55.7	35.9	5.9	59.1	31.4	4.9	55.7	25.5	2.8
Queue Length 50th (ft)	29	57	0	239	50	0	57	286	0	91	230	0
Queue Length 95th (ft)	50	87	0	#340	72	34	93	391	61	136	291	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	397	241	1578	841	499	548	301	1422	933	492	2211	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.32	0.09	0.77	0.17	0.30	0.51	0.62	0.54	0.50	0.51	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	58	130	586	59	136	135	825	442	223	1045	85
Future Volume (veh/h)	65	58	130	586	59	136	135	825	442	223	1045	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	80	78	0	651	84	0	153	887	0	245	1124	0
Peak Hour Factor	0.81	0.74	0.94	0.90	0.70	0.84	0.88	0.93	0.87	0.91	0.93	0.56
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	229	129		730	400		226	1489		315	2270	
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.06	0.42	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	80	78	0	651	84	0	153	887	0	245	1124	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.3	4.3	0.0	19.4	3.9	0.0	4.6	20.5	0.0	7.3	16.6	0.0
Cycle Q Clear(g_c), s	2.3	4.3	0.0	19.4	3.9	0.0	4.6	20.5	0.0	7.3	16.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	129		730	400		226	1489		315	2270	
V/C Ratio(X)	0.35	0.61		0.89	0.21		0.68	0.60		0.78	0.50	
Avail Cap(c_a), veh/h	409	248		866	495		311	1489		507	2270	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.6	48.2	0.0	40.9	34.6	0.0	48.7	24.2	0.0	47.4	21.3	0.0
Incr Delay (d2), s/veh	0.7	4.5	0.0	9.8	0.3	0.0	2.6	1.8	0.0	3.1	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.1	0.0	9.0	1.8	0.0	2.0	8.7	0.0	3.3	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.3	52.7	0.0	50.8	34.9	0.0	51.3	25.9	0.0	50.5	22.1	0.0
LnGrp LOS	D	D		D	C		D	C		D	C	
Approach Vol, veh/h		158			735			1040			1369	
Approach Delay, s/veh		50.5			48.9			29.7			27.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	50.3	27.8	13.3	12.4	53.0	12.5	28.6
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.3	22.5	21.4	6.3	6.6	18.6	4.3	5.9
Green Ext Time (p_c), s	0.3	9.7	1.0	0.1	0.1	15.6	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	33.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	609	313	194	705	177	212
v/c Ratio	0.51	0.24	0.19	0.26	0.48	0.13
Control Delay	12.3	0.8	3.9	4.4	46.6	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	0.8	3.9	4.4	46.6	0.2
Queue Length 50th (ft)	169	0	11	51	56	0
Queue Length 95th (ft)	366	6	30	99	87	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1192	1523	1188	2700	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.21	0.16	0.26	0.18	0.13

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	554	244	173	564	172	144
Future Volume (vph)	554	244	173	564	172	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.31	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1124	3574	3467	1599
Peak-hour factor, PHF	0.91	0.78	0.89	0.80	0.97	0.68
Adj. Flow (vph)	609	313	194	705	177	212
RTOR Reduction (vph)	0	90	0	0	0	0
Lane Group Flow (vph)	609	223	194	705	177	212
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.7	71.3	71.6	71.6	10.6	100.0
Effective Green, g (s)	60.7	71.3	71.6	71.6	10.6	100.0
Actuated g/C Ratio	0.61	0.71	0.72	0.72	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1119	1117	943	2558	367	1599
v/s Ratio Prot	c0.33	0.02	0.01	c0.20	c0.05	
v/s Ratio Perm		0.12	0.14			c0.13
v/c Ratio	0.54	0.20	0.21	0.28	0.48	0.13
Uniform Delay, d1	11.5	4.8	6.3	5.0	42.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.0	0.0	0.3	0.4	0.2
Delay (s)	13.4	4.8	6.4	5.3	42.5	0.2
Level of Service	B	A	A	A	D	A
Approach Delay (s)	10.5			5.5	19.4	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	322	276	157	592	421	138	114	980	386	128	807	282
v/c Ratio	0.36	0.24	0.26	0.52	0.32	0.20	0.52	0.92	0.24	0.67	0.76	0.35
Control Delay	19.8	34.4	6.2	21.4	30.5	5.2	33.3	59.3	0.4	44.6	48.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	34.4	6.2	21.4	30.5	5.2	33.3	59.3	0.4	44.6	48.2	6.5
Queue Length 50th (ft)	75	91	0	152	134	0	59	427	0	67	327	24
Queue Length 95th (ft)	94	137	38	197	176	30	80	#590	0	105	440	88
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1219	1135	614	1219	1320	676	312	1064	1599	220	1056	956
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.24	0.26	0.49	0.32	0.20	0.37	0.92	0.24	0.58	0.76	0.29

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

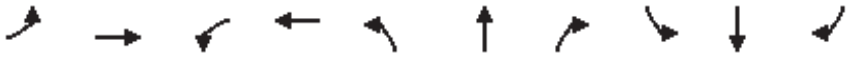
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	268	129	545	362	110	79	872	351	100	718	271
Future Volume (veh/h)	261	268	129	545	362	110	79	872	351	100	718	271
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	322	276	157	592	421	138	114	980	0	128	807	282
Peak Hour Factor	0.81	0.97	0.82	0.92	0.86	0.80	0.69	0.89	0.91	0.78	0.89	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	878	1166	520	1069	1346	600	217	1091		195	1103	620
Arrive On Green	0.08	0.33	0.33	0.13	0.38	0.38	0.06	0.30	0.00	0.06	0.31	0.31
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	322	276	157	592	421	138	114	980	0	128	807	282
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	7.8	7.2	9.5	13.9	10.7	7.6	5.5	33.5	0.0	6.3	25.9	16.9
Cycle Q Clear(g_c), s	7.8	7.2	9.5	13.9	10.7	7.6	5.5	33.5	0.0	6.3	25.9	16.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	878	1166	520	1069	1346	600	217	1091		195	1103	620
V/C Ratio(X)	0.37	0.24	0.30	0.55	0.31	0.23	0.52	0.90		0.66	0.73	0.46
Avail Cap(c_a), veh/h	1275	1166	520	1290	1346	600	351	1091		248	1103	620
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	31.3	32.1	21.8	28.0	27.1	30.9	42.6	0.0	32.9	39.4	28.9
Incr Delay (d2), s/veh	0.1	0.5	1.5	0.2	0.6	0.9	0.7	11.6	0.0	1.9	4.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.2	3.8	5.6	4.6	3.0	2.4	16.2	0.0	2.7	11.7	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.9	31.8	33.6	22.0	28.6	27.9	31.6	54.2	0.0	34.8	43.7	31.3
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		755			1151			1094			1217	
Approach Delay, s/veh		29.2			25.1			51.9			39.9	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.8	48.0	13.2	45.0	15.3	54.5	12.5	45.7
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	42.0	12.0	39.0	25.0	42.0	17.0	34.0
Max Q Clear Time (g_c+I1), s	15.9	11.5	8.3	35.5	9.8	12.7	7.5	27.9
Green Ext Time (p_c), s	0.9	2.3	0.0	2.0	0.5	3.3	0.1	3.1

Intersection Summary	
HCM 6th Ctrl Delay	37.0
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	82	235	216	20	247	180	56	362	13
v/c Ratio	0.09	0.40	0.48	0.42	0.05	0.21	0.19	0.06	0.49	0.02
Control Delay	25.4	43.0	27.6	28.4	20.5	26.6	3.6	19.0	28.8	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	43.0	27.6	28.4	20.5	26.6	3.6	19.0	28.8	0.0
Queue Length 50th (ft)	7	34	82	62	5	46	0	7	115	0
Queue Length 95th (ft)	26	55	183	36	17	112	8	32	#445	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	445	436	493	549	549	1204	965	1163	735	709
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.19	0.48	0.39	0.04	0.21	0.19	0.05	0.49	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	30	15	167	25	86	10	188	119	53	311	10
Future Volume (vph)	15	30	15	167	25	86	10	188	119	53	311	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1763	1788		1752	1674		1770	3539	1567	3388	1845	1568
Flt Permitted	0.62	1.00		0.46	1.00		0.43	1.00	1.00	0.55	1.00	1.00
Satd. Flow (perm)	1156	1788		841	1674		803	3539	1567	1959	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.76	0.66	0.94	0.86	0.78
Adj. Flow (vph)	22	60	22	235	100	116	20	247	180	56	362	13
RTOR Reduction (vph)	0	10	0	0	26	0	0	0	86	0	0	8
Lane Group Flow (vph)	22	72	0	235	190	0	20	247	94	56	362	5
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	11.6	9.2		32.5	25.1		33.4	31.2	49.5	39.0	34.0	34.0
Effective Green, g (s)	11.6	9.2		32.5	25.1		33.4	31.2	49.5	39.0	34.0	34.0
Actuated g/C Ratio	0.12	0.10		0.34	0.26		0.35	0.33	0.52	0.41	0.36	0.36
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	156	173		463	442		305	1163	817	880	661	561
v/s Ratio Prot	0.00	0.04		c0.10	0.11		0.00	0.07	0.02	c0.00	c0.20	
v/s Ratio Perm	0.01			c0.08			0.02		0.04	0.02		0.00
v/c Ratio	0.14	0.42		0.51	0.43		0.07	0.21	0.11	0.06	0.55	0.01
Uniform Delay, d1	37.0	40.3		23.9	29.0		20.4	23.0	11.6	16.8	24.3	19.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.6		0.9	0.7		0.1	0.4	0.1	0.0	3.2	0.0
Delay (s)	37.4	41.9		24.7	29.6		20.5	23.4	11.6	16.8	27.6	19.6
Level of Service	D	D		C	C		C	C	B	B	C	B
Approach Delay (s)		41.0			27.1			18.5			25.9	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	26.5
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

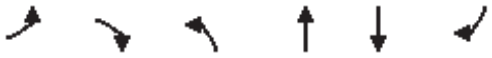
Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	33	275	6	11	473
Future Vol, veh/h	16	33	275	6	11	473
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	36	299	7	12	514

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	841	303	0	0	306	0
Stage 1	303	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	335	737	-	-	1255	-
Stage 1	749	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	737	-	-	1255	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	579	-	-	-	-	-

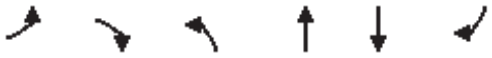
Approach	WB	NB	SB
HCM Control Delay, s	12.6	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1255	-
HCM Lane V/C Ratio	-	-	0.101	0.01	-
HCM Control Delay (s)	-	-	12.6	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	579	149	80	880	1239	296
v/c Ratio	0.72	0.31	0.30	0.27	0.68	0.31
Control Delay	37.0	6.2	42.4	8.1	20.3	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.0	6.2	42.4	8.1	20.3	2.9
Queue Length 50th (ft)	156	0	22	73	280	0
Queue Length 95th (ft)	181	36	44	112	407	37
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	579	267	3221	1833	962
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.26	0.30	0.27	0.68	0.31

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	492	127	74	880	1140	252
Future Volume (veh/h)	492	127	74	880	1140	252
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	579	149	80	880	1239	296
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	711	326	594	3374	1500	669
Arrive On Green	0.21	0.21	0.17	0.66	0.42	0.42
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	579	149	80	880	1239	296
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	14.4	7.4	1.8	6.4	27.8	11.9
Cycle Q Clear(g_c), s	14.4	7.4	1.8	6.4	27.8	11.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	711	326	594	3374	1500	669
V/C Ratio(X)	0.81	0.46	0.13	0.26	0.83	0.44
Avail Cap(c_a), veh/h	1037	476	594	3374	1500	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.48	0.48	1.00	1.00
Uniform Delay (d), s/veh	34.1	31.3	31.6	6.3	23.1	18.5
Incr Delay (d2), s/veh	3.3	1.0	0.0	0.1	5.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.8	0.7	1.9	11.7	4.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.4	32.3	31.6	6.3	28.4	20.6
LnGrp LOS	D	C	C	A	C	C
Approach Vol, veh/h	728			960	1535	
Approach Delay, s/veh	36.3			8.5	26.9	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.5		24.5	21.5	44.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s		8.4		16.4	3.8	29.8
Green Ext Time (p_c), s		6.9		2.1	0.0	5.4

Intersection Summary		
HCM 6th Ctrl Delay		23.5
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	180	232	1101	42	182	96	1426	1103	66	32	522	85
v/c Ratio	0.57	0.71	0.69	0.12	0.50	0.06	0.89	0.53	0.04	0.15	0.54	0.11
Control Delay	50.2	56.0	2.4	40.6	46.8	0.1	40.8	10.2	0.0	46.2	34.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	56.0	2.4	40.6	46.8	0.1	40.8	10.2	0.0	46.2	34.7	0.9
Queue Length 50th (ft)	57	76	0	12	58	0	238	115	0	10	156	0
Queue Length 95th (ft)	89	113	0	19	89	0	159	134	m0	22	189	6
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	377	389	1599	1598	2063	1599	215	959	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.43	0.69	0.11	0.47	0.06	0.89	0.53	0.04	0.15	0.54	0.10

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	178	220	914	25	160	75	713	794	45	25	428	81
Future Volume (veh/h)	178	220	914	25	160	75	713	794	45	25	428	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	180	232	0	42	182	0	1426	1103	0	32	522	85
Peak Hour Factor	0.99	0.95	0.83	0.60	0.88	0.78	0.50	0.72	0.68	0.78	0.82	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	296	305		253	260		1468	2180		82	1190	667
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.29	0.61	0.00	0.02	0.33	0.33
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	180	232	0	42	182	0	1426	1103	0	32	522	85
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	5.0	6.3	0.0	1.1	5.0	0.0	27.8	17.4	0.0	0.9	11.4	3.3
Cycle Q Clear(g_c), s	5.0	6.3	0.0	1.1	5.0	0.0	27.8	17.4	0.0	0.9	11.4	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	296	305		253	260		1468	2180		82	1190	667
V/C Ratio(X)	0.61	0.76		0.17	0.70		0.97	0.51		0.39	0.44	0.13
Avail Cap(c_a), veh/h	522	537		348	358		1468	2180		209	1190	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	44.7	0.0	43.5	45.3	0.0	35.1	11.1	0.0	48.1	26.1	17.9
Incr Delay (d2), s/veh	0.5	1.1	0.0	0.3	3.6	0.0	17.0	0.8	0.0	3.0	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.8	0.0	0.5	2.3	0.0	13.0	6.1	0.0	0.4	4.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	45.8	0.0	43.8	48.9	0.0	52.0	11.9	0.0	51.1	27.3	18.3
LnGrp LOS	D	D		D	D		D	B		D	C	B
Approach Vol, veh/h		412			224			2529			639	
Approach Delay, s/veh		45.3			47.9			34.5			27.3	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.9		13.5	35.0	39.2		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	19.4		8.3	29.8	13.4		7.0				
Green Ext Time (p_c), s	0.0	8.4		0.2	0.0	2.5		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	35.3	
HCM 6th LOS	D	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	10	757	258	10	66	1040	1519	200	43	1349	56
v/c Ratio	0.20	0.06	1.52	0.47	0.04	0.18	1.15	0.73	0.20	0.23	1.12	0.04
Control Delay	31.1	42.6	263.4	34.6	42.2	1.1	115.6	14.2	1.7	53.2	91.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	42.6	263.4	34.6	42.2	1.1	115.6	14.2	1.7	53.2	91.7	0.0
Queue Length 50th (ft)	27	6	~441	70	6	0	~414	311	3	14	~534	0
Queue Length 95th (ft)	40	13	#671	104	13	0	86	413	15	m21	#672	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	564	171	497	551	233	360	901	2074	1012	205	1203	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.06	1.52	0.47	0.04	0.18	1.15	0.73	0.20	0.21	1.12	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	5	757	230	5	55	260	1413	180	25	1309	28
Future Volume (veh/h)	79	5	757	230	5	55	260	1413	180	25	1309	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	105	10	0	258	10	66	1040	1519	200	43	1349	0
Peak Hour Factor	0.75	0.50	1.00	0.89	0.50	0.83	0.25	0.93	0.90	0.58	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	449	95		577	167	142	906	2216	988	78	1355	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.26	0.62	0.62	0.02	0.38	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	105	10	0	258	10	66	1040	1519	200	43	1349	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	2.8	0.5	0.0	6.9	0.5	3.9	26.0	28.1	5.5	1.2	37.9	0.0
Cycle Q Clear(g_c), s	2.8	0.5	0.0	6.9	0.5	3.9	26.0	28.1	5.5	1.2	37.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	449	95		577	167	142	906	2216	988	78	1355	
V/C Ratio(X)	0.23	0.11		0.45	0.06	0.47	1.15	0.69	0.20	0.55	1.00	
Avail Cap(c_a), veh/h	590	171		580	170	144	906	2216	988	207	1355	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.8	45.4	0.0	40.1	41.7	43.3	37.0	12.6	8.3	48.4	30.9	0.0
Incr Delay (d2), s/veh	0.3	0.6	0.0	0.7	0.2	2.8	79.7	1.7	0.5	2.2	23.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.3	0.0	3.0	0.2	1.7	20.4	9.8	1.9	0.5	19.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.1	46.0	0.0	40.7	41.9	46.2	116.7	14.4	8.8	50.6	54.3	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	D	
Approach Vol, veh/h		115			334			2759			1392	
Approach Delay, s/veh		42.4			41.8			52.5			54.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	67.9	14.9	11.0	30.0	44.1	11.0	14.9
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	26.0	34.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	3.2	30.1	8.9	2.5	28.0	39.9	4.8	5.9
Green Ext Time (p_c), s	0.0	12.7	0.0	0.0	0.0	0.0	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	52.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	99	101	708	235	1243	1929	459
v/c Ratio	0.57	0.58	0.44	0.84	0.45	0.62	0.40
Control Delay	54.8	55.1	0.9	48.4	5.2	9.1	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	54.8	55.1	0.9	48.4	5.4	9.1	0.7
Queue Length 50th (ft)	64	65	0	135	92	161	2
Queue Length 95th (ft)	114	46	0	186	198	m147	m1
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	325	1599	507	2751	3126	1149
Starvation Cap Reductn	0	0	0	0	644	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.31	0.44	0.46	0.59	0.62	0.40

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	5	637	200	1156	0	0	1852	404
Future Volume (vph)	0	0	0	170	5	637	200	1156	0	0	1852	404
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1713	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.07	1.00			1.00	1.00
Satd. Flow (perm)				1698	1713	1599	122	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.38	0.90	0.85	0.93	0.92	0.92	0.96	0.88
Adj. Flow (vph)	0	0	0	187	13	708	235	1243	0	0	1929	459
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	177
Lane Group Flow (vph)	0	0	0	99	101	708	235	1243	0	0	1929	282
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.3	10.3	100.0	77.7	77.7			61.4	61.4
Effective Green, g (s)				10.3	10.3	100.0	77.7	77.7			61.4	61.4
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.61	0.61
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				174	176	1599	281	2749			3122	971
v/s Ratio Prot							c0.09	0.35			0.38	
v/s Ratio Perm				0.06	0.06	c0.44	c0.56					0.18
v/c Ratio				0.57	0.57	0.44	0.84	0.45			0.62	0.29
Uniform Delay, d1				42.7	42.8	0.0	26.6	3.8			12.0	9.1
Progression Factor				1.00	1.00	1.00	1.26	1.13			0.67	0.48
Incremental Delay, d2				2.5	2.8	0.9	15.1	0.4			0.1	0.1
Delay (s)				45.3	45.6	0.9	48.6	4.8			8.1	4.4
Level of Service				D	D	A	D	A			A	A
Approach Delay (s)		0.0			10.7			11.7			7.4	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	209	213	241	1029	171	1199	928
v/c Ratio	0.79	0.80	0.16	0.66	0.22	1.52	0.36
Control Delay	61.1	62.0	0.2	24.7	3.4	273.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.1	62.0	0.2	24.7	3.4	273.4	6.1
Queue Length 50th (ft)	134	136	0	265	0	~581	67
Queue Length 95th (ft)	211	109	0	336	17	#692	80
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1557	792	787	2545
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.68	0.16	0.66	0.22	1.52	0.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	358	10	190	0	0	0	0	988	125	1175	891	0
Future Volume (vph)	358	10	190	0	0	0	0	988	125	1175	891	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1660	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1660	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.89	0.50	0.79	0.92	0.92	0.92	0.92	0.96	0.73	0.98	0.96	0.92
Adj. Flow (vph)	402	20	241	0	0	0	0	1029	171	1199	928	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	96	0	0	0
Lane Group Flow (vph)	209	213	241	0	0	0	0	1029	75	1199	928	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	16.1	16.1	100.0					44.0	44.0	22.9	71.9	
Effective Green, g (s)	16.1	16.1	100.0					44.0	44.0	22.9	71.9	
Actuated g/C Ratio	0.16	0.16	1.00					0.44	0.44	0.23	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	265	267	1553					1557	696	786	2544	
v/s Ratio Prot								c0.29		c0.35	0.26	
v/s Ratio Perm	0.13	0.13	0.16						0.05			
v/c Ratio	0.79	0.80	0.16					0.66	0.11	1.53	0.36	
Uniform Delay, d1	40.3	40.4	0.0					22.1	16.5	38.5	5.4	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.16	1.00	
Incremental Delay, d2	13.3	14.3	0.2					2.2	0.3	241.6	0.3	
Delay (s)	53.7	54.6	0.2					24.3	16.8	286.3	5.7	
Level of Service	D	D	A					C	B	F	A	
Approach Delay (s)		34.5			0.0			23.3			163.9	
Approach LOS		C			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	100.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	367	364	555
Demand Flow Rate, veh/h	375	371	566
Vehicles Circulating, veh/h	352	140	174
Vehicles Exiting, veh/h	388	587	337
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.4	4.3	5.5
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.469	0.531	0.469	0.531	0.622	0.378
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	176	199	174	197	352	214
Cap Entry Lane, veh/h	976	1053	1187	1261	1150	1225
Entry HV Adj Factor	0.981	0.978	0.980	0.980	0.980	0.981
Flow Entry, veh/h	173	195	171	193	345	210
Cap Entry, veh/h	958	1030	1156	1228	1127	1202
V/C Ratio	0.180	0.189	0.148	0.157	0.306	0.175
Control Delay, s/veh	5.5	5.3	4.4	4.3	6.1	4.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	1

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	150	5	50	189	18	154
Future Vol, veh/h	150	5	50	189	18	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	214	5	54	270	20	167

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	219	0	595	217
Stage 1	-	-	-	-	217	-
Stage 2	-	-	-	-	378	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1344	-	465	820
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1344	-	446	820
Mov Cap-2 Maneuver	-	-	-	-	446	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	663	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	754	-	-	1344	-
HCM Lane V/C Ratio	0.248	-	-	0.04	-
HCM Control Delay (s)	11.3	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	6.2
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	430	421	388
Demand Flow Rate, veh/h	443	434	400
Vehicles Circulating, veh/h	126	34	430
Vehicles Exiting, veh/h	342	796	139
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.6	4.3	7.8
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.290	0.710	0.085	0.915
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	443	126	308	34	366
Cap Entry Lane, veh/h	1213	1377	1377	960	960
Entry HV Adj Factor	0.972	0.968	0.971	0.971	0.970
Flow Entry, veh/h	430	122	299	33	355
Cap Entry, veh/h	1179	1333	1337	932	931
V/C Ratio	0.365	0.092	0.224	0.035	0.381
Control Delay, s/veh	6.6	3.4	4.6	4.2	8.1
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	1	0	2

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	12	2	13	35	36	6	13	39	113	4	8
Future Vol, veh/h	3	12	2	13	35	36	6	13	39	113	4	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	13	2	14	38	39	7	14	42	123	4	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	15	0	0	112	125	14	134	107	58
Stage 1	-	-	-	-	-	-	20	20	-	86	86	-
Stage 2	-	-	-	-	-	-	92	105	-	48	21	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1515	-	-	1596	-	-	863	764	1063	835	781	1005
Stage 1	-	-	-	-	-	-	996	877	-	919	822	-
Stage 2	-	-	-	-	-	-	913	806	-	963	876	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1596	-	-	845	756	1063	784	772	1005
Mov Cap-2 Maneuver	-	-	-	-	-	-	845	756	-	784	772	-
Stage 1	-	-	-	-	-	-	994	875	-	917	815	-
Stage 2	-	-	-	-	-	-	892	799	-	908	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	1.1	9.1	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	951	1515	-	-	1596	-	-	795
HCM Lane V/C Ratio	0.066	0.002	-	-	0.009	-	-	0.171
HCM Control Delay (s)	9.1	7.4	0	-	7.3	0	-	10.5
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	163	0	0	82	10	0	0	0	30	0	2
Future Vol, veh/h	1	163	0	0	82	10	0	0	0	30	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	177	0	0	89	11	0	0	0	33	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	177	0	0	275	279	177	274	274	95
Stage 1	-	-	-	-	-	-	179	179	-	95	95	-
Stage 2	-	-	-	-	-	-	96	100	-	179	179	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	-	1393	-	-	675	629	863	678	633	962
Stage 1	-	-	-	-	-	-	820	751	-	912	816	-
Stage 2	-	-	-	-	-	-	908	812	-	823	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1493	-	-	1393	-	-	673	628	863	677	632	962
Mov Cap-2 Maneuver	-	-	-	-	-	-	673	628	-	677	632	-
Stage 1	-	-	-	-	-	-	819	750	-	911	816	-
Stage 2	-	-	-	-	-	-	906	812	-	822	750	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	10.5
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1493	-	-	1393	-	-	690
HCM Lane V/C Ratio	-	0.001	-	-	-	-	-	0.05
HCM Control Delay (s)	0	7.4	-	-	0	-	-	10.5
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.1
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	210	324	87	689
Demand Flow Rate, veh/h	216	334	90	710
Vehicles Circulating, veh/h	700	41	888	93
Vehicles Exiting, veh/h	103	937	28	282
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	6.5	4.0	7.1	8.8
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.472	0.528	0.254	0.746	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	102	114	85	249	90	710
Cap Entry Lane, veh/h	709	783	1300	1371	668	1312
Entry HV Adj Factor	0.968	0.977	0.966	0.972	0.970	0.970
Flow Entry, veh/h	99	111	82	242	87	689
Cap Entry, veh/h	686	765	1255	1333	648	1273
V/C Ratio	0.144	0.146	0.065	0.182	0.135	0.541
Control Delay, s/veh	6.8	6.2	3.4	4.2	7.1	8.8
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	0	3

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	73	222	2	88	23	182	47	33	339	16
Future Vol, veh/h	49	1	73	222	2	88	23	182	47	33	339	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	1	79	241	2	96	25	198	51	36	368	17
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.2	19.1	15.2	23.4
HCM LOS	B	C	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	71%	100%	0%
Vol Thru, %	0%	79%	1%	1%	0%	95%
Vol Right, %	0%	21%	59%	28%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	229	123	312	33	355
LT Vol	23	0	49	222	33	0
Through Vol	0	182	1	2	0	339
RT Vol	0	47	73	88	0	16
Lane Flow Rate	25	249	134	339	36	386
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.052	0.474	0.253	0.608	0.072	0.716
Departure Headway (Hd)	7.516	6.855	6.806	6.456	7.226	6.682
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	476	525	525	560	495	540
Service Time	5.275	4.614	4.875	4.509	4.979	4.435
HCM Lane V/C Ratio	0.053	0.474	0.255	0.605	0.073	0.715
HCM Control Delay	10.7	15.7	12.2	19.1	10.5	24.6
HCM Lane LOS	B	C	B	C	B	C
HCM 95th-tile Q	0.2	2.5	1	4	0.2	5.8

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	1	97	206	1	39	31	211	76	32	85	19
Future Vol, veh/h	61	1	97	206	1	39	31	211	76	32	85	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	1	105	224	1	42	34	229	83	35	92	21
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	10.7	13.1	14.2	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	38%	84%	100%	0%
Vol Thru, %	0%	74%	1%	0%	0%	82%
Vol Right, %	0%	26%	61%	16%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	287	159	246	32	104
LT Vol	31	0	61	206	32	0
Through Vol	0	211	1	1	0	85
RT Vol	0	76	97	39	0	19
Lane Flow Rate	34	312	173	267	35	113
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.062	0.51	0.268	0.427	0.067	0.196
Departure Headway (Hd)	6.585	5.889	5.591	5.754	6.895	6.255
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	543	611	639	623	518	572
Service Time	4.335	3.638	3.652	3.808	4.658	4.017
HCM Lane V/C Ratio	0.063	0.511	0.271	0.429	0.068	0.198
HCM Control Delay	9.8	14.7	10.7	13.1	10.2	10.6
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.2	2.9	1.1	2.1	0.2	0.7

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	30	12	1	10	6	4	64	1	2	43	4
Future Vol, veh/h	12	30	12	1	10	6	4	64	1	2	43	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	13	33	13	1	11	7	4	70	1	2	47	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.2	7.6	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	22%	6%	4%
Vol Thru, %	93%	56%	59%	88%
Vol Right, %	1%	22%	35%	8%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	54	17	49
LT Vol	4	12	1	2
Through Vol	64	30	10	43
RT Vol	1	12	6	4
Lane Flow Rate	75	59	18	53
Geometry Grp	1	1	1	1
Degree of Util (X)	0.086	0.067	0.021	0.061
Departure Headway (Hd)	4.11	4.08	4.018	4.101
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	866	869	879	867
Service Time	2.162	2.148	2.095	2.157
HCM Lane V/C Ratio	0.087	0.068	0.02	0.061
HCM Control Delay	7.6	7.4	7.2	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0.2

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	30	10	302	106	18
Future Vol, veh/h	55	30	10	302	106	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	60	33	11	328	115	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	475	125	135	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	546	923	1443	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	542	923	1443	-	-	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1443	-	634	-	-
HCM Lane V/C Ratio	0.008	-	0.146	-	-
HCM Control Delay (s)	7.5	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Appendix F – Intersection Capacity Worksheets (Synchro) Year 2040 + Project

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	43	20	49	395	47	174	125	935	521	213	729	54
v/c Ratio	0.21	0.19	0.03	0.70	0.21	0.50	0.47	0.49	0.48	0.61	0.25	0.06
Control Delay	56.0	57.3	0.0	53.8	46.9	11.4	58.5	20.4	3.5	58.9	15.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	57.3	0.0	53.8	46.9	11.4	58.5	20.4	3.5	58.9	15.1	0.1
Queue Length 50th (ft)	16	15	0	147	35	0	48	207	0	82	90	0
Queue Length 95th (ft)	36	41	0	196	64	60	78	374	66	120	164	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	277	190	1595	864	507	551	357	1921	1084	382	2884	974
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.11	0.03	0.46	0.09	0.32	0.35	0.49	0.48	0.56	0.25	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	18	45	363	43	160	115	860	479	196	700	50
Future Volume (veh/h)	40	18	45	363	43	160	115	860	479	196	700	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	20	0	395	47	0	125	935	0	213	729	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92
Percent Heavy Veh, %	0	0	0	3	3	3	2	2	2	2	2	2
Cap, veh/h	205	85		469	228		198	1950		271	2909	
Arrive On Green	0.06	0.04	0.00	0.14	0.12	0.00	0.06	0.55	0.00	0.08	0.57	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3456	3554	1585	3456	5106	1585
Grp Volume(v), veh/h	43	20	0	395	47	0	125	935	0	213	729	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1728	1777	1585	1728	1702	1585
Q Serve(g_s), s	1.4	1.2	0.0	13.5	2.7	0.0	4.2	19.3	0.0	7.3	8.6	0.0
Cycle Q Clear(g_c), s	1.4	1.2	0.0	13.5	2.7	0.0	4.2	19.3	0.0	7.3	8.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	85		469	228		198	1950		271	2909	
V/C Ratio(X)	0.21	0.24		0.84	0.21		0.63	0.48		0.79	0.25	
Avail Cap(c_a), veh/h	278	190		871	510		360	1950		360	2909	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.9	55.4	0.0	50.5	47.4	0.0	55.3	16.6	0.0	54.3	13.0	0.0
Incr Delay (d2), s/veh	0.4	1.4	0.0	3.2	0.4	0.0	2.4	0.8	0.0	7.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	0.0	5.9	1.3	0.0	1.9	7.8	0.0	3.4	3.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.2	56.8	0.0	53.7	47.8	0.0	57.7	17.4	0.0	61.4	13.2	0.0
LnGrp LOS	D	E		D	D		E	B		E	B	
Approach Vol, veh/h		63			442			1060			942	
Approach Delay, s/veh		55.0			53.1			22.2			24.1	
Approach LOS		E			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.9	71.8	21.9	11.3	12.4	74.4	12.5	20.7
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	12.5	42.0	30.5	12.0	12.5	42.0	9.5	33.0
Max Q Clear Time (g_c+I1), s	9.3	21.3	15.5	3.2	6.2	10.6	3.4	4.7
Green Ext Time (p_c), s	0.2	10.9	0.9	0.0	0.1	10.1	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	440	509	136	429	300	168
v/c Ratio	0.57	0.38	0.20	0.24	0.27	0.11
Control Delay	30.1	1.4	14.7	16.2	33.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	1.4	14.7	16.2	33.9	0.1
Queue Length 50th (ft)	254	0	25	92	80	0
Queue Length 95th (ft)	368	32	42	124	#185	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	777	1342	1200	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.38	0.11	0.24	0.27	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	405	468	125	395	276	155
Future Volume (vph)	405	468	125	395	276	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.28	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1015	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	440	509	136	429	300	168
RTOR Reduction (vph)	0	145	0	0	0	0
Lane Group Flow (vph)	440	364	136	429	300	168
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	46.6	85.7	58.4	58.4	39.1	120.0
Effective Green, g (s)	46.6	85.7	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.39	0.71	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	716	1119	629	1705	1107	1568
v/s Ratio Prot	c0.24	c0.11	0.01	c0.12	0.09	
v/s Ratio Perm		0.13	0.09			c0.11
v/c Ratio	0.61	0.32	0.22	0.25	0.27	0.11
Uniform Delay, d1	29.5	6.4	18.8	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	0.8	0.1	0.4	0.6	0.1
Delay (s)	33.4	7.2	18.9	18.4	30.5	0.1
Level of Service	C	A	B	B	C	A
Approach Delay (s)	19.3			18.5	19.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	287	168	158	496	252	98	92	934	658	114	1026	221
v/c Ratio	0.29	0.15	0.26	0.43	0.21	0.16	0.46	0.93	0.42	0.53	0.99	0.27
Control Delay	17.1	29.3	6.0	18.2	26.3	3.7	28.3	55.8	0.8	30.2	65.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	29.3	6.0	18.2	26.3	3.7	28.3	55.8	0.8	30.2	65.8	3.6
Queue Length 50th (ft)	56	45	0	104	65	0	39	337	0	49	379	0
Queue Length 95th (ft)	85	78	50	147	103	26	77	#525	0	93	#584	45
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1285	1101	602	1235	1214	620	261	1002	1583	308	1036	945
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.15	0.26	0.40	0.21	0.16	0.35	0.93	0.42	0.37	0.99	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

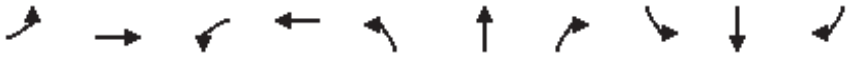
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	155	145	456	232	90	85	878	605	105	944	203
Future Volume (veh/h)	270	155	145	456	232	90	85	878	605	105	944	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1841	1841	1841	1870	1870	1870	1885	1885	1885
Adj Flow Rate, veh/h	287	168	158	496	252	98	92	934	0	114	1026	221
Peak Hour Factor	0.94	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1	4	4	4	2	2	2	1	1	1
Cap, veh/h	1035	1148	512	1118	1268	565	169	1037		202	1081	605
Arrive On Green	0.08	0.32	0.32	0.12	0.36	0.36	0.05	0.29	0.00	0.06	0.30	0.30
Sat Flow, veh/h	3483	3582	1598	3401	3497	1560	1781	3554	1585	1795	3582	1598
Grp Volume(v), veh/h	287	168	158	496	252	98	92	934	0	114	1026	221
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1700	1749	1560	1781	1777	1585	1795	1791	1598
Q Serve(g_s), s	5.7	3.5	7.9	9.9	5.2	4.5	3.8	26.8	0.0	4.7	29.7	10.6
Cycle Q Clear(g_c), s	5.7	3.5	7.9	9.9	5.2	4.5	3.8	26.8	0.0	4.7	29.7	10.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1035	1148	512	1118	1268	565	169	1037		202	1081	605
V/C Ratio(X)	0.28	0.15	0.31	0.44	0.20	0.17	0.54	0.90		0.57	0.95	0.37
Avail Cap(c_a), veh/h	1424	1148	512	1355	1268	565	279	1037		346	1081	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	25.7	27.2	18.7	23.2	23.0	28.5	36.1	0.0	27.8	36.2	23.8
Incr Delay (d2), s/veh	0.1	0.3	1.6	0.1	0.4	0.7	1.0	12.3	0.0	0.9	17.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	1.5	3.1	3.8	2.2	1.7	1.6	12.9	0.0	2.0	15.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	25.9	28.7	18.8	23.6	23.7	29.5	48.4	0.0	28.7	53.8	25.5
LnGrp LOS	C	C	C	B	C	C	C	D		C	D	C
Approach Vol, veh/h		613			846			1026			1361	
Approach Delay, s/veh		24.4			20.8			46.7			47.1	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	40.0	11.5	37.0	13.2	44.4	10.4	38.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	20.0	34.0	15.0	29.0	20.0	34.0	12.0	32.0
Max Q Clear Time (g_c+I1), s	11.9	9.9	6.7	28.8	7.7	7.2	5.8	31.7
Green Ext Time (p_c), s	0.7	1.5	0.1	0.1	0.4	1.9	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	37.6
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	38	310	208	11	167	783	458	205	21
v/c Ratio	0.10	0.21	0.86	0.51	0.02	0.14	0.65	0.35	0.21	0.02
Control Delay	29.4	31.0	54.4	24.9	19.2	26.5	4.8	15.6	19.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	31.0	54.4	24.9	19.2	26.5	4.8	15.6	19.6	0.1
Queue Length 50th (ft)	8	9	130	42	2	30	0	57	50	0
Queue Length 95th (ft)	37	24	#476	25	20	99	0	167	227	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	373	458	359	514	734	1222	1196	1371	968	890
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.08	0.86	0.40	0.01	0.14	0.65	0.33	0.21	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	10	15	273	20	91	10	154	587	353	189	15
Future Volume (vph)	20	10	15	273	20	91	10	154	587	353	189	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.89		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1787	1708		1701	1590		1770	3539	1565	3422	1863	1583
Flt Permitted	0.73	1.00		0.38	1.00		0.63	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	1368	1708		687	1590		1172	3539	1565	2035	1863	1583
Peak-hour factor, PHF	0.89	0.54	0.79	0.88	0.39	0.58	0.88	0.92	0.75	0.77	0.92	0.72
Adj. Flow (vph)	22	19	19	310	51	157	11	167	783	458	205	21
RTOR Reduction (vph)	0	18	0	0	79	0	0	0	384	0	0	11
Lane Group Flow (vph)	22	20	0	310	129	0	11	167	399	458	205	10
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	1%	1%	1%	6%	6%	6%	2%	2%	2%	2%	2%	2%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	8.0	5.5		25.5	18.0		35.5	34.7	49.7	51.0	45.2	45.2
Effective Green, g (s)	8.0	5.5		25.5	18.0		35.5	34.7	49.7	51.0	45.2	45.2
Actuated g/C Ratio	0.08	0.06		0.26	0.18		0.36	0.36	0.51	0.52	0.46	0.46
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	122	96		335	293		431	1258	796	1223	862	733
v/s Ratio Prot	0.00	0.01		c0.14	0.08		0.00	0.05	c0.08	c0.04	0.11	
v/s Ratio Perm	0.01			c0.10			0.01		0.18	0.15		0.01
v/c Ratio	0.18	0.21		0.93	0.44		0.03	0.13	0.50	0.37	0.24	0.01
Uniform Delay, d1	41.6	44.0		33.1	35.3		19.9	21.3	15.8	13.0	15.8	14.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	1.1		30.5	1.1		0.0	0.2	0.5	0.2	0.7	0.0
Delay (s)	42.4	45.1		63.5	36.4		19.9	21.5	16.3	13.2	16.5	14.2
Level of Service	D	D		E	D		B	C	B	B	B	B
Approach Delay (s)		44.1			52.6			17.2			14.2	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	97.6	Sum of lost time (s)	26.5
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

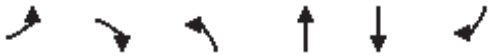
Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	9	777	18	44	31
Future Vol, veh/h	4	9	777	18	44	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	10	883	20	50	35

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1028	893	0	0	903	0
Stage 1	893	-	-	-	-	-
Stage 2	135	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	259	340	-	-	753	-
Stage 1	400	-	-	-	-	-
Stage 2	891	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	242	340	-	-	753	-
Mov Cap-2 Maneuver	242	-	-	-	-	-
Stage 1	400	-	-	-	-	-
Stage 2	832	-	-	-	-	-

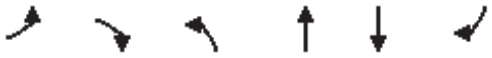
Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	5.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	302	753	-
HCM Lane V/C Ratio	-	-	0.047	0.066	-
HCM Control Delay (s)	-	-	17.5	10.1	-
HCM Lane LOS	-	-	C	B	-
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	492	65	168	1155	978	741
v/c Ratio	0.58	0.15	0.55	0.37	0.60	0.59
Control Delay	31.8	7.2	46.6	9.5	20.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	7.2	46.6	9.5	20.9	5.8
Queue Length 50th (ft)	123	0	47	114	217	113
Queue Length 95th (ft)	153	26	80	155	301	161
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	520	305	3140	1634	1240
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.13	0.55	0.37	0.60	0.60

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	418	55	155	1155	900	630
Future Volume (veh/h)	418	55	155	1155	900	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	492	65	168	1155	978	741
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	614	282	729	3517	1461	933
Arrive On Green	0.18	0.18	0.21	0.69	0.41	0.41
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	492	65	168	1155	978	741
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	12.3	3.2	3.6	8.2	20.1	32.5
Cycle Q Clear(g_c), s	12.3	3.2	3.6	8.2	20.1	32.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	614	282	729	3517	1461	933
V/C Ratio(X)	0.80	0.23	0.23	0.33	0.67	0.79
Avail Cap(c_a), veh/h	1037	476	729	3517	1461	933
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.66	0.66	1.00	1.00
Uniform Delay (d), s/veh	35.5	31.7	29.4	5.6	21.5	14.3
Incr Delay (d2), s/veh	2.5	0.4	0.1	0.2	2.5	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	3.0	1.5	2.3	8.2	17.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.9	32.1	29.5	5.8	24.0	21.2
LnGrp LOS	D	C	C	A	C	C
Approach Vol, veh/h	557			1323	1719	
Approach Delay, s/veh	37.3			8.8	22.8	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		68.0		22.0	25.0	43.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	8.0	37.0
Max Q Clear Time (g_c+I1), s		10.2		14.3	5.6	34.5
Green Ext Time (p_c), s		9.8		1.7	0.1	2.0

Intersection Summary	
HCM 6th Ctrl Delay	19.9
HCM 6th LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	77	136	830	65	223	54	992	503	27	49	848	214
v/c Ratio	0.35	0.60	0.52	0.18	0.59	0.03	0.80	0.25	0.02	0.24	0.68	0.26
Control Delay	48.4	56.0	1.2	41.4	49.2	0.0	44.5	5.5	0.0	47.7	32.2	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	56.0	1.2	41.4	49.2	0.0	44.5	5.5	0.0	47.7	32.2	7.1
Queue Length 50th (ft)	24	45	0	19	71	0	189	25	0	15	240	24
Queue Length 95th (ft)	46	75	0	40	111	0	212	37	m0	34	#375	73
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	343	353	1583	377	388	1568	1680	2025	1568	211	1255	880
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.39	0.52	0.17	0.57	0.03	0.59	0.25	0.02	0.23	0.68	0.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	125	764	60	205	50	913	463	25	45	780	197
Future Volume (veh/h)	71	125	764	60	205	50	913	463	25	45	780	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	77	136	0	65	223	0	992	503	0	49	848	214
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	3	3	3	3	3	3	3	3	3
Cap, veh/h	200	206		290	298		1147	2178		102	1436	732
Arrive On Green	0.06	0.06	0.00	0.08	0.08	0.00	0.23	0.62	0.00	0.03	0.41	0.41
Sat Flow, veh/h	3456	3554	1585	3428	3526	1572	4983	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	77	136	0	65	223	0	992	503	0	49	848	214
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1714	1763	1572	1661	1763	1572	1714	1763	1572
Q Serve(g_s), s	2.1	3.7	0.0	1.8	6.2	0.0	19.1	6.4	0.0	1.4	18.8	8.4
Cycle Q Clear(g_c), s	2.1	3.7	0.0	1.8	6.2	0.0	19.1	6.4	0.0	1.4	18.8	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	200	206		290	298		1147	2178		102	1436	732
V/C Ratio(X)	0.38	0.66		0.22	0.75		0.87	0.23		0.48	0.59	0.29
Avail Cap(c_a), veh/h	346	355		343	353		1694	2178		206	1436	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	46.1	0.0	42.7	44.7	0.0	37.0	8.5	0.0	47.8	23.1	16.5
Incr Delay (d2), s/veh	0.4	1.1	0.0	0.4	7.1	0.0	2.3	0.2	0.0	3.5	1.8	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.6	0.0	0.8	3.0	0.0	7.6	2.1	0.0	0.6	7.6	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	47.2	0.0	43.1	51.9	0.0	39.3	8.8	0.0	51.2	24.9	17.6
LnGrp LOS	D	D		D	D		D	A		D	C	B
Approach Vol, veh/h		213			288			1495			1111	
Approach Delay, s/veh		46.7			49.9			29.0			24.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	67.8		10.8	29.0	46.7		13.5				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	53.0		10.0	34.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	3.4	8.4		5.7	21.1	20.8		8.2				
Green Ext Time (p_c), s	0.0	3.3		0.1	1.9	1.8		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		30.6
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	3	832	271	20	71	958	1411	216	71	1494	170
v/c Ratio	0.16	0.03	0.52	0.51	0.12	0.23	0.98	0.64	0.20	0.34	1.12	0.11
Control Delay	39.5	44.0	1.2	39.6	43.4	1.7	54.5	11.1	1.2	57.3	89.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	44.0	1.2	39.6	43.4	1.7	54.5	11.1	1.2	57.3	89.2	0.1
Queue Length 50th (ft)	14	2	0	77	12	0	~358	284	1	24	~595	0
Queue Length 95th (ft)	14	4	0	110	9	0	m#467	m352	m5	m41	#736	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	295	133	1615	543	202	337	982	2192	1061	217	1331	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.02	0.52	0.50	0.10	0.21	0.98	0.64	0.20	0.33	1.12	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
Future Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.92	0.86	0.92	0.95	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	93		599	174	148	754	2119	945	120	1467	
Arrive On Green	0.05	0.05	0.00	0.10	0.09	0.09	0.22	0.60	0.60	0.03	0.42	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	3526	1572
Grp Volume(v), veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1763	1572
Q Serve(g_s), s	1.2	0.2	0.0	7.3	1.0	4.3	22.0	26.6	6.4	2.0	41.6	0.0
Cycle Q Clear(g_c), s	1.2	0.2	0.0	7.3	1.0	4.3	22.0	26.6	6.4	2.0	41.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	446	93		599	174	148	754	2119	945	120	1467	
V/C Ratio(X)	0.10	0.03		0.45	0.11	0.48	1.27	0.67	0.23	0.59	1.02	
Avail Cap(c_a), veh/h	516	133		650	204	173	754	2119	945	206	1467	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.1	45.3	0.0	39.3	41.5	43.0	39.0	13.3	9.2	47.6	29.2	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.6	0.3	2.9	131.9	1.7	0.6	1.7	28.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.0	3.1	0.5	1.8	22.6	9.3	2.2	0.9	21.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.3	45.5	0.0	40.0	41.8	45.9	170.9	14.9	9.8	49.3	57.5	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	F	
Approach Vol, veh/h		49			362			2585			1565	
Approach Delay, s/veh		41.5			41.2			72.3			57.1	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	66.1	15.5	10.9	26.0	47.6	11.0	15.4
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	11.0	7.0	22.0	38.0	7.0	11.0
Max Q Clear Time (g_c+I1), s	4.0	28.6	9.3	2.2	24.0	43.6	3.2	6.3
Green Ext Time (p_c), s	0.0	12.1	0.2	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	64.3
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	100	101	1464	234	1054	1524	549
v/c Ratio	0.58	0.58	0.93	0.70	0.38	0.49	0.46
Control Delay	55.3	55.3	13.3	36.3	3.8	7.6	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	55.3	13.3	36.3	3.8	7.6	1.1
Queue Length 50th (ft)	65	65	0	127	51	102	3
Queue Length 95th (ft)	115	116	#120	205	115	m113	m5
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	299	302	1568	363	2747	3142	1184
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.33	0.93	0.64	0.38	0.49	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	15	1347	215	980	0	0	1402	505
Future Volume (vph)	0	0	0	170	15	1347	215	980	0	0	1402	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1665	1682	1568	1770	3539			5036	1568
Flt Permitted				0.95	0.96	1.00	0.12	1.00			1.00	1.00
Satd. Flow (perm)				1665	1682	1568	225	3539			5036	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	185	16	1464	234	1054	0	0	1524	549
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	206
Lane Group Flow (vph)	0	0	0	100	101	1464	234	1054	0	0	1524	343
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.4	10.4	100.0	77.6	77.6			62.4	62.4
Effective Green, g (s)				10.4	10.4	100.0	77.6	77.6			62.4	62.4
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.62	0.62
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				173	174	1568	332	2746			3142	978
v/s Ratio Prot							0.07	0.30			0.30	
v/s Ratio Perm				0.06	0.06	c0.93	0.47					0.22
v/c Ratio				0.58	0.58	0.93	0.70	0.38			0.49	0.35
Uniform Delay, d1				42.7	42.7	0.0	9.6	3.6			10.1	9.0
Progression Factor				1.00	1.00	1.00	2.78	0.88			0.66	0.40
Incremental Delay, d2				2.9	3.2	11.6	4.7	0.3			0.3	0.5
Delay (s)				45.6	45.9	11.6	31.4	3.5			6.9	4.1
Level of Service				D	D	B	C	A			A	A
Approach Delay (s)		0.0			15.7			8.6			6.2	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	198	198	201	920	65	575	1157
v/c Ratio	0.78	0.77	0.13	0.54	0.08	0.87	0.46
Control Delay	60.4	59.8	0.2	20.7	2.3	56.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.4	59.8	0.2	20.7	2.3	56.2	5.2
Queue Length 50th (ft)	128	127	0	222	0	168	68
Queue Length 95th (ft)	204	203	0	290	16	#190	78
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1697	804	692	2540
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.63	0.13	0.54	0.08	0.83	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	344	20	185	0	0	0	0	846	60	529	1064	0
Future Volume (vph)	344	20	185	0	0	0	0	846	60	529	1064	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1662	1553					3539	1583	3400	3505	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1662	1553					3539	1583	3400	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	22	201	0	0	0	0	920	65	575	1157	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	34	0	0	0
Lane Group Flow (vph)	198	198	201	0	0	0	0	920	31	575	1157	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	3%	3%	3%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Effective Green, g (s)	15.5	15.5	100.0					48.0	48.0	19.5	72.5	
Actuated g/C Ratio	0.16	0.16	1.00					0.48	0.48	0.20	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	255	257	1553					1698	759	663	2541	
v/s Ratio Prot								c0.26		c0.17	0.33	
v/s Ratio Perm	c0.12	0.12	0.13						0.02			
v/c Ratio	0.78	0.77	0.13					0.54	0.04	0.87	0.46	
Uniform Delay, d1	40.6	40.5	0.0					18.3	13.8	39.0	5.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.10	0.77	
Incremental Delay, d2	12.6	12.2	0.2					1.2	0.1	10.2	0.5	
Delay (s)	53.2	52.7	0.2					19.5	13.9	53.2	4.9	
Level of Service	D	D	A					B	B	D	A	
Approach Delay (s)		35.2			0.0			19.1			20.9	
Approach LOS		D			A			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Intersection Delay, s/veh	6.0
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	454	606	407
Demand Flow Rate, veh/h	458	618	415
Vehicles Circulating, veh/h	244	310	155
Vehicles Exiting, veh/h	326	392	773
Ped Vol Crossing Leg, #/h	0	1	0
Ped Cap Adj	1.000	0.999	1.000
Approach Delay, s/veh	5.5	7.2	4.6
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	L	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.677	0.323	0.251	0.749	0.588	0.412
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	310	148	155	463	244	171
Cap Entry Lane, veh/h	1078	1154	1015	1091	1170	1245
Entry HV Adj Factor	0.990	0.990	0.980	0.981	0.980	0.982
Flow Entry, veh/h	307	147	152	454	239	168
Cap Entry, veh/h	1068	1143	994	1069	1146	1223
V/C Ratio	0.287	0.128	0.153	0.425	0.208	0.137
Control Delay, s/veh	6.2	4.3	5.0	8.0	5.0	4.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	0	1	2	1	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	357	18	199	277	5	47
Future Vol, veh/h	357	18	199	277	5	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	510	20	216	396	5	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	530	0	1348	520
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	828	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1032	-	166	554
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	427	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1032	-	131	554
Mov Cap-2 Maneuver	-	-	-	-	131	-
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.3	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	423	-	-	1032	-
HCM Lane V/C Ratio	0.134	-	-	0.21	-
HCM Control Delay (s)	14.8	-	-	9.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.8	-

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	566	996	98
Demand Flow Rate, veh/h	583	1026	101
Vehicles Circulating, veh/h	339	10	547
Vehicles Exiting, veh/h	697	638	375
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	12.2	6.6	5.2
Approach LOS	B	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.330	0.670	0.099	0.901
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	583	339	687	10	91
Cap Entry Lane, veh/h	977	1407	1407	863	863
Entry HV Adj Factor	0.971	0.971	0.971	1.000	0.967
Flow Entry, veh/h	566	329	667	10	88
Cap Entry, veh/h	948	1366	1366	863	835
V/C Ratio	0.597	0.241	0.488	0.012	0.105
Control Delay, s/veh	12.2	4.7	7.6	4.3	5.3
LOS	B	A	A	A	A
95th %tile Queue, veh	4	1	3	0	0

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	39	16	84	9	104	3	11	16	27	62	2
Future Vol, veh/h	7	39	16	84	9	104	3	11	16	27	62	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	8	42	17	91	10	113	3	12	17	29	67	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	123	0	0	59	0	0	350	372	51	330	324	67
Stage 1	-	-	-	-	-	-	67	67	-	249	249	-
Stage 2	-	-	-	-	-	-	283	305	-	81	75	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1458	-	-	1538	-	-	603	557	1014	621	592	994
Stage 1	-	-	-	-	-	-	941	837	-	753	699	-
Stage 2	-	-	-	-	-	-	722	660	-	925	831	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1458	-	-	1538	-	-	517	518	1014	568	551	994
Mov Cap-2 Maneuver	-	-	-	-	-	-	517	518	-	568	551	-
Stage 1	-	-	-	-	-	-	935	832	-	748	654	-
Stage 2	-	-	-	-	-	-	605	618	-	891	826	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	3.2	10.4	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	701	1458	-	-	1538	-	-	561
HCM Lane V/C Ratio	0.047	0.005	-	-	0.059	-	-	0.176
HCM Control Delay (s)	10.4	7.5	0	-	7.5	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	0.6

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	70	10	82	194	30	2	1	13	8	1	1
Future Vol, veh/h	2	70	10	82	194	30	2	1	13	8	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	2	76	11	89	211	33	2	1	14	9	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	244	0	0	87	0	0	493	508	82	499	497	228
Stage 1	-	-	-	-	-	-	86	86	-	406	406	-
Stage 2	-	-	-	-	-	-	407	422	-	93	91	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1322	-	-	1503	-	-	485	468	975	482	475	811
Stage 1	-	-	-	-	-	-	919	824	-	622	598	-
Stage 2	-	-	-	-	-	-	619	588	-	914	820	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1322	-	-	1503	-	-	461	439	975	452	446	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	461	439	-	452	446	-
Stage 1	-	-	-	-	-	-	917	822	-	621	563	-
Stage 2	-	-	-	-	-	-	580	553	-	898	818	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	2	9.6	12.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	802	1322	-	-	1503	-	-	472
HCM Lane V/C Ratio	0.022	0.002	-	-	0.059	-	-	0.023
HCM Control Delay (s)	9.6	7.7	-	-	7.5	-	-	12.8
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	0.1

Intersection	
Intersection Delay, s/veh	5.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	99	907	16	193
Demand Flow Rate, veh/h	102	934	16	199
Vehicles Circulating, veh/h	242	30	273	385
Vehicles Exiting, veh/h	342	259	71	579
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	3.7	6.0	3.3	5.5
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.471	0.529	0.411	0.589	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	48	54	384	550	16	199
Cap Entry Lane, veh/h	1080	1156	1313	1384	1126	1024
Entry HV Adj Factor	0.968	0.971	0.972	0.971	0.993	0.972
Flow Entry, veh/h	46	52	373	534	16	193
Cap Entry, veh/h	1046	1122	1276	1344	1118	995
V/C Ratio	0.044	0.047	0.292	0.397	0.014	0.194
Control Delay, s/veh	3.8	3.6	5.4	6.4	3.3	5.5
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	2	0	1

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Future Vol, veh/h	12	2	19	58	1	23	72	328	117	80	101	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	13	2	21	63	1	25	78	357	127	87	110	52
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	9.1	9.9	16.1	9.6
HCM LOS	A	A	C	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	36%	71%	100%	0%
Vol Thru, %	0%	74%	6%	1%	0%	68%
Vol Right, %	0%	26%	58%	28%	0%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	445	33	82	80	149
LT Vol	72	0	12	58	80	0
Through Vol	0	328	2	1	0	101
RT Vol	0	117	19	23	0	48
Lane Flow Rate	78	484	36	89	87	162
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.123	0.667	0.057	0.143	0.143	0.234
Departure Headway (Hd)	5.649	4.961	5.757	5.781	5.931	5.199
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	726	626	614	601	685
Service Time	3.412	2.723	3.757	3.874	3.708	2.976
HCM Lane V/C Ratio	0.123	0.667	0.058	0.145	0.145	0.236
HCM Control Delay	9.2	17.2	9.1	9.9	9.7	9.6
HCM Lane LOS	A	C	A	A	A	A
HCM 95th-tile Q	0.4	5.1	0.2	0.5	0.5	0.9

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Future Vol, veh/h	16	2	25	52	1	9	96	81	186	77	152	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	2	27	57	1	10	104	88	202	84	165	65
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	8.8	9.4	10	10
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	37%	84%	100%	0%
Vol Thru, %	0%	30%	5%	2%	0%	72%
Vol Right, %	0%	70%	58%	15%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	267	43	62	77	212
LT Vol	96	0	16	52	77	0
Through Vol	0	81	2	1	0	152
RT Vol	0	186	25	9	0	60
Lane Flow Rate	104	290	47	67	84	230
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.164	0.376	0.069	0.106	0.133	0.321
Departure Headway (Hd)	5.662	4.669	5.329	5.641	5.723	5.02
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	632	766	667	631	624	714
Service Time	3.411	2.417	3.405	3.712	3.475	2.772
HCM Lane V/C Ratio	0.165	0.379	0.07	0.106	0.135	0.322
HCM Control Delay	9.5	10.2	8.8	9.4	9.4	10.2
HCM Lane LOS	A	B	A	A	A	B
HCM 95th-tile Q	0.6	1.8	0.2	0.4	0.5	1.4

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	7	3	1	30	2	12	45	2	6	109	12
Future Vol, veh/h	3	7	3	1	30	2	12	45	2	6	109	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	3	8	3	1	33	2	13	49	2	7	118	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.6	7.5	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	23%	3%	5%
Vol Thru, %	76%	54%	91%	86%
Vol Right, %	3%	23%	6%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	13	33	127
LT Vol	12	3	1	6
Through Vol	45	7	30	109
RT Vol	2	3	2	12
Lane Flow Rate	64	14	36	138
Geometry Grp	1	1	1	1
Degree of Util (X)	0.074	0.017	0.043	0.155
Departure Headway (Hd)	4.147	4.323	4.281	4.04
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	857	833	823	883
Service Time	2.205	2.323	2.378	2.084
HCM Lane V/C Ratio	0.075	0.017	0.044	0.156
HCM Control Delay	7.5	7.4	7.6	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.5

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	8	30	76	281	54
Future Vol, veh/h	14	8	30	76	281	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	15	9	33	83	305	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	484	335	364	0	-	0
Stage 1	335	-	-	-	-	-
Stage 2	149	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	540	705	1189	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	525	705	1189	-	-	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	2.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	579	-	-
HCM Lane V/C Ratio	0.027	-	0.041	-	-
HCM Control Delay (s)	8.1	-	11.5	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	440	509	136	429	300	168
v/c Ratio	0.30	0.38	0.16	0.24	0.27	0.11
Control Delay	23.8	1.4	14.4	16.2	33.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	1.4	14.4	16.2	33.9	0.1
Queue Length 50th (ft)	116	0	25	92	80	0
Queue Length 95th (ft)	160	32	42	124	#185	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1477	1342	1306	1822	1108	1568
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.38	0.10	0.24	0.27	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	405	468	125	395	276	155
Future Volume (vph)	405	468	125	395	276	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3505	1568	3400	3505	3400	1568
Flt Permitted	1.00	1.00	0.40	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1439	3505	3400	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	440	509	136	429	300	168
RTOR Reduction (vph)	0	145	0	0	0	0
Lane Group Flow (vph)	440	364	136	429	300	168
Confl. Peds. (#/hr)					9	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	46.6	85.7	58.4	58.4	39.1	120.0
Effective Green, g (s)	46.6	85.7	58.4	58.4	39.1	120.0
Actuated g/C Ratio	0.39	0.71	0.49	0.49	0.33	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1361	1119	811	1705	1107	1568
v/s Ratio Prot	0.13	c0.11	0.01	c0.12	0.09	
v/s Ratio Perm		0.13	0.07			c0.11
v/c Ratio	0.32	0.32	0.17	0.25	0.27	0.11
Uniform Delay, d1	25.7	6.4	16.9	18.0	29.9	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.8	0.0	0.4	0.6	0.1
Delay (s)	26.3	7.2	16.9	18.4	30.5	0.1
Level of Service	C	A	B	B	C	A
Approach Delay (s)	16.0			18.0	19.6	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	46	3	832	271	20	71	958	1411	216	71	1494	170
v/c Ratio	0.16	0.03	0.52	0.51	0.12	0.23	0.86	0.64	0.20	0.34	0.87	0.11
Control Delay	39.5	44.0	1.2	39.6	43.4	1.7	38.8	11.1	1.2	57.3	29.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	44.0	1.2	39.6	43.4	1.7	38.8	11.1	1.2	57.3	29.7	0.1
Queue Length 50th (ft)	14	2	0	77	12	0	309	284	1	24	356	0
Queue Length 95th (ft)	14	4	0	110	9	0	m#425	m352	m5	m41	413	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	295	133	1615	543	202	337	1118	2192	1061	217	1712	1568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.02	0.52	0.50	0.10	0.21	0.86	0.64	0.20	0.33	0.87	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
Future Volume (veh/h)	23	1	208	255	5	65	824	1298	205	65	1449	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Peak Hour Factor	0.50	0.33	0.25	0.94	0.25	0.92	0.86	0.92	0.95	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	93		599	174	148	891	2119	945	120	1905	
Arrive On Green	0.05	0.05	0.00	0.10	0.09	0.09	0.26	0.60	0.60	0.03	0.38	0.00
Sat Flow, veh/h	3510	1900	1610	3428	1856	1572	3428	3526	1572	3428	5066	1572
Grp Volume(v), veh/h	46	3	0	271	20	71	958	1411	216	71	1494	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1714	1856	1572	1714	1763	1572	1714	1689	1572
Q Serve(g_s), s	1.2	0.2	0.0	7.3	1.0	4.3	26.0	26.6	6.4	2.0	26.1	0.0
Cycle Q Clear(g_c), s	1.2	0.2	0.0	7.3	1.0	4.3	26.0	26.6	6.4	2.0	26.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	446	93		599	174	148	891	2119	945	120	1905	
V/C Ratio(X)	0.10	0.03		0.45	0.11	0.48	1.07	0.67	0.23	0.59	0.78	
Avail Cap(c_a), veh/h	516	133		650	204	173	891	2119	945	206	1905	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.1	45.3	0.0	39.3	41.5	43.0	37.0	13.3	9.2	47.6	27.6	0.0
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.6	0.3	2.9	52.3	1.7	0.6	1.7	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	0.0	3.1	0.5	1.8	16.7	9.3	2.2	0.9	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.3	45.5	0.0	40.0	41.8	45.9	89.3	14.9	9.8	49.3	30.9	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	C	
Approach Vol, veh/h		49			362			2585			1565	
Approach Delay, s/veh		41.5			41.2			42.1			31.8	
Approach LOS		D			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	66.1	15.5	10.9	30.0	43.6	11.0	15.4
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	11.0	7.0	26.0	34.0	7.0	11.0
Max Q Clear Time (g_c+I1), s	4.0	28.6	9.3	2.2	28.0	28.1	3.2	6.3
Green Ext Time (p_c), s	0.0	12.1	0.2	0.0	0.0	4.2	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	38.5
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	76	68	149	680	70	160	158	941	510	260	1188	98
v/c Ratio	0.31	0.43	0.09	0.89	0.16	0.32	0.57	0.67	0.55	0.65	0.54	0.13
Control Delay	54.8	58.5	0.1	56.9	35.5	5.7	59.4	32.6	4.9	55.9	26.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	58.5	0.1	56.9	35.5	5.7	59.4	32.6	4.9	55.9	26.0	0.3
Queue Length 50th (ft)	28	49	0	251	41	0	59	310	0	96	245	0
Queue Length 95th (ft)	54	96	0	#361	81	42	97	417	77	142	308	0
Internal Link Dist (ft)		734			1002			865			1265	
Turn Bay Length (ft)	135		120	285		285	510			190		100
Base Capacity (vph)	396	240	1578	839	493	543	301	1408	930	491	2206	778
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.28	0.09	0.81	0.14	0.29	0.52	0.67	0.55	0.53	0.54	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	63	140	626	64	147	145	875	469	239	1105	90
Future Volume (veh/h)	70	63	140	626	64	147	145	875	469	239	1105	90
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	76	68	0	680	70	0	158	941	0	260	1188	0
Peak Hour Factor	0.92	0.92	0.94	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.93	0.92
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	228	120		756	405		226	1467		330	2262	
Arrive On Green	0.07	0.06	0.00	0.22	0.22	0.00	0.06	0.41	0.00	0.09	0.44	0.00
Sat Flow, veh/h	3483	1885	1598	3483	1885	1598	3483	3582	1598	3483	5147	1598
Grp Volume(v), veh/h	76	68	0	680	70	0	158	941	0	260	1188	0
Grp Sat Flow(s),veh/h/ln	1742	1885	1598	1742	1885	1598	1742	1791	1598	1742	1716	1598
Q Serve(g_s), s	2.2	3.7	0.0	20.3	3.2	0.0	4.8	22.5	0.0	7.8	18.0	0.0
Cycle Q Clear(g_c), s	2.2	3.7	0.0	20.3	3.2	0.0	4.8	22.5	0.0	7.8	18.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	120		756	405		226	1467		330	2262	
V/C Ratio(X)	0.33	0.57		0.90	0.17		0.70	0.64		0.79	0.53	
Avail Cap(c_a), veh/h	407	247		863	494		309	1467		505	2262	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.7	48.6	0.0	40.7	34.2	0.0	49.0	25.3	0.0	47.3	21.8	0.0
Incr Delay (d2), s/veh	0.6	4.2	0.0	11.0	0.2	0.0	3.2	2.2	0.0	3.6	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.9	0.0	9.6	1.5	0.0	2.1	9.7	0.0	3.5	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	52.8	0.0	51.8	34.4	0.0	52.2	27.4	0.0	51.0	22.7	0.0
LnGrp LOS	D	D		D	C		D	C		D	C	
Approach Vol, veh/h		144			750			1099			1448	
Approach Delay, s/veh		50.5			50.1			31.0			27.8	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	49.8	28.7	12.8	12.4	53.0	12.5	29.0
Change Period (Y+Rc), s	5.5	6.0	5.5	6.0	5.5	6.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	41.0	26.5	14.0	9.5	47.0	12.5	28.0
Max Q Clear Time (g_c+I1), s	9.8	24.5	22.3	5.7	6.8	20.0	4.2	5.2
Green Ext Time (p_c), s	0.3	9.5	0.9	0.1	0.1	16.0	0.1	0.3

Intersection Summary	
HCM 6th Ctrl Delay	34.6
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	635	285	199	646	204	173
v/c Ratio	0.54	0.22	0.21	0.24	0.53	0.11
Control Delay	13.1	0.7	4.1	4.5	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	0.7	4.1	4.5	47.2	0.1
Queue Length 50th (ft)	181	0	11	46	64	0
Queue Length 95th (ft)	401	12	32	108	98	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	1183	1516	1141	2685	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.19	0.17	0.24	0.21	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	584	262	183	594	198	159
Future Volume (vph)	584	262	183	594	198	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	1.00	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.29	1.00	0.95	1.00
Satd. Flow (perm)	1845	1568	1054	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	635	285	199	646	204	173
RTOR Reduction (vph)	0	82	0	0	0	0
Lane Group Flow (vph)	635	203	199	646	204	173
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.1	71.2	71.1	71.1	11.1	100.0
Effective Green, g (s)	60.1	71.2	71.1	71.1	11.1	100.0
Actuated g/C Ratio	0.60	0.71	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	1108	1116	894	2541	384	1599
v/s Ratio Prot	c0.34	0.02	0.01	c0.18	c0.06	
v/s Ratio Perm		0.11	0.14			c0.11
v/c Ratio	0.57	0.18	0.22	0.25	0.53	0.11
Uniform Delay, d1	12.1	4.8	6.9	5.1	42.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2	0.0	0.0	0.2	0.7	0.1
Delay (s)	14.3	4.8	6.9	5.3	42.7	0.1
Level of Service	B	A	A	A	D	A
Approach Delay (s)	11.4			5.7	23.2	
Approach LOS	B			A	C	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	300	297	151	627	415	130	91	1021	414	114	864	298
v/c Ratio	0.35	0.27	0.25	0.57	0.31	0.19	0.46	0.92	0.26	0.64	0.78	0.35
Control Delay	20.3	36.2	6.5	22.5	30.7	4.4	32.0	58.9	0.4	42.7	47.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	36.2	6.5	22.5	30.7	4.4	32.0	58.9	0.4	42.7	47.9	5.6
Queue Length 50th (ft)	71	102	0	167	133	0	47	450	0	60	355	18
Queue Length 95th (ft)	100	151	53	213	185	37	89	#630	0	117	477	81
Internal Link Dist (ft)		605			645			562			691	
Turn Bay Length (ft)	415		415	420		420	330		330	335		335
Base Capacity (vph)	1204	1095	594	1183	1322	679	315	1105	1599	204	1109	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.27	0.25	0.53	0.31	0.19	0.29	0.92	0.26	0.56	0.78	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	276	288	139	577	382	120	84	939	381	105	795	286
Future Volume (vph)	276	288	139	577	382	120	84	939	381	105	795	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	4.0	5.0	6.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1787	3574	1599	1770	3539	1583
Flt Permitted	0.51	1.00	1.00	0.47	1.00	1.00	0.13	1.00	1.00	0.10	1.00	1.00
Satd. Flow (perm)	1839	3539	1583	1716	3539	1583	254	3574	1599	179	3539	1583
Peak-hour factor, PHF	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Adj. Flow (vph)	300	297	151	627	415	130	91	1021	414	114	864	298
RTOR Reduction (vph)	0	0	104	0	0	81	0	0	0	0	0	157
Lane Group Flow (vph)	300	297	47	627	415	49	91	1021	414	114	864	141
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6		7	4		3	8	5
Permitted Phases	2		2	6		6	4		Free	8		8
Actuated Green, G (s)	51.9	41.1	41.1	65.5	49.7	49.7	49.7	41.1	132.8	50.9	41.7	52.5
Effective Green, g (s)	51.9	41.1	41.1	65.5	49.7	49.7	49.7	41.1	132.8	50.9	41.7	52.5
Actuated g/C Ratio	0.39	0.31	0.31	0.49	0.37	0.37	0.37	0.31	1.00	0.38	0.31	0.40
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0		5.0	6.0	5.0
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0		2.0	3.0	2.0
Lane Grp Cap (vph)	848	1095	489	1097	1324	592	194	1106	1599	178	1111	625
v/s Ratio Prot	0.03	0.08		c0.08	0.12		0.03	c0.29		c0.04	0.24	0.02
v/s Ratio Perm	0.11		0.03	c0.20		0.03	0.15		c0.26	0.20		0.07
v/c Ratio	0.35	0.27	0.10	0.57	0.31	0.08	0.47	0.92	0.26	0.64	0.78	0.23
Uniform Delay, d1	27.0	34.6	32.6	21.2	29.5	26.8	30.0	44.3	0.0	31.9	41.3	26.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6	0.4	0.4	0.6	0.3	0.7	13.9	0.4	5.8	5.4	0.1
Delay (s)	27.1	35.2	33.0	21.6	30.1	27.1	30.6	58.3	0.4	37.6	46.7	26.7
Level of Service	C	D	C	C	C	C	C	E	A	D	D	C
Approach Delay (s)		31.5			25.2			40.9			41.2	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	132.8	Sum of lost time (s)	22.0
Intersection Capacity Utilization	74.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

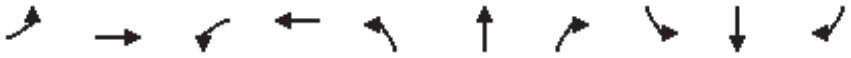
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	276	288	139	577	382	120	84	939	381	105	795	286
Future Volume (veh/h)	276	288	139	577	382	120	84	939	381	105	795	286
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	300	297	151	627	415	130	91	1021	0	114	864	298
Peak Hour Factor	0.92	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	1	1	1	2	2	2
Cap, veh/h	873	1125	502	1058	1348	601	195	1134		182	1159	639
Arrive On Green	0.08	0.32	0.32	0.14	0.38	0.38	0.05	0.32	0.00	0.06	0.33	0.33
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	1795	3582	1598	1781	3554	1585
Grp Volume(v), veh/h	300	297	151	627	415	130	91	1021	0	114	864	298
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1795	1791	1598	1781	1777	1585
Q Serve(g_s), s	7.5	8.1	9.3	15.2	10.6	7.2	4.4	35.3	0.0	5.5	28.0	17.9
Cycle Q Clear(g_c), s	7.5	8.1	9.3	15.2	10.6	7.2	4.4	35.3	0.0	5.5	28.0	17.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	873	1125	502	1058	1348	601	195	1134		182	1159	639
V/C Ratio(X)	0.34	0.26	0.30	0.59	0.31	0.22	0.47	0.90		0.62	0.75	0.47
Avail Cap(c_a), veh/h	1275	1125	502	1243	1348	601	358	1134		231	1159	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.1	33.0	33.4	22.7	28.3	27.2	31.0	42.3	0.0	33.0	38.9	28.4
Incr Delay (d2), s/veh	0.1	0.6	1.5	0.2	0.6	0.8	0.6	11.5	0.0	1.3	4.4	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	3.6	3.8	6.1	4.6	2.8	1.9	17.0	0.0	2.4	12.6	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.2	33.6	35.0	22.9	28.9	28.0	31.6	53.8	0.0	34.3	43.3	30.9
LnGrp LOS	C	C	C	C	C	C	C	D		C	D	C
Approach Vol, veh/h		748			1172			1112			1276	
Approach Delay, s/veh		30.9			25.6			52.0			39.6	
Approach LOS		C			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	47.0	12.5	47.0	15.0	55.1	11.2	48.2
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	25.0	41.0	11.0	41.0	25.0	41.0	18.0	34.0
Max Q Clear Time (g_c+I1), s	17.2	11.3	7.5	37.3	9.5	12.6	6.4	30.0
Green Ext Time (p_c), s	0.9	2.4	0.0	2.2	0.5	3.2	0.1	2.3

Intersection Summary	
HCM 6th Ctrl Delay	37.5
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	22	82	235	216	20	233	188	56	358	13
v/c Ratio	0.09	0.41	0.46	0.41	0.05	0.20	0.19	0.06	0.49	0.02
Control Delay	25.3	43.5	26.9	28.0	21.1	27.1	3.5	19.4	29.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	43.5	26.9	28.0	21.1	27.1	3.5	19.4	29.3	0.0
Queue Length 50th (ft)	7	35	82	62	5	44	0	7	116	0
Queue Length 95th (ft)	26	55	183	36	18	129	7	33	#480	0
Internal Link Dist (ft)		538		1917		1338			851	
Turn Bay Length (ft)	125		210		170		170	400		200
Base Capacity (vph)	439	408	509	554	542	1188	975	1155	725	701
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.20	0.46	0.39	0.04	0.20	0.19	0.05	0.49	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	30	15	167	25	86	10	214	124	53	329	10
Future Volume (vph)	15	30	15	167	25	86	10	214	124	53	329	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.99	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.92		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1763	1788		1752	1675		1770	3539	1567	3387	1845	1568
Flt Permitted	0.62	1.00		0.46	1.00		0.43	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	1156	1788		844	1675		803	3539	1567	1985	1845	1568
Peak-hour factor, PHF	0.67	0.50	0.69	0.71	0.25	0.74	0.50	0.92	0.66	0.94	0.92	0.78
Adj. Flow (vph)	22	60	22	235	100	116	20	233	188	56	358	13
RTOR Reduction (vph)	0	10	0	0	26	0	0	0	89	0	0	8
Lane Group Flow (vph)	22	72	0	235	190	0	20	233	99	56	358	5
Confl. Peds. (#/hr)	2					2			8	8		
Heavy Vehicles (%)	2%	2%	2%	3%	3%	3%	2%	2%	2%	3%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	11.7	9.3		33.6	26.2		33.4	31.2	50.5	39.0	34.0	34.0
Effective Green, g (s)	11.7	9.3		33.6	26.2		33.4	31.2	50.5	39.0	34.0	34.0
Actuated g/C Ratio	0.12	0.10		0.35	0.27		0.35	0.32	0.53	0.41	0.35	0.35
Clearance Time (s)	5.0	6.0		5.0	6.0		5.0	6.0	5.0	5.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		2.5	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	155	173		477	456		301	1148	823	878	652	554
v/s Ratio Prot	0.00	0.04		c0.10	0.11		0.00	0.07	0.02	c0.00	c0.19	
v/s Ratio Perm	0.01			c0.07			0.02		0.04	0.02		0.00
v/c Ratio	0.14	0.42		0.49	0.42		0.07	0.20	0.12	0.06	0.55	0.01
Uniform Delay, d1	37.5	40.8		23.6	28.7		20.9	23.5	11.5	17.3	24.9	20.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.6		0.8	0.6		0.1	0.4	0.1	0.0	3.3	0.0
Delay (s)	38.0	42.5		24.4	29.3		21.0	23.9	11.6	17.3	28.2	20.2
Level of Service	D	D		C	C		C	C	B	B	C	C
Approach Delay (s)		41.5			26.8			18.5			26.5	
Approach LOS		D			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	26.5
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

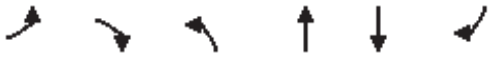
Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	49	290	7	14	503
Future Vol, veh/h	21	49	290	7	14	503
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	53	315	8	15	547

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	896	319	0	0	323	0
Stage 1	319	-	-	-	-	-
Stage 2	577	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	311	722	-	-	1237	-
Stage 1	737	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	307	722	-	-	1237	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	0.2
HCM LOS	B		

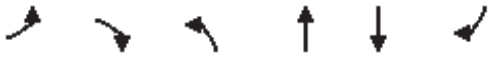
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	514	1237	-
HCM Lane V/C Ratio	-	-	0.148	0.012	-
HCM Control Delay (s)	-	-	13.2	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	640	168	88	930	1304	318
v/c Ratio	0.76	0.33	0.33	0.30	0.73	0.33
Control Delay	37.2	5.9	42.9	8.7	22.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	5.9	42.9	8.7	22.6	3.0
Queue Length 50th (ft)	172	0	24	83	315	0
Queue Length 95th (ft)	202	38	48	120	#453	38
Internal Link Dist (ft)	1230			741	455	
Turn Bay Length (ft)	300		250			300
Base Capacity (vph)	1029	592	267	3152	1785	956
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.28	0.33	0.30	0.73	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	544	143	81	930	1200	270
Future Volume (veh/h)	544	143	81	930	1200	270
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	640	168	88	930	1304	318
Peak Hour Factor	0.85	0.85	0.92	1.00	0.92	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	772	354	533	3284	1500	669
Arrive On Green	0.22	0.22	0.15	0.64	0.42	0.42
Sat Flow, veh/h	3456	1585	3456	5274	3647	1585
Grp Volume(v), veh/h	640	168	88	930	1304	318
Grp Sat Flow(s),veh/h/ln	1728	1585	1728	1702	1777	1585
Q Serve(g_s), s	15.9	8.3	2.0	7.2	30.1	13.1
Cycle Q Clear(g_c), s	15.9	8.3	2.0	7.2	30.1	13.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	772	354	533	3284	1500	669
V/C Ratio(X)	0.83	0.47	0.17	0.28	0.87	0.48
Avail Cap(c_a), veh/h	1037	476	533	3284	1500	669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.68	0.68	1.00	1.00
Uniform Delay (d), s/veh	33.3	30.3	33.0	7.0	23.7	18.8
Incr Delay (d2), s/veh	4.3	1.0	0.1	0.1	7.1	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	7.6	0.8	2.2	12.9	4.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.6	31.3	33.1	7.2	30.8	21.2
LnGrp LOS	D	C	C	A	C	C
Approach Vol, veh/h	808			1018	1622	
Approach Delay, s/veh	36.3			9.4	28.9	
Approach LOS	D			A	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		63.9		26.1	19.9	44.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		51.0		27.0	7.0	38.0
Max Q Clear Time (g_c+I1), s		9.2		17.9	4.0	32.1
Green Ext Time (p_c), s		7.4		2.2	0.1	4.3

Intersection Summary		
HCM 6th Ctrl Delay		24.9
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	201	247	1048	33	185	87	799	950	54	33	511	93
v/c Ratio	0.61	0.72	0.66	0.09	0.51	0.05	0.78	0.46	0.03	0.16	0.38	0.10
Control Delay	50.8	55.8	2.1	40.4	47.3	0.1	50.7	7.6	0.0	46.1	25.1	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	55.8	2.1	40.4	47.3	0.1	50.7	7.6	0.0	46.1	25.1	1.0
Queue Length 50th (ft)	64	82	0	9	59	0	170	63	0	10	123	0
Queue Length 95th (ft)	97	119	0	24	93	0	185	80	m0	26	194	9
Internal Link Dist (ft)		741			1037			943			877	
Turn Bay Length (ft)	280		250	180		180	700			600		600
Base Capacity (vph)	520	536	1599	375	386	1599	1461	2049	1599	217	1354	1000
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.46	0.66	0.09	0.48	0.05	0.55	0.46	0.03	0.15	0.38	0.09

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	199	235	964	30	170	80	735	874	50	30	470	88
Future Volume (veh/h)	199	235	964	30	170	80	735	874	50	30	470	88
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	201	247	0	33	185	0	799	950	0	33	511	93
Peak Hour Factor	0.99	0.95	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	311	320		256	263		945	2161		84	1543	831
Arrive On Green	0.09	0.09	0.00	0.07	0.07	0.00	0.19	0.60	0.00	0.02	0.43	0.43
Sat Flow, veh/h	3483	3582	1598	3483	3582	1598	5063	3582	1598	3483	3582	1598
Grp Volume(v), veh/h	201	247	0	33	185	0	799	950	0	33	511	93
Grp Sat Flow(s),veh/h/ln	1742	1791	1598	1742	1791	1598	1688	1791	1598	1742	1791	1598
Q Serve(g_s), s	5.6	6.7	0.0	0.9	5.0	0.0	15.2	14.3	0.0	0.9	9.5	3.0
Cycle Q Clear(g_c), s	5.6	6.7	0.0	0.9	5.0	0.0	15.2	14.3	0.0	0.9	9.5	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	320		256	263		945	2161		84	1543	831
V/C Ratio(X)	0.65	0.77		0.13	0.70		0.85	0.44		0.39	0.33	0.11
Avail Cap(c_a), veh/h	522	537		348	358		1468	2161		209	1543	831
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.0	44.5	0.0	43.3	45.3	0.0	39.3	10.7	0.0	48.1	18.9	12.2
Incr Delay (d2), s/veh	0.5	1.0	0.0	0.2	3.8	0.0	1.6	0.7	0.0	3.0	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	3.0	0.0	0.4	2.4	0.0	6.2	5.0	0.0	0.4	3.8	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	45.5	0.0	43.6	49.1	0.0	40.9	11.4	0.0	51.1	19.5	12.5
LnGrp LOS	D	D		D	D		D	B		D	B	B
Approach Vol, veh/h		448			218			1749			637	
Approach Delay, s/veh		45.1			48.3			24.9			20.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	66.3		13.9	24.7	49.1		12.3				
Change Period (Y+Rc), s	5.0	6.0		5.0	6.0	6.0		5.0				
Max Green Setting (Gmax), s	6.0	48.0		15.0	29.0	24.0		10.0				
Max Q Clear Time (g_c+I1), s	2.9	16.3		8.7	17.2	11.5		7.0				
Green Ext Time (p_c), s	0.0	7.0		0.2	1.4	2.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		28.5	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	10	883	266	10	65	1140	1638	212	33	1437	60
v/c Ratio	0.32	0.08	0.55	0.45	0.08	0.23	1.06	0.73	0.20	0.18	1.19	0.04
Control Delay	41.5	44.8	1.3	37.2	44.8	2.0	80.3	13.6	1.9	54.1	123.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	44.8	1.3	37.2	44.8	2.0	80.3	13.6	1.9	54.1	123.9	0.0
Queue Length 50th (ft)	37	6	0	74	6	0	~453	322	0	11	~598	0
Queue Length 95th (ft)	45	13	0	110	13	0	92	464	16	m20	#736	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	372	171	1615	597	169	312	1071	2248	1084	209	1203	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.06	0.55	0.45	0.06	0.21	1.06	0.73	0.20	0.16	1.19	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
Future Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Peak Hour Factor	0.75	0.50	1.00	0.92	0.50	0.92	0.25	0.93	0.92	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	459	95		581	164	139	906	2229	994	62	1351	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.26	0.62	0.62	0.02	0.38	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	3554	1585
Grp Volume(v), veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1777	1585
Q Serve(g_s), s	3.1	0.5	0.0	7.1	0.5	3.9	26.0	31.8	5.8	0.9	38.0	0.0
Cycle Q Clear(g_c), s	3.1	0.5	0.0	7.1	0.5	3.9	26.0	31.8	5.8	0.9	38.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	459	95		581	164	139	906	2229	994	62	1351	
V/C Ratio(X)	0.26	0.11		0.46	0.06	0.47	1.26	0.74	0.21	0.53	1.06	
Avail Cap(c_a), veh/h	590	171		581	170	144	906	2229	994	207	1351	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.7	45.4	0.0	40.1	41.9	43.4	37.0	13.2	8.2	48.7	31.0	0.0
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.7	0.2	2.9	125.4	2.2	0.5	2.6	43.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.3	0.0	3.1	0.2	1.6	26.2	11.1	2.0	0.4	23.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	46.0	0.0	40.7	42.1	46.4	162.4	15.4	8.7	51.3	74.3	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	F	
Approach Vol, veh/h		129			341			2990			1470	
Approach Delay, s/veh		42.3			41.8			71.0			73.8	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	68.2	15.0	11.0	30.0	44.0	11.3	14.7
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	26.0	34.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	2.9	33.8	9.1	2.5	28.0	40.0	5.1	5.9
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.0	0.0	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	69.1
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	104	103	740	234	1352	2122	478
v/c Ratio	0.58	0.58	0.46	0.85	0.49	0.68	0.41
Control Delay	55.2	54.5	1.0	49.1	6.6	9.2	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	55.2	54.5	1.0	49.1	6.9	9.2	1.0
Queue Length 50th (ft)	67	67	0	134	123	156	2
Queue Length 95th (ft)	120	117	0	m184	306	m173	m4
Internal Link Dist (ft)		1408			528	351	
Turn Bay Length (ft)	330			190			300
Base Capacity (vph)	322	324	1599	502	2742	3115	1152
Starvation Cap Reductn	0	0	0	0	621	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.32	0.46	0.47	0.64	0.68	0.41

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	180	10	681	215	1257	0	0	2037	440
Future Volume (vph)	0	0	0	180	10	681	215	1257	0	0	2037	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	4.0	5.0	6.0			6.0	6.0
Lane Util. Factor				0.95	0.95	1.00	1.00	0.95			0.91	1.00
Frt				1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected				0.95	0.96	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)				1698	1711	1599	1770	3539			5085	1583
Flt Permitted				0.95	0.96	1.00	0.06	1.00			1.00	1.00
Satd. Flow (perm)				1698	1711	1599	112	3539			5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.96	0.92
Adj. Flow (vph)	0	0	0	196	11	740	234	1352	0	0	2122	478
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	183
Lane Group Flow (vph)	0	0	0	104	103	740	234	1352	0	0	2122	295
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	2%	2%	2%	2%	2%	2%
Turn Type				Perm	NA	Free	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		Free	2					6
Actuated Green, G (s)				10.5	10.5	100.0	77.5	77.5			61.3	61.3
Effective Green, g (s)				10.5	10.5	100.0	77.5	77.5			61.3	61.3
Actuated g/C Ratio				0.10	0.10	1.00	0.78	0.78			0.61	0.61
Clearance Time (s)				6.0	6.0		5.0	6.0			6.0	6.0
Vehicle Extension (s)				2.0	2.0		2.0	3.0			3.0	3.0
Lane Grp Cap (vph)				178	179	1599	272	2742			3117	970
v/s Ratio Prot							c0.10	0.38			0.42	
v/s Ratio Perm				0.06	0.06	c0.46	c0.57					0.19
v/c Ratio				0.58	0.58	0.46	0.86	0.49			0.68	0.30
Uniform Delay, d1				42.7	42.6	0.0	28.7	4.1			12.9	9.2
Progression Factor				1.00	1.00	1.00	1.16	1.37			0.59	0.36
Incremental Delay, d2				3.1	2.8	1.0	17.9	0.5			0.5	0.3
Delay (s)				45.8	45.4	1.0	51.3	6.1			8.1	3.6
Level of Service				D	D	A	D	A			A	A
Approach Delay (s)		0.0			10.7			12.7			7.3	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	180	10	681	215	1257	0	0	2037	440
Future Volume (veh/h)	0	0	0	180	10	681	215	1257	0	0	2037	440
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				204	0	0	234	1352	0	0	2122	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.93	0.92	0.92	0.96	0.92
Percent Heavy Veh, %				1	1	1	2	2	0	0	2	2
Cap, veh/h				280	0		270	2850	0	0	3530	
Arrive On Green				0.08	0.00	0.00	0.12	1.00	0.00	0.00	0.69	0.00
Sat Flow, veh/h				3591	0	1598	1781	3647	0	0	5274	1585
Grp Volume(v), veh/h				204	0	0	234	1352	0	0	2122	0
Grp Sat Flow(s),veh/h/ln				1795	0	1598	1781	1777	0	0	1702	1585
Q Serve(g_s), s				5.6	0.0	0.0	3.8	0.0	0.0	0.0	22.0	0.0
Cycle Q Clear(g_c), s				5.6	0.0	0.0	3.8	0.0	0.0	0.0	22.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				280	0		270	2850	0	0	3530	
V/C Ratio(X)				0.73	0.00		0.87	0.47	0.00	0.00	0.60	
Avail Cap(c_a), veh/h				682	0		607	2850	0	0	3530	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.60	0.60	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				45.1	0.0	0.0	17.4	0.0	0.0	0.0	8.2	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	2.0	0.3	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	0.0	3.7	0.1	0.0	0.0	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.4	0.0	0.0	19.4	0.3	0.0	0.0	8.9	0.0
LnGrp LOS				D	A		B	A	A	A	A	
Approach Vol, veh/h					204			1586			2122	
Approach Delay, s/veh					46.4			3.2			8.9	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		5	6		8						
Phs Duration (G+Y+Rc), s	86.2		11.1	75.1		13.8						
Change Period (Y+Rc), s	6.0		5.0	6.0		6.0						
Max Green Setting (Gmax), s	69.0		25.0	39.0		19.0						
Max Q Clear Time (g_c+I1), s	2.0		5.8	24.0		7.6						
Green Ext Time (p_c), s	13.4		0.3	11.7		0.3						

Intersection Summary		
HCM 6th Ctrl Delay	8.5	
HCM 6th LOS	A	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	216	215	223	1120	147	1327	1001
v/c Ratio	0.81	0.80	0.14	0.72	0.19	1.70	0.39
Control Delay	62.5	61.5	0.2	26.2	3.5	350.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	61.5	0.2	26.2	3.5	350.6	6.0
Queue Length 50th (ft)	138	137	0	299	0	~675	0
Queue Length 95th (ft)	#236	#233	0	377	34	#786	83
Internal Link Dist (ft)		1012		1721			528
Turn Bay Length (ft)	330		150		300	180	
Base Capacity (vph)	313	315	1553	1557	778	779	2538
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.68	0.14	0.72	0.19	1.70	0.39

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	382	15	205	0	0	0	0	1075	135	1300	961	0
Future Volume (vph)	382	15	205	0	0	0	0	1075	135	1300	961	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	4.0					6.0	6.0	5.0	6.0	
Lane Util. Factor	0.95	0.95	1.00					0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1649	1659	1553					3539	1583	3433	3539	
Flt Permitted	0.95	0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1649	1659	1553					3539	1583	3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.96	0.92	0.98	0.96	0.92
Adj. Flow (vph)	415	16	223	0	0	0	0	1120	147	1327	1001	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	82	0	0	0
Lane Group Flow (vph)	216	215	223	0	0	0	0	1120	65	1327	1001	0
Heavy Vehicles (%)	4%	4%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Free					NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		Free						2			
Actuated Green, G (s)	16.3	16.3	100.0					44.0	44.0	22.7	71.7	
Effective Green, g (s)	16.3	16.3	100.0					44.0	44.0	22.7	71.7	
Actuated g/C Ratio	0.16	0.16	1.00					0.44	0.44	0.23	0.72	
Clearance Time (s)	6.0	6.0						6.0	6.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0						3.0	3.0	2.0	3.0	
Lane Grp Cap (vph)	268	270	1553					1557	696	779	2537	
v/s Ratio Prot								c0.32		c0.39	0.28	
v/s Ratio Perm	c0.13	0.13	0.14						0.04			
v/c Ratio	0.81	0.80	0.14					0.72	0.09	1.70	0.39	
Uniform Delay, d1	40.3	40.3	0.0					22.9	16.3	38.6	5.6	
Progression Factor	1.00	1.00	1.00					1.00	1.00	1.20	0.95	
Incremental Delay, d2	15.2	14.0	0.2					2.9	0.3	320.6	0.4	
Delay (s)	55.5	54.3	0.2					25.8	16.6	366.9	5.7	
Level of Service	E	D	A					C	B	F	A	
Approach Delay (s)		36.2			0.0			24.8			211.6	
Approach LOS		D			A			C			F	

Intersection Summary			
HCM 2000 Control Delay	128.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	382	15	205	0	0	0	0	1075	135	1300	961	0
Future Volume (veh/h)	382	15	205	0	0	0	0	1075	135	1300	961	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	426	0	0				0	1120	0	1327	1001	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.96	0.92	0.98	0.96	0.92
Percent Heavy Veh, %	4	4	4				0	2	2	2	2	0
Cap, veh/h	502	0					0	1730		691	2619	0
Arrive On Green	0.14	0.00	0.00				0.00	0.49	0.00	0.13	0.49	0.00
Sat Flow, veh/h	3506	0	1560				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	426	0	0				0	1120	0	1327	1001	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	1585	1728	1777	0
Q Serve(g_s), s	11.9	0.0	0.0				0.0	23.6	0.0	20.0	17.6	0.0
Cycle Q Clear(g_c), s	11.9	0.0	0.0				0.0	23.6	0.0	20.0	17.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	502	0					0	1730		691	2619	0
V/C Ratio(X)	0.85	0.00					0.00	0.65		1.92	0.38	0.00
Avail Cap(c_a), veh/h	666	0					0	1730		691	2619	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.67	0.67	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.68	0.68	0.00
Uniform Delay (d), s/veh	41.8	0.0	0.0				0.0	19.2	0.0	43.3	11.1	0.0
Incr Delay (d2), s/veh	6.2	0.0	0.0				0.0	1.9	0.0	417.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0				0.0	9.2	0.0	48.7	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.0	0.0	0.0				0.0	21.1	0.0	461.0	11.4	0.0
LnGrp LOS	D	A					A	C		F	B	A
Approach Vol, veh/h		426						1120			2328	
Approach Delay, s/veh		48.0						21.1			267.7	
Approach LOS		D						C			F	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	54.7		20.3		79.7
Change Period (Y+Rc), s	5.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	20.0	44.0		19.0		69.0
Max Q Clear Time (g_c+I1), s	22.0	25.6		13.9		19.6
Green Ext Time (p_c), s	0.0	7.2		0.5		8.1

Intersection Summary		
HCM 6th Ctrl Delay		172.2
HCM 6th LOS		F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Intersection Delay, s/veh	5.1
Intersection LOS	A

Approach	EB	WB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	383	366	531
Demand Flow Rate, veh/h	391	373	542
Vehicles Circulating, veh/h	347	147	171
Vehicles Exiting, veh/h	366	591	349
Ped Vol Crossing Leg, #/h	0	6	0
Ped Cap Adj	1.000	0.994	1.000
Approach Delay, s/veh	5.4	4.4	5.4
Approach LOS	A	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	LT	TR	LT	TR	L	TR
Assumed Moves	LT	TR	LT	R	L	TR
RT Channelized						
Lane Util	0.471	0.529	0.458	0.542	0.640	0.360
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	184	207	171	202	347	195
Cap Entry Lane, veh/h	981	1057	1179	1253	1153	1228
Entry HV Adj Factor	0.979	0.981	0.980	0.980	0.980	0.979
Flow Entry, veh/h	180	203	168	198	340	191
Cap Entry, veh/h	960	1037	1149	1221	1130	1203
V/C Ratio	0.188	0.196	0.146	0.162	0.301	0.159
Control Delay, s/veh	5.6	5.3	4.4	4.3	6.1	4.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	1	1

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	155	5	60	194	18	207
Future Vol, veh/h	155	5	60	194	18	207
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	70	92	92	70	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	221	5	65	277	20	225

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	226	0	631	224
Stage 1	-	-	-	-	224	-
Stage 2	-	-	-	-	407	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1337	-	443	813
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	670	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1337	-	421	813
Mov Cap-2 Maneuver	-	-	-	-	421	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	637	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.5	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	757	-	-	1337	-
HCM Lane V/C Ratio	0.323	-	-	0.049	-
HCM Control Delay (s)	12	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	1.4	-	-	0.2	-

Intersection	
Intersection Delay, s/veh	6.9
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	2	2
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	513	442	388
Demand Flow Rate, veh/h	528	456	400
Vehicles Circulating, veh/h	126	34	515
Vehicles Exiting, veh/h	364	881	139
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.6	4.4	8.7
Approach LOS	A	A	A

Lane	Left	Left	Right	Left	Right
Designated Moves	TR	L	TR	L	TR
Assumed Moves	TR	L	TR	L	TR
RT Channelized					
Lane Util	1.000	0.276	0.724	0.085	0.915
Follow-Up Headway, s	2.609	2.535	2.535	2.535	2.535
Critical Headway, s	4.976	4.544	4.544	4.544	4.544
Entry Flow, veh/h	528	126	330	34	366
Cap Entry Lane, veh/h	1213	1377	1377	889	889
Entry HV Adj Factor	0.972	0.968	0.971	0.971	0.970
Flow Entry, veh/h	513	122	320	33	355
Cap Entry, veh/h	1179	1333	1337	863	862
V/C Ratio	0.435	0.092	0.240	0.038	0.412
Control Delay, s/veh	7.6	3.4	4.7	4.5	9.1
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	1	0	2

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	14	4	23	45	36	16	66	91	113	14	9
Future Vol, veh/h	3	14	4	23	45	36	16	66	91	113	14	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	15	4	25	49	39	17	72	99	123	15	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	88	0	0	19	0	0	154	161	17	228	144	69
Stage 1	-	-	-	-	-	-	23	23	-	119	119	-
Stage 2	-	-	-	-	-	-	131	138	-	109	25	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1501	-	-	1591	-	-	811	729	1059	725	745	991
Stage 1	-	-	-	-	-	-	993	874	-	883	795	-
Stage 2	-	-	-	-	-	-	870	780	-	894	872	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1501	-	-	1591	-	-	779	715	1059	598	731	991
Mov Cap-2 Maneuver	-	-	-	-	-	-	779	715	-	598	731	-
Stage 1	-	-	-	-	-	-	991	872	-	881	781	-
Stage 2	-	-	-	-	-	-	830	767	-	742	870	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.6	10.3	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	870	1501	-	-	1591	-	-	626
HCM Lane V/C Ratio	0.216	0.002	-	-	0.016	-	-	0.236
HCM Control Delay (s)	10.3	7.4	0	-	7.3	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	215	2	16	92	10	10	1	84	30	1	2
Future Vol, veh/h	1	215	2	16	92	10	10	1	84	30	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	-	300	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	3	3	3	2	3	2	3	2	2	2
Mvmt Flow	1	234	2	17	100	11	11	1	91	33	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	111	0	0	236	0	0	378	382	235	423	378	106
Stage 1	-	-	-	-	-	-	237	237	-	140	140	-
Stage 2	-	-	-	-	-	-	141	145	-	283	238	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1479	-	-	1325	-	-	578	551	802	541	554	948
Stage 1	-	-	-	-	-	-	764	709	-	863	781	-
Stage 2	-	-	-	-	-	-	860	777	-	724	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1325	-	-	570	543	802	474	546	948
Mov Cap-2 Maneuver	-	-	-	-	-	-	570	543	-	474	546	-
Stage 1	-	-	-	-	-	-	763	708	-	862	771	-
Stage 2	-	-	-	-	-	-	846	767	-	640	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	10.4	12.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	765	1479	-	-	1325	-	-	491
HCM Lane V/C Ratio	0.135	0.001	-	-	0.013	-	-	0.073
HCM Control Delay (s)	10.4	7.4	-	-	7.8	-	-	12.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	358	353	87	689
Demand Flow Rate, veh/h	368	364	90	710
Vehicles Circulating, veh/h	700	41	1040	122
Vehicles Exiting, veh/h	132	1089	28	283
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.8	4.0	8.2	9.2
Approach LOS	A	A	A	A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	R	LTR	LTR
Assumed Moves	LT	TR	LT	R	LTR	LTR
RT Channelized						
Lane Util	0.470	0.530	0.313	0.687	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	173	195	114	250	90	710
Cap Entry Lane, veh/h	709	783	1300	1371	587	1280
Entry HV Adj Factor	0.972	0.972	0.967	0.972	0.970	0.970
Flow Entry, veh/h	168	190	110	243	87	689
Cap Entry, veh/h	689	761	1257	1333	569	1242
V/C Ratio	0.244	0.249	0.088	0.182	0.153	0.555
Control Delay, s/veh	8.1	7.5	3.6	4.2	8.2	9.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	1	1	4

Intersection	
Intersection Delay, s/veh	19
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	1	73	222	2	88	23	182	48	33	339	16
Future Vol, veh/h	49	1	73	222	2	88	23	182	48	33	339	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	53	1	79	241	2	96	25	198	52	36	368	17
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	12.2	19.1	15.2	23.5
HCM LOS	B	C	C	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	40%	71%	100%	0%
Vol Thru, %	0%	79%	1%	1%	0%	95%
Vol Right, %	0%	21%	59%	28%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	230	123	312	33	355
LT Vol	23	0	49	222	33	0
Through Vol	0	182	1	2	0	339
RT Vol	0	48	73	88	0	16
Lane Flow Rate	25	250	134	339	36	386
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.052	0.476	0.253	0.609	0.072	0.717
Departure Headway (Hd)	7.519	6.856	6.812	6.463	7.23	6.686
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	475	525	525	556	495	540
Service Time	5.279	4.615	4.883	4.514	4.983	4.439
HCM Lane V/C Ratio	0.053	0.476	0.255	0.61	0.073	0.715
HCM Control Delay	10.7	15.7	12.2	19.1	10.5	24.7
HCM Lane LOS	B	C	B	C	B	C
HCM 95th-tile Q	0.2	2.5	1	4.1	0.2	5.8

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	1	97	206	1	39	31	212	76	32	85	19
Future Vol, veh/h	61	1	97	206	1	39	31	212	76	32	85	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	66	1	105	224	1	42	34	230	83	35	92	21
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay	10.7	13.1	14.2	10.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	38%	84%	100%	0%
Vol Thru, %	0%	74%	1%	0%	0%	82%
Vol Right, %	0%	26%	61%	16%	0%	18%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	31	288	159	246	32	104
LT Vol	31	0	61	206	32	0
Through Vol	0	212	1	1	0	85
RT Vol	0	76	97	39	0	19
Lane Flow Rate	34	313	173	267	35	113
Geometry Grp	7	7	2	2	7	7
Degree of Util (X)	0.062	0.512	0.269	0.428	0.067	0.196
Departure Headway (Hd)	6.585	5.89	5.595	5.758	6.897	6.257
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	543	610	639	623	518	571
Service Time	4.338	3.642	3.658	3.813	4.664	4.024
HCM Lane V/C Ratio	0.063	0.513	0.271	0.429	0.068	0.198
HCM Control Delay	9.8	14.7	10.7	13.1	10.2	10.6
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.2	2.9	1.1	2.1	0.2	0.7

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	30	12	1	10	6	4	117	1	2	53	4
Future Vol, veh/h	12	30	12	1	10	6	4	117	1	2	53	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	3	2	3	2	3	3	3	3	2
Mvmt Flow	13	33	13	1	11	7	4	127	1	2	58	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	7.3	7.9	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	22%	6%	3%
Vol Thru, %	96%	56%	59%	90%
Vol Right, %	1%	22%	35%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	54	17	59
LT Vol	4	12	1	2
Through Vol	117	30	10	53
RT Vol	1	12	6	4
Lane Flow Rate	133	59	18	64
Geometry Grp	1	1	1	1
Degree of Util (X)	0.152	0.07	0.022	0.074
Departure Headway (Hd)	4.118	4.3	4.25	4.152
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	863	838	847	852
Service Time	2.18	2.301	2.251	2.229
HCM Lane V/C Ratio	0.154	0.07	0.021	0.075
HCM Control Delay	7.9	7.6	7.3	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.2	0.1	0.2

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	30	10	302	106	18
Future Vol, veh/h	55	30	10	302	106	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	60	33	11	328	115	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	475	125	135	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	546	923	1443	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	542	923	1443	-	-	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1443	-	634	-	-
HCM Lane V/C Ratio	0.008	-	0.146	-	-
HCM Control Delay (s)	7.5	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	635	285	199	646	204	173
v/c Ratio	0.28	0.22	0.18	0.24	0.53	0.11
Control Delay	9.1	0.7	4.0	4.5	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	0.7	4.0	4.5	47.2	0.1
Queue Length 50th (ft)	76	0	11	46	64	0
Queue Length 95th (ft)	155	12	32	108	98	0
Internal Link Dist (ft)	1510			466	307	
Turn Bay Length (ft)			400		200	200
Base Capacity (vph)	2248	1516	1301	2685	970	1599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.19	0.15	0.24	0.21	0.11

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	584	262	183	594	198	159
Future Volume (vph)	584	262	183	594	198	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	6.0	6.0	4.0
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3505	1568	3467	3574	3467	1599
Flt Permitted	1.00	1.00	0.36	1.00	0.95	1.00
Satd. Flow (perm)	3505	1568	1313	3574	3467	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.97	0.92
Adj. Flow (vph)	635	285	199	646	204	173
RTOR Reduction (vph)	0	82	0	0	0	0
Lane Group Flow (vph)	635	203	199	646	204	173
Confl. Peds. (#/hr)					12	
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	NA	pm+ov	pm+pt	NA	Prot	Free
Protected Phases	2	4	1	6	4	
Permitted Phases		2	6			Free
Actuated Green, G (s)	60.1	71.2	71.1	71.1	11.1	100.0
Effective Green, g (s)	60.1	71.2	71.1	71.1	11.1	100.0
Actuated g/C Ratio	0.60	0.71	0.71	0.71	0.11	1.00
Clearance Time (s)	6.0	6.0	5.0	6.0	6.0	
Vehicle Extension (s)	3.1	2.0	2.0	3.1	2.0	
Lane Grp Cap (vph)	2106	1116	1062	2541	384	1599
v/s Ratio Prot	c0.18	0.02	0.01	c0.18	c0.06	
v/s Ratio Perm		0.11	0.12			c0.11
v/c Ratio	0.30	0.18	0.19	0.25	0.53	0.11
Uniform Delay, d1	9.7	4.8	4.8	5.1	42.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0	0.0	0.2	0.7	0.1
Delay (s)	10.1	4.8	4.8	5.3	42.7	0.1
Level of Service	B	A	A	A	D	A
Approach Delay (s)	8.4			5.2	23.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

30: Northwest Pkwy & Tape Drive/Via Varra

2040 Bkgrd + Project (with Improvements) - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	119	10	883	266	10	65	1140	1638	212	33	1437	60
v/c Ratio	0.32	0.08	0.55	0.45	0.08	0.23	0.94	0.73	0.20	0.18	0.94	0.04
Control Delay	41.5	44.8	1.3	37.2	44.8	2.0	48.9	13.6	1.9	54.1	42.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	44.8	1.3	37.2	44.8	2.0	48.9	13.6	1.9	54.1	42.9	0.0
Queue Length 50th (ft)	37	6	0	74	6	0	~398	322	0	11	342	0
Queue Length 95th (ft)	45	13	0	110	13	0	89	464	16	m20	#430	0
Internal Link Dist (ft)		527			679			676			2055	
Turn Bay Length (ft)	125		125	250		500	455		250	550		550
Base Capacity (vph)	372	171	1615	597	169	312	1210	2248	1084	209	1525	1583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.06	0.55	0.45	0.06	0.21	0.94	0.73	0.20	0.16	0.94	0.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
Future Volume (veh/h)	89	5	883	245	5	60	285	1523	195	30	1394	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Peak Hour Factor	0.75	0.50	1.00	0.92	0.50	0.92	0.25	0.93	0.92	0.92	0.97	0.50
Percent Heavy Veh, %	0	0	0	1	1	1	1	1	1	2	2	2
Cap, veh/h	459	95		581	164	139	1045	2229	994	62	1737	
Arrive On Green	0.05	0.05	0.00	0.09	0.09	0.09	0.30	0.62	0.62	0.02	0.34	0.00
Sat Flow, veh/h	3510	1900	1610	3483	1885	1598	3483	3582	1598	3456	5106	1585
Grp Volume(v), veh/h	119	10	0	266	10	65	1140	1638	212	33	1437	0
Grp Sat Flow(s),veh/h/ln	1755	1900	1610	1742	1885	1598	1742	1791	1598	1728	1702	1585
Q Serve(g_s), s	3.1	0.5	0.0	7.1	0.5	3.9	30.0	31.8	5.8	0.9	25.8	0.0
Cycle Q Clear(g_c), s	3.1	0.5	0.0	7.1	0.5	3.9	30.0	31.8	5.8	0.9	25.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	459	95		581	164	139	1045	2229	994	62	1737	
V/C Ratio(X)	0.26	0.11		0.46	0.06	0.47	1.09	0.74	0.21	0.53	0.83	
Avail Cap(c_a), veh/h	590	171		581	170	144	1045	2229	994	207	1737	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.7	45.4	0.0	40.1	41.9	43.4	35.0	13.2	8.2	48.7	30.3	0.0
Incr Delay (d2), s/veh	0.4	0.6	0.0	0.7	0.2	2.9	56.0	2.2	0.5	2.6	4.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.3	0.0	3.1	0.2	1.6	20.0	11.1	2.0	0.4	10.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	46.0	0.0	40.7	42.1	46.4	91.0	15.4	8.7	51.3	35.0	0.0
LnGrp LOS	D	D		D	D	D	F	B	A	D	C	
Approach Vol, veh/h		129			341			2990			1470	
Approach Delay, s/veh		42.3			41.8			43.7			35.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	68.2	15.0	11.0	34.0	40.0	11.3	14.7
Change Period (Y+Rc), s	4.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	54.0	9.0	9.0	30.0	30.0	9.0	9.0
Max Q Clear Time (g_c+I1), s	2.9	33.8	9.1	2.5	32.0	27.8	5.1	5.9
Green Ext Time (p_c), s	0.0	12.5	0.0	0.0	0.0	1.6	0.1	0.1

Intersection Summary	
HCM 6th Ctrl Delay	41.1
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix G –
All-Way Stop Control Warrant Analysis

1.0 All -Way Stop Control Warrants

Warrants from the Manual on Uniform Traffic Control Devices (MUTCD) were analyzed to support the installation of all-way stop control at intersections #106 and #107 on Sorrel Avenue (as shown in **Figures 25, 26, and 27**). Section 2B.07 of the MUTCD defines appropriate applications of multi-way stop control. Criteria for multi-way stop control include:

- Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.

- Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions. As the intersections have not yet been built and therefore have no crash history, the consideration of crash occurrence is not applicable to these intersections.

- Minimum volumes:

    - The vehicular volume entering the intersect from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and

    - The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but

    - If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in the previous two items.

1.1 Traffic Signal Warrants for Consideration

Applicable traffic signal warrants were considered for the first multi-way stop control criterion. Of the eight (8) traffic signal warrants in the MUTCD, Warrant 1 (Eight-Hour Vehicular Volume), Warrant 2 (Four-Hour Vehicular Volume), and Warrant 3 (Peak Hour) are applicable for consideration at these two intersections. Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume) are unlikely to be met at intersections #106 and #107 based on projected traffic volume generated by Redtail Ridge land uses and connectivity of Sorrel Avenue. Warrant 3 (Peak Hour) was analyzed in detail.

1.1.1 Traffic Signal Warrant 3, Peak Hour

Section 4C.04 of the MUTCD defines the criteria for traffic signal Warrant 3, Peak Hour. Guidance for this warrant states "this signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time." Given the industrial use of Redtail Ridge, consideration of Warrant 3 is appropriate at intersections #106 and #107. Criteria for this traffic signal warrant are:

- If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:
    - The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and
    - The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and
    - The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.
- The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

2.0 All-way Stop Control Warrant Evaluation

Intersections #106 and #107 were evaluated based on the previously defined criteria for multi-way stop control and peak hour traffic signal warrants. Turning movement volumes at both intersections were only developed for the future AM and PM peak hours; therefore the only volume warrant that can be evaluated is traffic signal Warrant 3, Peak Hour. The results of traffic signal Warrant 3 evaluation are shown in **Table G.1**.

Table G.1 - Traffic Signal Warrant 3 (Peak Hour) Evaluation

	Criteria	Calculated	Threshold	Criteria Satisfied?
Intersection #106	Maximum minor street delay	8.9 vehicle-hours (PM peak)	4 vehicle-hours	Yes
	Maximum minor street volume	312 vph (PM peak)	100 vph	Yes
	Total entering volume	1076 vph (PM peak)	800 vph	Yes
Intersection #107	Maximum minor street delay	2.3 vehicle-hours (PM peak)	4 vehicle-hours	No
	Maximum minor street volume	246 vph (PM peak)	100 vph	Yes
	Total entering volume	860 vph (PM peak)	800 vph	Yes

Based on the PM peak operations, intersection #106 meets all three criteria to satisfy traffic signal Warrant 3, peak hour. Though one traffic signal warrant is met, it is very unlikely that any others would be met. Considering that the minor street volume is primarily driven by traffic to and from the hospital use, which has more even demand throughout the day than industrial uses, the future 8-hour volume at intersection #106 may satisfy the all-way stop warrant minimum volume. One traffic signal warrant does not require the installation of a traffic signal, and in this case, installing an all-way stop at intersection #106 is a more prudent course of action.

At intersection #107, two of three criteria for the peak hour traffic signal warrant are met. While peak hour delay does not meet the threshold for the peak hour traffic signal warrant, peak hour delay does exceed 30 seconds delay per vehicle for the minor street approach as identified in the multi-way stop warrant. Peak hour volumes also exceed the peak hour volume thresholds in the multi-way stop warrant in addition to traffic signal Warrant 3. To estimate off-peak volume, projected peak hour volume was extrapolated based on the nearest daily traffic counts on 96th Street south of Dillon Road. Based on the projected volumes at intersection #107 shown in **Table G.2** the multi-way stop warrant is met for five hours. Three additional hours nearly meet the threshold for the multi-way stop warrant with vehicle traffic only. With the addition of pedestrian and bicycle traffic anticipated based on the multimodal connections through Redtail Ridge it is very likely that the multi-way stop warrant will be met. An all-way stop is therefore recommended at intersection #107 for operational benefit, as well as improving opportunities for pedestrians and bicyclists to cross Sorrel Avenue.

Table G.2 – Intersection #107 Multi-Way Stop Evaluation

Hour	Sorrel Avenue Volume	Internal Connector/Access Volume	Multi-Way Stop Warrant Met?
5:00 AM	111	18	No
6:00 AM	254	41	No
7:00 AM	541	87	No
8:00 AM	652	105	No
9:00 AM	398	64	No
10:00 AM	339	55	No
11:00 AM	365	211	Yes
12:00 PM	417	239	Yes
1:00 PM	250	223	Almost
2:00 PM	282	251	Almost
3:00 PM	373	332	Yes
4:00 PM	455	405	Yes
5:00 PM	432	385	Yes
6:00 PM	255	227	Almost

It should be noted that this planning-level evaluation assumes that all hospital access is from Sorrel Avenue at intersections #106 and #107. If the hospital-requested right-in right-out access to Northwest Parkway is approved, volumes at these intersections is likely to be reduced and intersection control should be reevaluated. The project team prefers the implementation of all-way stop control at intersection #106 and intersection #107 over roundabout control due to operational flexibility should the Northwest Parkway right-in right-out access be approved.

Appendix H – Percent Contribution

Appendix G: Redtail Ridge Percent of Total Entering Traffic to the Intersection/Segment

Intersection/Segments	Year 2025 + Phase 1 (AM Peak)					Year 2025 + Phase 1 (PM Peak)						Year 2040 + Project (AM Peak)					Year 2040 + Project (PM Peak)					
	Ex	Bkgd	Redtail	Total	Redtail %	Ex	Bkgd	Redtail	Total	Redtail %	Average	Ex	Bkgd	Redtail	Total	Redtail %	Ex	Bkgd	Redtail	Total	Redtail %	Average
Dillon Road/McCaslin Boulevard	2591	171	60	2822	2%	3475	156	63	3694	2%	2%	2591	429	133	3153	4%	3475	470	152	4097	4%	4%
Dillon Road/88th Street	1402	271	60	1733	3%	1594	221	63	1878	3%	3%	1402	403	133	1938	7%	1594	386	152	2132	7%	7%
Dillon Road/96th Street	2884	594	182	3660	5%	3176	443	193	3812	5%	5%	2884	881	384	4149	9%	3176	759	443	4378	10%	10%
88th Street/Campus Drive	1746	149	45	1940	2%	1035	143	47	1225	4%	3%	1746	184	98	2028	5%	1035	205	110	1350	8%	6%
88th Street/Tape Drive	1075	139	15	1229	1%	708	134	0	842	0%	1%	1075	235	85	1395	6%	708	192	102	1002	10%	8%
96th Street/Campus Drive	2269	331	334	2934	11%	2102	230	354	2686	13%	12%	2269	536	581	3386	17%	2102	428	660	3190	21%	19%
Northwest Parkway/96th Street/Via Varra	2780	351	190	3321	6%	2998	246	201	3445	6%	6%	2780	735	280	3795	7%	2998	677	312	3987	8%	8%
Northwest Parkway/Tape Drive/Via Varra	2707	285	493	3485	14%	2816	210	521	3547	15%	14%	2707	638	1082	4427	24%	2816	579	1245	4640	27%	26%
Northwest Parkway/US 36 North Ramps (WB)	2948	267	455	3670	12%	2993	196	481	3670	13%	13%	2948	662	999	4609	22%	2993	607	1150	4750	24%	23%
Northwest Parkway/US 36 South Ramps (EB)	2189	158	169	2516	7%	2667	151	333	3151	11%	9%	2189	486	361	3036	12%	2667	518	801	3986	20%	16%
88th Street/Rock Creek Parkway	1138	179	15	1332	1%	969	195	16	1180	1%	1%	1138	292	32	1462	2%	969	291	39	1299	3%	3%
S. 88th St. (Btw Dillon Rd and Campus Dr)	869	103	30	1002	3%	679	107	31	817	4%	3%	869	186	83	1138	7%	679	181	94	954	10%	9%
S. 88th St. (Btw Campus Dr and Tape Dr)	1075	145	15	1235	1%	708	130	16	854	2%	2%	1075	185	68	1328	5%	708	182	79	969	8%	7%
S. 88th St. (South of Tape Dr)	1075	139	15	1229	1%	708	134	0	842	0%	1%	1075	235	32	1342	2%	708	192	39	939	4%	3%
Dillon Rd (Btw S. 88th St. and S. 96th St.)	740	242	30	1012	3%	1231	193	32	1456	2%	3%	740	320	50	1110	5%	1231	319	58	1608	4%	4%
S. 96th St. (North of Dillon Rd)	1622	436	114	2172	5%	1718	318	121	2157	6%	5%	1622	593	251	2466	10%	1718	482	289	2489	12%	11%
S. 96th St. (Btw Dillon Road and Northwest Pkwy)	2159	315	182	2656	7%	1983	213	193	2389	8%	7%	2159	521	384	3064	13%	1983	407	443	2833	16%	14%
Northwest Pkwy (Northeast of S. 96th St.)	1130	54	76	1260	6%	1221	48	81	1350	6%	6%	1130	285	166	1581	10%	1221	304	192	1717	11%	11%
Northwest Pkwy (Btw S. 96th St. and Tape Dr)	2338	233	152	2723	6%	2459	147	160	2766	6%	6%	2338	567	197	3102	6%	2459	511	215	3185	7%	7%
Northwest Pkwy (Btw Tape Dr and US 36)	2600	260	455	3315	14%	2743	186	481	3410	14%	14%	2600	615	999	4214	24%	2743	562	1150	4455	26%	25%
Northwest Pkwy (South of US 36)	1749	70	38	1857	2%	1902	70	40	2012	2%	2%	1749	351	83	2183	4%	1902	368	95	2365	4%	4%

Attachment #2f

BOULDER VALLEY SCHOOL DISTRICT RE-2

RESOLUTION NO. 22-25

WHEREAS, the Board of Education ("Board") of Boulder Valley School District RE-2 ("District") is the owner of the Monarch K-8 and Monarch High School Campus ("Campus") located in the City of Louisville, Colorado ("City"); and

WHEREAS, vehicular access to and from the Campus is primarily along Campus Drive, a public right-of-way previously dedicated by the District and owned by the City; and

WHEREAS, the real property adjacent to the Campus on the south was acquired by Brue-Baukol Capital Partners which recently has become a joint owner with Sterling Bay Capital Partners, (collectively the "Developer"); and

WHEREAS, the Developer has filed a preliminary and final plat with the City for the development of the Property titled "Redtail Ridge – Filing No. 1;" and

WHEREAS, as a condition of the application process for Redtail Ridge – Filing No. 1, the City requires the Developer to make the widening and extension of Campus Drive part of the first phase of infrastructure improvements that will be followed in the future as part of a larger construction project by the Developer to extend the right-of-way on the Developer's property to South 96th Street, creating a second and much-needed access to the Campus; and

WHEREAS, the alignment currently proposed by the Developer, in consultation with the District and City, will add approximately 1.15 acres of District property to the current Campus Drive right-of-way, improve pedestrian and vehicle access to and from the Campus, and keep the Campus parking lot virtually intact; and

WHEREAS, the proposed new configuration of Campus Drive is depicted on Attachment A; and general vicinity of the Campus Drive widening improvements is depicted on Attachment B; and

WHEREAS, the District's staff has reviewed the proposed widening and new alignment, has determined that the construction of the Campus Drive project will not significantly impact school operations, and has recommended the project as it will provide a substantial benefit to the District by improving access to and from the Campus.

NOW, THEREFORE, BE IT RESOLVED:

Section 1. Approval of Concept. That the Board of Education hereby approves the concept for the widening of Campus Drive by the Developer, substantially in the configuration presented on Attachment B, including the potential future conveyance or dedication by the District of approximately 1.15 acres of District property to the City for additional right-of-way as shown on Attachment B, subject to the following:

A. That a land use application filed by the Developer or its successor that includes the new alignment of Campus Drive as shown on Attachment A is approved by the City within one year from the date of this Resolution; and

B. That upon receipt of the City's written request within 180 days after approval of the land use application, the additional right-of-way be dedicated by the District to the City and that any necessary documents of conveyance to be subject to approval by the District's legal counsel; and

C. That, if deemed necessary by the Authorized District Officials, designated below, to allow construction of the Campus Drive widening improvements to proceed prior to dedication or conveyance of the additional right-of-way to the City as provided herein, the District will grant a temporary construction easement to the Developer, on terms approved by the District's legal counsel, following or in conjunction with approval and the issuance of building permits for the project by the City.

D. That the widening of Campus Drive in the configuration presented does not prevent or materially interfere with pedestrian or vehicular access to and from the Campus during construction.

Section 2. Approval and Execution of Documents; Authorized District Officials. The President or Vice-President of the Board, the Superintendent of Schools, and the District's Assistant Superintendent for Operational Services ("Authorized District Officials") are each individually hereby authorized to execute and deliver for and on behalf of the Board and District any and all additional documents, easements, agreements and other papers and to perform all other acts that each of them may deem necessary or appropriate in order to implement and carry out the transaction and other matters authorized by this Resolution.

Section 3. Severability. If any section, paragraph, clause, or provision of this Resolution shall for any reason be held to be invalid or unenforceable, the invalidity or unenforceability of such section, paragraph, clause, or provision shall not affect any of the remaining provisions of this Resolution.

APPROVED AND ADOPTED this 23rd day of August 2022.

BOULDER VALLEY SCHOOL DISTRICT RE-2

By: Kathy Gebhardt
Name: Kathy Gebhardt
Title: President, Board of Education

ATTEST:

By: _____
Name: Laura Shafer
Title: Secretary, Board of Education

4880-7561-6557, v. 1

Attachment #2g

101 Spader Way
Broomfield, Colorado 80020
303-452-9910 Fax 303-451-0289
www.northmetrofire.org

David A. Ramos
Fire Chief

April 9, 2021

Jordan Swisher & Jay Hardy
Redtail Ridge Development
1515 Blake Street
Suite 210
Denver, CO 80202

Re: Letter of Support for Easement Request

Mr. Swisher & Mr. Hardy:

North Metro Fire Rescue District ("District") submits this letter of support for Redtail Ridge Development's ("RRD") request for a right-of-way access easement consisting of .056 acres ("Easement") over a portion of the District' property located at 13975 S 96th Street, Broomfield, CO 80020 ("Property"), subject to the conditions described herein.

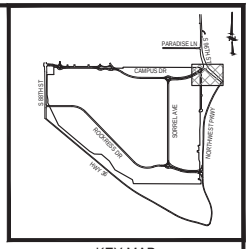
When the Northwest Parkway Public Highway Authority ("Authority") deeded the Property to the District, it retained a perpetual multi-use easement over and across portions of the Property, including the area that is the subject of the RRD's requested Easement. The District and Authority have had preliminary discussions concerning RRD's Easement request, which the District intends to continue should this development proceed.

It is the District's understanding that the requested Easement will be used to expand both Campus Drive and the turn lane onto southbound S 96th Street. Subject to the final design and form of the Easement agreement, the District believes the Easement will benefit traffic flow. In exchange for the Easement, RRD has agreed to cover all costs associated with the Easement, including legal fees. RRD has also agreed to pay for the costs related to installation of an Opticom Emergency Traffic System on 96th Street.

Based on the foregoing, the District is in support of RRD's Easement request. Please do not hesitate to contact me with any questions.

Richard Miller, Board President
North Metro Fire Rescue District

Attachment #2h



KEY MAP
1"=2000'

BOULDER COUNTY
CITY OF LOUISVILLE
CITY OF BROOMFIELD

CAMPUS DR
(120' ROW)

OLD S 96TH ST
(EX ROW)

REDTAIL RIDGE
PROPERTY
BOUNDARY

EXISTING PROPERTY
BOUNDARY (TYP)

NORTHWEST PARKWAY
PUBLIC HIGHWAY AUTHORITY
BROOMFIELD BUSINESS
CENTER FILING NO. 1

S 96TH ST
(EX ROW)

NORTH METRO FIRE RESCUE DISTRICT
BROOMFIELD BUSINESS CENTER
FILING NO. 1 REPLAT B

NORTHWEST PARKWAY
(EX ROW)

LEGEND

PR ROW	
EX ROW	
NORTH METRO FIRE RESCUE DISTRICT ROW DEDICATION AREA	
NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY ROW DEDICATION AREA	

CAMPUS DR ROW AREA

LOCATION	PROPOSED ROW AREA TO BE DEDICATED (SF)	PROPOSED ROW AREA TO BE DEDICATED (ACRES)
NORTH METRO FIRE RESCUE DISTRICT	2499.33	0.06

S 96TH ST ROW AREA

LOCATION	PROPOSED ROW AREA TO BE DEDICATED (SF)	PROPOSED ROW AREA TO BE DEDICATED (ACRES)
NORTH METRO FIRE RESCUE DISTRICT	1331.68	0.03
NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY	7088.55	0.16

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

REDTAIL RIDGE - ROW ACQUISITION EXHIBIT

40 0 40 80
SCALE: 1" = 40'

Mr. Rob Zuccaro
Planning and Building Safety Director
City of Louisville
749 Main St
Louisville, CO 80027

Re: Redtail Ridge Xcel Easement Encroachments

Dear Mr. Zuccaro:

Please be advised that Public Service Company of Colorado (dba Xcel Energy) is in receipt of the Final Plat for Redtail Ridge dated April 28th, 2022, and Civil Construction Drawings dated May 23rd and May 26th, 2022. We have also had numerous conversations with the Redtail Ridge development team regarding Xcel's easements through the property and the proposed impact and encroachments into our easements.

The specific easements encroachments that have been reviewed include:

1. 50' PSCO Easement Rec. No. 543534 – Rockcress Drive extension crossing
2. 40' PSCO easement Rec. No. 290792 – Sorrel Avenue crossing & path crossing
3. 26' PSCO easement Rec. No. 00639459 – Sorrel Avenue crossing & path crossing
4. 40' PSCO easement Rec. No. 531606 – path crossing (2 crossings)

We have reviewed the existing easements for ***Electric Distribution*** and have discussed the encroachments with the Redtail Ridge development team. By means of this letter, The Electric Distribution Area Engineer at Xcel Energy is accepting the proposed crossings pertaining to Electric Distribution; contingent upon the improvements remaining consistent with the reviewed documents and in conformance with the underlying requirements defined in the individual easement documents.

Should you have any questions concerning this matter, please feel free to contact me at (303) 571-3305.

Sam Bebernes
Area Engineer – Boulder

Parks & Open Space
5201 St. Vrain Road • Longmont, CO 80503
303-678-6200 • POSinfo@bouldercounty.org
www.BoulderCountyOpenSpace.org

Attachment #2j

February 16, 2023

Rob Zuccaro
Director of Community Development
City of Louisville
749 Main Street
Louisville, CO 80027

Re: Redtail Ridge Proposed Open Space Donation

Dear Rob,

It is the county's understanding that the Redtail Ridge project may come before the Louisville City Council for preliminary plat approval within the next few months. If the city accepts an offer of dedication of 47.7 acres of land in the vicinity of Paradise Lane for open space, the county would be willing to own the fee title to the property subject to a conservation easement to be held by the city. The county would also be willing to manage the property.

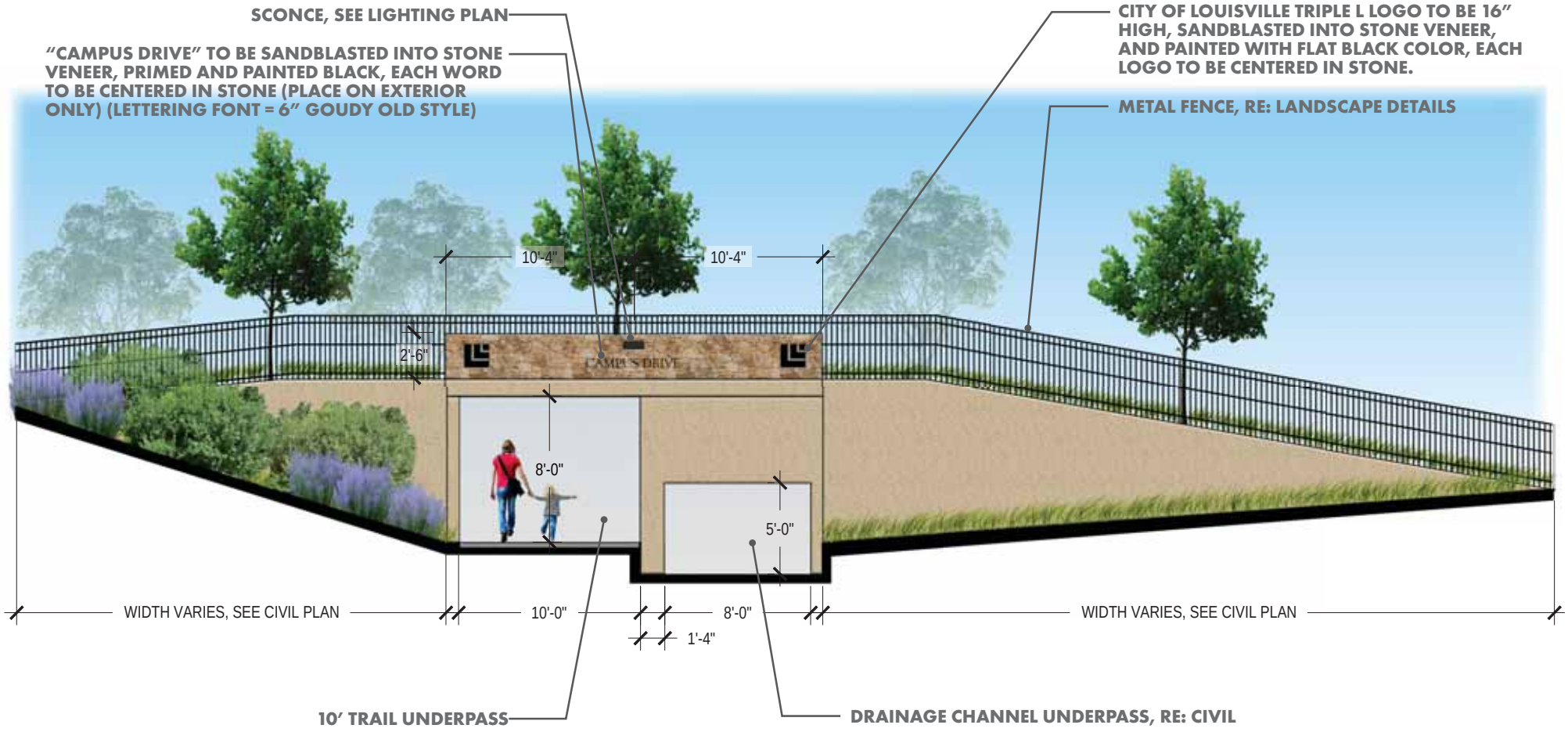
The acceptance of the property would be subject to final approval of the Board of County Commissioners at a public meeting.

Please let me know if you have any questions.

Sincerely,

Therese Glowacki
Director
Parks & Open Space

Claire Levy *County Commissioner* **Marta Loachamin** *County Commissioner* **Ashley Stolzmann** *County Commissioner*

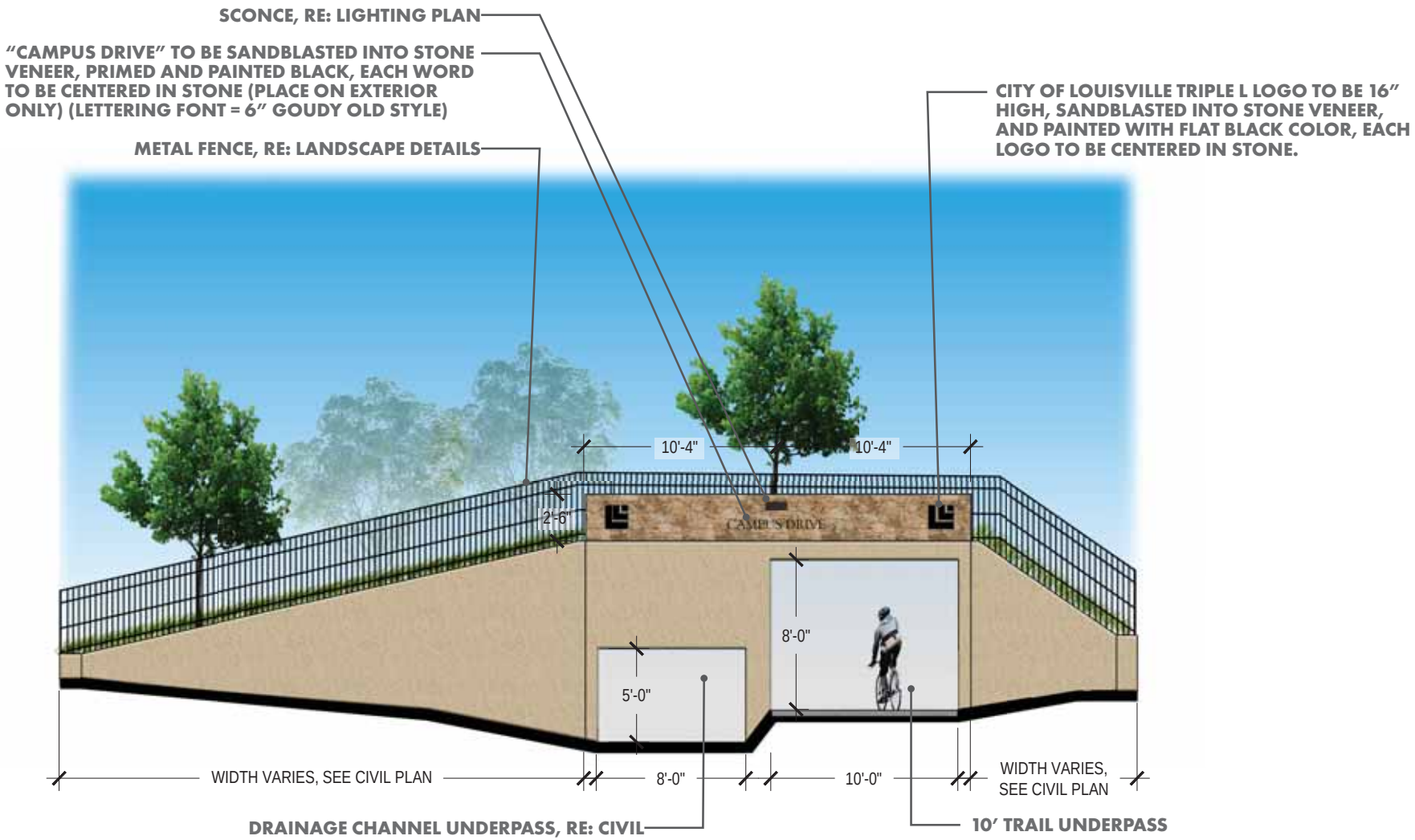


REDTAIL RIDGE | WEST UNDERPASS ELEVATION

08/10/2022

SCALE: 3/16" = 1'-0"

NORRIS DESIGN
Planning | Landscape Architecture | Branding



REDTAIL RIDGE | EAST UNDERPASS ELEVATION

08/10/2022

SCALE: 3/16" = 1'-0"

NORRIS DESIGN
Planning | Landscape Architecture | Branding

Redtail Ridge

Sustainability & Wellness

TRYBA ARCHITECTS Perkins&Will

BranchPatterr HKS HARRIS KOCHER SMITH

Sustainability Commitments

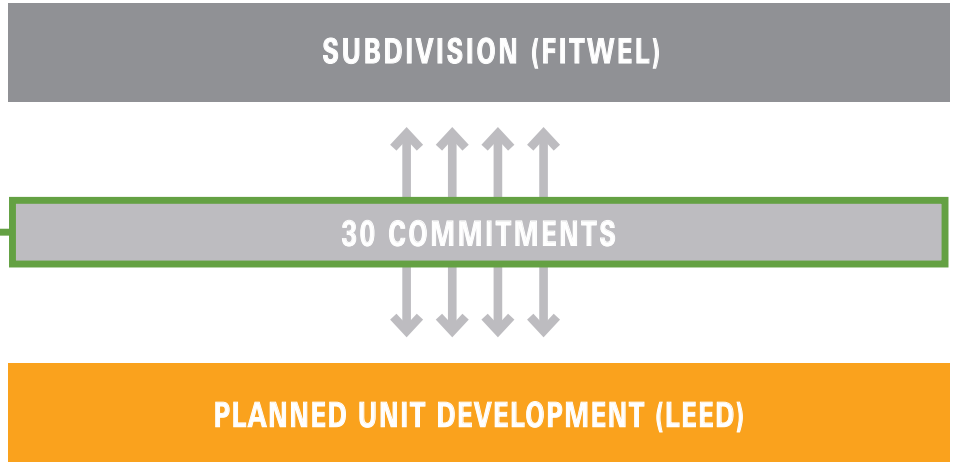
SECTION	#	COMMITMENT	VALIDATION
Community	1	Wayfinding	Fitwel
	2	Crop Share Drop Off	Fitwel
	3	Building Operational Guidelines	Fitwel
	4	Comprehensive Composting	LEED
	5	Emergency Preparedness Plan	Fitwel
	6	Public Art	Fitwel
Energy & Carbon	7	LEED Certification for all buildings	LEED
	8	Idle Reduction	Fitwel
	9	Optimize Energy Performance	LEED
	10	Renewable Energy Production Min. 2.6 MW Solar Garden	LEED
	11	Heat Island Reduction	Fitwel
	12	Advanced Energy Metering	LEED
Site Development & Water	13	Open Space	LEED
	14	Walking Trail	Fitwel
	15	Light Pollution Mitigation	Fitwel
	16	Restorative Garden	Fitwel
	17	Indoor Water Use	LEED
	18	Outdoor Water Use	LEED
Transportation & Mobility	19	Pedestrian Network	Fitwel
	20	Green Vehicles	Fitwel
	21	Safe Street Infrastructure	Fitwel
	22	Transit Access	Fitwel
	23	Bicycle Parking	Fitwel
	24	Universal Accessibility	Fitwel
Health	25	Outdoor Fitness Area	Fitwel
	26	Bike Lanes	Fitwel
	27	Minimum IAQ Performance	LEED
	28	Outdoor Space Amenities	Fitwel
	29	Air Quality Testing	Fitwel
	30	Tobacco and Smoke-Free Outdoor Spaces	Fitwel

Sustainability Plan and Commitments

Redtail Ridge 2.0 has developed a sustainability framework that targets outcomes in the areas of community, energy, site, transportation, and health. These commitments will be validated through globally recognized third-party rating systems: LEED and Fitwel. Together, these certification programs address sustainability at the building level (LEED) and at the level of the overall district (Fitwel Commercial and Industrial Site). Commitments validated through Fitwel will form part of the project's final scorecard for Fitwel: Commercial and Industrial Sites.

Executive Summary of Sustainability Commitments planned for the Subdivision Improvement Agreement (SIA).

Commitments that apply to development of projects in the district will be validated through LEED certifications. In addition to requiring LEED Silver certification, the SIA will also list specific LEED credits that must be achieved by each project, as demonstrated by its final LEED scorecard.



Credit Validation | Community

SECTION	#	COMMITMENT	VALIDATION
Community	1	Wayfinding	Fitwel
	2	Crop Share Drop Off	Fitwel
	3	Building Operational Guidelines	Fitwel
	4	Comprehensive Composting	LEED
	5	Emergency Preparedness Plan	Fitwel
	6	Public Art	Fitwel

Credit Validation | Energy & Carbon

SECTION	#	COMMITMENT	VALIDATION
Energy & Carbon	7	LEED Certification for all buildings	LEED
	8	Idle Reduction	Fitwel
	9	Optimize Energy Performance	LEED
	10	Renewable Energy Production Min. 2.6 MW Solar Garden	LEED
	11	Heat Island Reduction	Fitwel
	12	Advanced Energy Metering	LEED

Credit Validation | Site Development & Water

SECTION	#	COMMITMENT	VALIDATION
Site Development & Water	13	Open Space	LEED
	14	Walking Trail	Fitwel
	15	Light Pollution Mitigation	Fitwel
	16	Restorative Garden	Fitwel
	17	Indoor Water Use	LEED
	18	Outdoor Water Use	LEED

Credit Validation | Transportation & Mobility

SECTION	#	COMMITMENT	VALIDATION
Transportation & Mobility	19	Pedestrian Network	Fitwel
	20	Green Vehicles	Fitwel
	21	Safe Street Infrastructure	Fitwel
	22	Transit Access	Fitwel
	23	Bicycle Parking	Fitwel
	24	Universal Accessibility	Fitwel

Credit Validation | Health

SECTION	#	COMMITMENT	VALIDATION
Health	25	Outdoor Fitness Area	Fitwel
	26	Bike Lanes	Fitwel
	27	Minimum IAQ Performance	LEED
	28	Outdoor Space Amenities	Fitwel
	29	Air Quality Testing	Fitwel
	30	Tobacco and Smoke-Free Outdoor Spaces	FItwel

SUSTAINABILITY COMMITMENTS BREAKDOWN

	#	PREVIOUS COMMITMENT	CURRENT ENFORCEABLE COMMITMENT	VALIDATION	DETAILED REQUIREMENTS
Community	1	5: All-electric HVAC and domestic water heating systems, with exceptions	2.6: Wayfinding	Fitwel	Include wayfinding within the project boundary that: 1. provides directions to a minimum of three qualifying amenities located within the project boundary. 2. provides directions to a minimum of two qualifying amenities located within a 1/2 mile walking distance from a site entrance. 3. outlines walking distances to identified qualifying amenities. 4. is located within 100 feet or 30 meters of all the following: a main entrance of each building, all site entrances, all on-site outdoor areas.
	2	21: Food truck coordination	10.4: Crop Share Drop-Off	Fitwel	Provide access to a minimum of one drop-off point designated for qualifying crop share or other fresh food delivery programs that is: 1. publicized to all regular occupants. 2. free to all regular occupants. 3. open during workplace work hours. 4. located within a 1/2-mile or an 800-meter walking route from all regularly occupied buildings. Qualifying crop share or other fresh food delivery programs: 1. provide access to fresh fruits and vegetables. 2. are scheduled to operate: – during workplace work hours. – a minimum of one day a week during workplace work days. – a minimum of five months of the year, or for the maximum growing season of the region.
	3	29: Sustainability Tenant Education	5.5: Building Operational Guidelines	Fitwel	Establish building operational guidelines that: 1. recommend the implementation of the following: – a tobacco- and smoke-free policy for all indoor areas. – an Indoor Air Quality (IAQ) policy that is as rigorous as the Fitwel Indoor Air Quality Standard (found at www.fitwel.org/fitwel-standards). – conducting IAQ testing at least once a year. – ventilating areas with chemicals use and storage separately for all indoor building areas. – an Integrated Pest Management (IPM) policy for all indoor building areas that is as rigorous as the Fitwel Integrated Pest Management Standard (found at www.fitwel.org/fitwel-standards). – a Green Purchasing policy for all indoor building areas that is as rigorous as the Fitwel building Green Purchasing policy, found under the Fitwel Building Policies tab. 2. are shared with occupants through one of the following: – tenant leases (for multi-tenant projects only) – tenant manual (for multi-tenant projects only) – digital communication, such as a website or digital application.
	4	28: Composting and Recycling Service	SSpc: Comprehensive Composting	LEED	Provide composting infrastructure to meet the needs of the entire project. Select one of the following: Option 1. Regular compost collection and offsite processing Provide organic waste receptacles and regular organic waste collection. Option 2. Onsite compost processing Provide organic waste collection receptacles and onsite compost unit(s) for onsite storage and processing.
	5	30: Participate in PACE	12.1: Emergency Preparedness Plan	Fitwel	Adopt a jurisdiction or district-wide emergency response plan or implement a comprehensive on-site emergency preparedness plan that: – identifies a minimum of one potential emergency scenario for the site context/geography (eg, biological events, storms, extreme weather events, fire, flooding, utility disruption). – outlines protective actions for each of the potential emergency scenario(s) identified (eg, evacuation, sheltering, shelter-in-place, lockdown, backup generators). – recommends emergency supplies that will be kept within the project boundary for each of the potential emergency scenarios identified. – outlines a framework for site-wide communication of proper precautions, available resources, and emergency notification. – outlines recurring trainings, drills, or emergency exercises. – establishes an emergency response team(s). – is publicized to all regular occupants.
	6	9: Participate in Xcel renewable energy program	7.1: Public Art	Fitwel	One Include a minimum of one permanent public artwork that: 1. is located in a minimum of one of the following spaces: – park or plazas – transit stops – outside a main building entrance – site entrance – on a building exterior visible to regular occupants. 2. is viewable by all regular occupants. 3. is executed by a local or regional artist. of public art by local artist
	7	1: All commercial development above 10,000 sq. ft. shall meet the LEED Silver rating.	LEED Certification for all buildings	LEED	Hold 10ksf - some small / accessory buildings may be developed

Energy & Carbon	8	2: in. 1 Point required in key LEED categories	6.5: Idle Reduction	Fitwel	Establish and implement an idle reduction policy that: 1. includes a maximum allowable idle time of 3 minutes, excluding: – legally authorized emergency motor vehicles – necessary operation (e.g., bus idling to deliver passengers; maintenance vehicles who rely on primary engine power). 2. applies to all vehicles entering the project boundary, both personal and commercial. 3. incorporates idle reduction signage in all designated loading areas within the project boundary. 4. establishes a protocol for reporting offenses. 5. is shared with all tenants through one of the following (for multi-tenant projects only): – tenant leases – tenant manuals.
	9	3: IECC 2021 (~20% more efficient than LEED v4.0 baseline)	EA: Optimize Energy Performance	LEED	IECC 2021 is exceeded by Louisville Municipal Code Establish an energy performance target no later than the schematic design phase. The target must be established as kBtu per square foot-year (kWh per square meter-year) of source energy use. Choose one of the options below: Option 1. Whole-building energy simulation Option 2. Prescriptive compliance: ASHRAE Advanced Energy Design Guide
	10	4: Install 2.6 MW solar on-site	EA: Renewable Energy Production	LEED	Use the building's annual energy cost, calculated in EA Prerequisite Minimum Energy Performance, if Option 1 was pursued; otherwise use the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey (CBECS) database to estimate energy use and cost. The use of solar gardens or community renewable energy systems is allowed if both of the following requirements are met. The project owns the system or has signed a lease agreement for a period of at least 10 years. The system is located with the same utility service area as the facility claiming the use. Credit is based on the percentage of ownership or percentage of use assigned in the lease agreement.
	11	6: White roofs	6.2: Heat Island Mitigation	Fitwel	Implement qualifying heat island mitigation practices on a minimum of 51% all structures, open spaces, and paved infrastructure. Qualifying heat island mitigation practices include: – non-paved natural surfaces on pathways walkways, such as wood, dirt, grass, etc. – green roofs – green walls – high albedo surfaces on roofs and paved pathways, roadways, and parking areas, including white roofs and light-colored concrete – reflective shading devices over paved areas such as parking areas, sidewalks, or pedestrian plazas – vegetation coverage on roofs and paved pathways, roadways, and parking areas – preservation or creation of green open space, such as parks – heat-resistant construction materials
	12	7: Sub-metering	EA: Advanced Energy Metering	LEED	Install meters for future tenant spaces so that tenants will be capable of independently metering energy consumption (electricity, chilled water, etc.) for all systems dedicated to their space. Provide a sufficient number of meters to capture total tenant energy use with a minimum of one meter per energy source per floor. Install advanced energy metering for all base building energy sources used by the building.The advanced energy metering must have the following characteristics. Meters must be permanently installed, record at intervals of one hour or less, and transmit data to a remote location. Electricity meters must record both consumption and demand. Whole-building electricity meters should record the power factor, if appropriate. The data collection system must use a local area network, building automation system, wireless network, or comparable communication infrastructure. The system must be capable of storing all meter data for at least 36 months. The data must be remotely accessible. All meters in the system must be capable of reporting hourly, daily, monthly, and annual energy use.
	13	10: Habitat Management Plan	SSc: Open Space	LEED	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint). A minimum of 25% of that outdoor space must be vegetated (turf grass does not count as vegetation) or have overhead vegetated canopy. The outdoor space must be physically accessible and be one or more of the following: a pedestrian-oriented paving or turf area with physical site elements that accommodate outdoor social activities; a recreation-oriented paving or turf area with physical site elements that encourage physical activity; a garden space with a diversity of vegetation types and species that provide opportunities for year-round visual interest; a garden space dedicated to community gardens or urban food production; preserved or created habitat that meets the criteria of SS Credit Site Development—Protect or Restore Habitat and also includes elements of human interaction.
	14	11: Native and water-wise landscaping	3.4: Walking Trail	Fitwel	Include a qualifying outdoor walking trail that is free of charge, is min. of 1/4-mile long, shielded from other functions and located within a 1/2-mile walking route from all regularly occupied buildings.
& Water	15	12: Biophillic site plan	6.3: Light Pollution Mitigation	Fitwel	Include a minimum of two of the following light pollution mitigation practices: 1. include light shields on all outdoor light fixtures. 2. install lighting motion sensors on pathway and walkway lighting. 3. require tenants to implement strategies to reduce light pollution from interior spaces. 4. schedule outdoor cleaning during daylight hours.

Site Development &	16	13: Green stormwater infrastructure	3.6: Restorative Garden	Fitwel	Include a qualifying outdoor restorative garden that is: 1. free of charge to all regular occupants 2. located within 1/2 mile walking distance of all regularly occupied buildings 3. includes natural, restorative elements (eg, vegetation, water features, or water bodies), 4. includes a minimum of one of the following amenities: *(seating, water feature, shelter from the elements, walking path)* 4. shielded from congested area 5. positioned away from major noise sources.
	17	14: Low water indoor fixtures (30% reduction to LEED v4.0 baseline)	WEp: Indoor Water Use Reduction	LEED	1. Reduce aggregate water consumption by 20% from the baseline 2. Eligible fixtures to be WaterSense labeled
	18	15: 50% Reduction in outdoor potable water use	WEc: Outdoor Water Use Reduction	LEED	Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion. Option 1. No irrigation required Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period. OR Option 2. Reduced irrigation Reduce the project's landscape water requirement (LWR) by at least 50% from the calculated baseline for the site's peak watering month. Reductions must first be achieved through plant species selection and irrigation system efficiency as calculated in the Environmental Protection Agency (EPA) WaterSense Water Budget Tool. Additional reductions beyond 30% may be achieved using any combination of efficiency, alternative water sources, and smart scheduling technologies.
Transportation & Mobility	19	16: Complete Street Design	1.3: Pedestrian Network	Fitwel	Provide a comprehensive pedestrian network on-site that includes: 1. pedestrian crossings at all street intersections. 2. sidewalks or designated pedestrian pathways between main entrances of all buildings, outdoor amenities, main building entrances and outdoor amenities.
	20	17: EV Ready Parking and Level 02 Chargers	LTc: Green Vehicles	LEED	Designate 5% of all parking spaces used by the project as preferred parking for green vehicles. Clearly identify and enforce for sole use by green vehicles. Distribute preferred parking spaces proportionally among various parking sections (e.g. between short-term and long-term spaces). Green vehicles must achieve a minimum green score of 45 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide. A discounted parking rate of at least 20% for green vehicles is an acceptable substitute for preferred parking spaces. The discounted rate must be publicly posted at the entrance of the parking area and permanently available to every qualifying vehicle. In addition to preferred parking for green vehicles, meet one of the following two options for alternative-fuel fueling stations: Option 1. Electric vehicle charging Install electrical vehicle supply equipment (EVSE) in 2% of all parking spaces used by the project. Clearly identify and reserve these spaces for the sole use by plug-in electric vehicles. Parking spaces that include EVSE must be provided separate from and in addition to preferred parking spaces for green vehicles. The EVSE must: Provide a Level 2 charging capacity (208 – 240 volts) or greater. Comply with the relevant regional or local standard for electrical connectors, such as SAE Surface Vehicle Recommended Practice J1772, SAE Electric Vehicle Conductive Charge Coupler or IEC 62196 of the International Electrotechnical Commission for projects outside the U.S. Be networked or internet addressable and be capable of participating in a demand-response program or time-of-use pricing to encourage off-peak charging. OR Option 2. Liquid, gas, or battery facilities Install liquid or gas alternative fuel fueling facilities or a battery switching station capable of refueling a number of vehicles per day equal to at least 2% of all parking spaces.
	21	18: City Minimum Parking	11.1: Safe Street Infrastructure	Fitwel	Include safe street infrastructure elements from a minimum of two of the qualifying categories that: 1. are located on a minimum of 51% of street intersections within the project. 2. are located on a minimum of 51% of mid-block crossings within the project. Qualifying safe street infrastructure categories are: – traffic controls (pedestrian, bicycle and motor vehicle signs, road markers, and signaling devices placed alongside roads, highways, and other public areas) – road design calming elements (narrowing streets and traffic lanes, widening sidewalks, incorporating traffic circles and roundabouts, adding diagonal parking spots alongside traffic lanes, and changing one way streets to two way streets) – pedestrian visibility (raised crosswalks, signalized crosswalks, curb extensions, pedestrian medians)
	22	19: Funding for shuttle	1.1: Transit Access	Fitwel	Metro District will provide a free, dedicated shuttle service that is connected to a transit stop (Flatiron RTD) - also proposing Ecopass. Connect the project to public transit by identifying a minimum of one transit stop that meets one of the following: – is located within a 1/2 mile or 800 meters walking distance of at least one entrance to the project. – is located within the project boundary. – is connected to a dedicated shuttle service that is free to all regular occupants.

SUSTAINABILITY COMMITMENTS BREAKDOWN

	#	PREVIOUS COMMITMENT	CURRENT ENFORCEABLE COMMITMENT	VALIDATION	DETAILED REQUIREMENTS
Community	1	5: All-electric HVAC and domestic water heating systems, with exceptions	2.6: Wayfinding	Fitwel	Include wayfinding within the project boundary that: 1. provides directions to a minimum of three qualifying amenities located within the project boundary. 2. provides directions to a minimum of two qualifying amenities located within a 1/2 mile walking distance from a site entrance. 3. outlines walking distances to identified qualifying amenities. 4. is located within 100 feet or 30 meters of all the following: a main entrance of each building, all site entrances, all on-site outdoor areas.
	2	21: Food truck coordination	10.4: Crop Share Drop-Off	Fitwel	Provide access to a minimum of one drop-off point designated for qualifying crop share or other fresh food delivery programs that is: 1. publicized to all regular occupants. 2. free to all regular occupants. 3. open during workplace work hours. 4. located within a 1/2-mile or an 800-meter walking route from all regularly occupied buildings. Qualifying crop share or other fresh food delivery programs: 1. provide access to fresh fruits and vegetables. 2. are scheduled to operate: – during workplace work hours. – a minimum of one day a week during workplace work days. – a minimum of five months of the year, or for the maximum growing season of the region.
	3	29: Sustainability Tenant Education	5.5: Building Operational Guidelines	Fitwel	Establish building operational guidelines that: 1. recommend the implementation of the following: – a tobacco- and smoke-free policy for all indoor areas. – an Indoor Air Quality (IAQ) policy that is as rigorous as the Fitwel Indoor Air Quality Standard (found at www.fitwel.org/fitwel-standards). – conducting IAQ testing at least once a year. – ventilating areas with chemicals use and storage separately for all indoor building areas. – an Integrated Pest Management (IPM) policy for all indoor building areas that is as rigorous as the Fitwel Integrated Pest Management Standard (found at www.fitwel.org/fitwel-standards). – a Green Purchasing policy for all indoor building areas that is as rigorous as the Fitwel building Green Purchasing policy, found under the Fitwel Building Policies tab. 2. are shared with occupants through one of the following: – tenant leases (for multi-tenant projects only) – tenant manual (for multi-tenant projects only) – digital communication, such as a website or digital application.
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	5	30: Participate in PACE	12.1: Emergency Preparedness Plan	Fitwel	Adopt a jurisdiction or district-wide emergency response plan or implement a comprehensive on-site emergency preparedness plan that: – identifies a minimum of one potential emergency scenario for the site context/geography (eg, biological events, storms, extreme weather events, fire, flooding, utility disruption). – outlines protective actions for each of the potential emergency scenario(s) identified (eg, evacuation, sheltering, shelter-in-place, lockdown, backup generators). – recommends emergency supplies that will be kept within the project boundary for each of the potential emergency scenarios identified. – outlines a framework for site-wide communication of proper precautions, available resources, and emergency notification. – outlines recurring trainings, drills, or emergency exercises. – establishes an emergency response team(s). – is publicized to all regular occupants.
	6	9: Participate in Xcel renewable energy program	7.1: Public Art	Fitwel	One Include a minimum of one permanent public artwork that: 1. is located in a minimum of one of the following spaces: – park or plazas – transit stops – outside a main building entrance – site entrance – on a building exterior visible to regular occupants. 2. is viewable by all regular occupants. 3. is executed by a local or regional artist. of public art by local artist
	7	1: All commercial development above 10,000 sq. ft. shall meet the LEED Silver rating.	LEED Certification for all buildings	LEED	Hold 10ksf - some small / accessory buildings may be developed

Energy & Carbon	8	2: in. 1 Point required in key LEED categories	6.5: Idle Reduction	Fitwel	Establish and implement an idle reduction policy that: 1. includes a maximum allowable idle time of 3 minutes, excluding: – legally authorized emergency motor vehicles – necessary operation (e.g., bus idling to deliver passengers; maintenance vehicles who rely on primary engine power). 2. applies to all vehicles entering the project boundary, both personal and commercial. 3. incorporates idle reduction signage in all designated loading areas within the project boundary. 4. establishes a protocol for reporting offenses. 5. is shared with all tenants through one of the following (for multi-tenant projects only): – tenant leases – tenant manuals.
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	10	4: Install 2.6 MW solar on-site	EA: Renewable Energy Production	LEED	Use the building's annual energy cost, calculated in EA Prerequisite Minimum Energy Performance, if Option 1 was pursued; otherwise use the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey (CBECS) database to estimate energy use and cost. The use of solar gardens or community renewable energy systems is allowed if both of the following requirements are met. The project owns the system or has signed a lease agreement for a period of at least 10 years. The system is located with the same utility service area as the facility claiming the use. Credit is based on the percentage of ownership or percentage of use assigned in the lease agreement.
	11	6: White roofs	6.2: Heat Island Mitigation	Fitwel	Implement qualifying heat island mitigation practices on a minimum of 51% all structures, open spaces, and paved infrastructure. Qualifying heat island mitigation practices include: – non-paved natural surfaces on pathways walkways, such as wood, dirt, grass, etc. – green roofs – green walls – high albedo surfaces on roofs and paved pathways, roadways, and parking areas, including white roofs and light-colored concrete – reflective shading devices over paved areas such as parking areas, sidewalks, or pedestrian plazas – vegetation coverage on roofs and paved pathways, roadways, and parking areas – preservation or creation of green open space, such as parks – heat-resistant construction materials
	12	7: Sub-metering	EA: Advanced Energy Metering	LEED	Install meters for future tenant spaces so that tenants will be capable of independently metering energy consumption (electricity, chilled water, etc.) for all systems dedicated to their space. Provide a sufficient number of meters to capture total tenant energy use with a minimum of one meter per energy source per floor. Install advanced energy metering for all base building energy sources used by the building.The advanced energy metering must have the following characteristics. Meters must be permanently installed, record at intervals of one hour or less, and transmit data to a remote location. Electricity meters must record both consumption and demand. Whole-building electricity meters should record the power factor, if appropriate. The data collection system must use a local area network, building automation system, wireless network, or comparable communication infrastructure. The system must be capable of storing all meter data for at least 36 months. The data must be remotely accessible. All meters in the system must be capable of reporting hourly, daily, monthly, and annual energy use.
	13	10: Habitat Management Plan	SSc: Open Space	LEED	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint). A minimum of 25% of that outdoor space must be vegetated (turf grass does not count as vegetation) or have overhead vegetated canopy. The outdoor space must be physically accessible and be one or more of the following: a pedestrian-oriented paving or turf area with physical site elements that accommodate outdoor social activities; a recreation-oriented paving or turf area with physical site elements that encourage physical activity; a garden space with a diversity of vegetation types and species that provide opportunities for year-round visual interest; a garden space dedicated to community gardens or urban food production; preserved or created habitat that meets the criteria of SS Credit Site Development—Protect or Restore Habitat and also includes elements of human interaction.
	14	11: Native and water-wise landscaping	3.4: Walking Trail	Fitwel	Include a qualifying outdoor walking trail that is free of charge, is min. of 1/4-mile long, shielded from other functions and located within a 1/2-mile walking route from all regularly occupied buildings.
& Water	15	12: Biophillic site plan	6.3: Light Pollution Mitigation	Fitwel	Include a minimum of two of the following light pollution mitigation practices: 1. include light shields on all outdoor light fixtures. 2. install lighting motion sensors on pathway and walkway lighting. 3. require tenants to implement strategies to reduce light pollution from interior spaces. 4. schedule outdoor cleaning during daylight hours.

Site Development &	16	13: Green stormwater infrastructure	3.6: Restorative Garden	Fitwel	Include a qualifying outdoor restorative garden that is: 1. free of charge to all regular occupants 2. located within 1/2 mile walking distance of all regularly occupied buildings 3. includes natural, restorative elements (eg, vegetation, water features, or water bodies), 4. includes a minimum of one of the following amenities: *(seating, water feature, shelter from the elements, walking path)* 4. shielded from congested area 5. positioned away from major noise sources.
	17	14: Low water indoor fixtures (30% reduction to LEED v4.0 baseline)	WEp: Indoor Water Use Reduction	LEED	1. Reduce aggregate water consumption by 20% from the baseline 2. Eligible fixtures to be WaterSense labeled
	18	15: 50% Reduction in outdoor potable water use	WEc: Outdoor Water Use Reduction	LEED	Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion. Option 1. No irrigation required Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period. OR Option 2. Reduced irrigation Reduce the project's landscape water requirement (LWR) by at least 50% from the calculated baseline for the site's peak watering month. Reductions must first be achieved through plant species selection and irrigation system efficiency as calculated in the Environmental Protection Agency (EPA) WaterSense Water Budget Tool. Additional reductions beyond 30% may be achieved using any combination of efficiency, alternative water sources, and smart scheduling technologies.
Transportation & Mobility	19	16: Complete Street Design	1.3: Pedestrian Network	Fitwel	Provide a comprehensive pedestrian network on-site that includes: 1. pedestrian crossings at all street intersections. 2. sidewalks or designated pedestrian pathways between main entrances of all buildings, outdoor amenities, main building entrances and outdoor amenities.
	20	17: EV Ready Parking and Level 02 Chargers	LTc: Green Vehicles	LEED	Designate 5% of all parking spaces used by the project as preferred parking for green vehicles. Clearly identify and enforce for sole use by green vehicles. Distribute preferred parking spaces proportionally among various parking sections (e.g. between short-term and long-term spaces). Green vehicles must achieve a minimum green score of 45 on the American Council for an Energy Efficient Economy (ACEEE) annual vehicle rating guide. A discounted parking rate of at least 20% for green vehicles is an acceptable substitute for preferred parking spaces. The discounted rate must be publicly posted at the entrance of the parking area and permanently available to every qualifying vehicle. In addition to preferred parking for green vehicles, meet one of the following two options for alternative-fuel fueling stations: Option 1. Electric vehicle charging Install electrical vehicle supply equipment (EVSE) in 2% of all parking spaces used by the project. Clearly identify and reserve these spaces for the sole use by plug-in electric vehicles. Parking spaces that include EVSE must be provided separate from and in addition to preferred parking spaces for green vehicles. The EVSE must: Provide a Level 2 charging capacity (208 – 240 volts) or greater. Comply with the relevant regional or local standard for electrical connectors, such as SAE Surface Vehicle Recommended Practice J1772, SAE Electric Vehicle Conductive Charge Coupler or IEC 62196 of the International Electrotechnical Commission for projects outside the U.S. Be networked or internet addressable and be capable of participating in a demand-response program or time-of-use pricing to encourage off-peak charging. OR Option 2. Liquid, gas, or battery facilities Install liquid or gas alternative fuel fueling facilities or a battery switching station capable of refueling a number of vehicles per day equal to at least 2% of all parking spaces.
	21	18: City Minimum Parking	11.1: Safe Street Infrastructure	Fitwel	Include safe street infrastructure elements from a minimum of two of the qualifying categories that: 1. are located on a minimum of 51% of street intersections within the project. 2. are located on a minimum of 51% of mid-block crossings within the project. Qualifying safe street infrastructure categories are: – traffic controls (pedestrian, bicycle and motor vehicle signs, road markers, and signaling devices placed alongside roads, highways, and other public areas) – road design calming elements (narrowing streets and traffic lanes, widening sidewalks, incorporating traffic circles and roundabouts, adding diagonal parking spots alongside traffic lanes, and changing one way streets to two way streets) – pedestrian visibility (raised crosswalks, signalized crosswalks, curb extensions, pedestrian medians)
	22	19: Funding for shuttle	1.1: Transit Access	Fitwel	Metro District will provide a free, dedicated shuttle service that is connected to a transit stop (Flatiron RTD) - also proposing Ecopass. Connect the project to public transit by identifying a minimum of one transit stop that meets one of the following: – is located within a 1/2 mile or 800 meters walking distance of at least one entrance to the project. – is located within the project boundary. – is connected to a dedicated shuttle service that is free to all regular occupants.

	23	20: Shared electric bike fleet	2.5: Bicycle Parking	Fitwel	Include a minimum of one shared bicycle station or dockless bicycle hub within the project boundary that is accessible free of charge to all regular occupants. Include bicycle parking that: 1. is located within the project boundary. 2. is free of charge to all regular occupants. 3. is covered from the elements. 4. is secured from theft. 5. is located in a minimum of one of the following locations: – near shared bicycle stations or hubs – in a common open space – at pedestrian routes and pathways – in parking areas. 6. is provided for a minimum of 2.5% of regular occupants.
	24	8: Solar ready	2.1: Universal Accessibility	Fitwel	Provide qualifying universally accessible entrances and pathways at all of the following areas within the project: – all sidewalks – route to a transit stop if located on-site or within a 1/2 mile or 800 meters walking distance from a site entrance – all main entrances to buildings – outdoor amenities and open space(s) – street crossings. Qualifying universally accessible entrances and pathways meet the following: – are free of obstacles that may impede or cause difficulties for those with physical disabilities, such as impeding trees, planting pots, bike racks, steps, or other barriers. – include adjoining ramps and sloped access in the event of stairs or steps to all main entrances of buildings. – include curb cuts and warning strips at street crossings
	25	22: Active stairway design	3.5: Outdoor Fitness Area	FItwel	Include a qualifying outdoor fitness area that: 1. is free of charge to all regular occupants. 2. is accessible a minimum of 12 hours a day. 3. is a space specifically designed for sport and exercise that includes a minimum of one of the following: – sports fields or courts, such as basketball courts, baseball fields, football fields, or soccer fields – outdoor fitness equipment such as outdoor stationary bicycles, air walkers or sit-up boards – secured mobile fitness equipment such as free-weights, yoga mats, other exercise equipment. 4. is located within a 1/2-mile or 800-meter walking route from all regularly occupied buildings. Regularly occupied buildings are buildings where occupants work, including: – commercial buildings – industrial buildings – retail buildings
	26	23: Shared, outdoor landscape areas	2.3: Bike Lanes	FItwel	Include bicycle lanes or pathways that: 1. are separated from traffic and marked as designated bicycle lanes through color coding or material selection. 2. are a minimum of 1 mile or 1600 meters long in one direction. 3. if provided on-site, meet a minimum of two of the following: – connect to an off-site network of bicycle lanes or pathways – connect the main project entrances to a minimum of one other function on-site (common areas, outdoor areas, building entrances or designated bicycle parking) – traverse the project. 4. if provided off-site, are directly connected to the project.

Health	27	24: Pandemic design best practices for HVAC	EQp: Minimum IAQ Performance	LEED	Meet the requirements for both ventilation and monitoring. **Ventilation** **Mechanically ventilated spaces**: ASHRAE Standard 62.1–2010 **Naturally ventilated spaces**: For naturally ventilated spaces (and for mixed-mode systems when the mechanical ventilation is inactivated), determine the minimum outdoor air opening and space configuration requirements using the natural ventilation procedure from ASHRAE Standard 62.1–2010 or a local equivalent, whichever is more stringent. Confirm that natural ventilation is an effective strategy for the project by following the flow diagram in the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual AM10, March 2005, Natural Ventilation in Nondomestic Buildings, Figure 2.8, and meet the requirements of ASHRAE Standard 62.1–2010, Section 4, or a local equivalent, whichever is more stringent. **Monitoring** **Mechanically ventilated spaces**: For variable air volume systems, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow. This device must measure the minimum outdoor air intake flow with an accuracy of +/–10% of the design minimum outdoor airflow rate, as defined by the ventilation requirements above. An alarm must indicate when the outdoor airflow value varies by 15% or more from the outdoor airflow setpoint. For constant-volume systems, balance outdoor airflow to the design minimum outdoor airflow rate defined by ASHRAE Standard 62.1–2010 (with errata), or higher. Install a current transducer on the supply fan, an airflow switch, or similar monitoring device. **Naturally ventilated spaces** For naturally ventilated spaces (and for mixed-mode systems when the mechanical ventilation is inactivated), comply with at least one of the following strategies. Provide a direct exhaust airflow measurement device capable of measuring the exhaust airflow. This device must measure the exhaust airflow with an accuracy of +/–10% of the design minimum exhaust airflow rate. An alarm must indicate when airflow values vary by 15% or more from the
	28	25: On-Site Exercise Facility	3.1: Outdoor Space Amenities	Fitwel	Include a minimum of one outdoor space amenity within the project boundary that: 1. is free of charge to all regular occupants. 2. includes one of the following elements: – tables and chairs – pedestrian pathways – water features – open lawn areas. 3. is located within a 1/2 mile or 800 meter walking distance of all regularly occupied buildings.
	29	26: Annual indoor air quality testing	6.7: Air Quality Testing	Fitwel	Conduct outdoor air quality testing that: 1. tests the air quality in the following outdoor areas: – near building mechanical and exhaust areas. – parking areas. – outdoor common areas. 2. tests for the following: – ozone – carbon monoxide – VOCs. 3. tests the air twice a year.
	30	27: Office buildings and build-outs to have operable windows	3.8: Tobacco and Smoke-Free Outdoor Spaces	Fitwel	Entryway system, CO2 monitoring options Establish and implement a tobacco- and smoke-free policy that: 1. is applied to all outdoor areas. 2. prohibits the use of all forms of smoking, tobacco use, and unregulated nicotine products 3. prohibits the inclusion of designated smoking areas within the project boundary. 4. is shared with all tenants through tenant leases or manuals

Attachment #2m

Redtail Ridge
Transportation Demand Management Plan

Date: March 24, 2023

Submitted To:
Sterling Bay
5910 Pacific Center Blvd, Suite 200
San Diego, CA 92121

Submitted By:
Fox Tuttle Transportation Group, LLC
1624 Market Street, Suite 202
Denver, CO 80202

FOX TUTTLE

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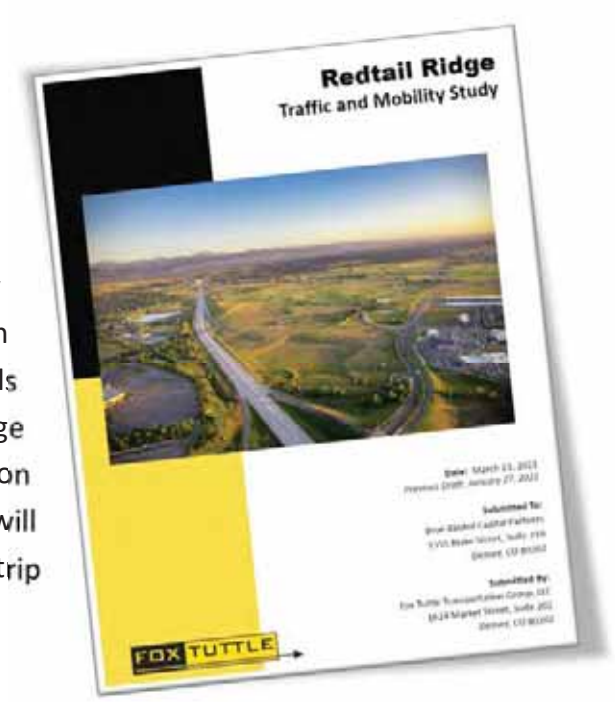
1. Introduction

Transportation Demand Management (TDM) is the application of strategies and policies to reduce travel demand in general and single occupant vehicle (SOV) travel specifically. It can also mean redistributing this demand to occur at less impactful times. TDM measures help people use the transportation system more efficiently, while reducing traffic congestion, vehicle emissions and fuel consumption in support of a larger sustainability plan. TDM activities maximize the value of transportation infrastructure and services by making options for non-SOV trip making easier to use and more readily available.

This TDM Plan was requested by City of Louisville staff as a supplemental submittal to the *Redtail Ridge Traffic and Mobility Study (Study),* to outline possible strategies to reduce SOV traffic generated by the proposed development. Sterling Bay and its development partners are planning to encourage and support non-SOV trips by employees to and from the development. This TDM plan was created to detail the identified strategies and tools which will be implemented as part of the Redtail Ridge development. The elements of this TDM plan in combination with existing programs and facilities within the area, will ensure that non-SOV trips are encouraged and that the trip reduction used in the *Study* is reasonable.



2. Development Overview

Sterling Bay and its development partners are proposing to build a mix of office, industrial, retail and commercial buildings on the former StorageTek campus in the City of Louisville, as detailed in the *Study*. The site is generally bounded by S. 88th Street to the west, Campus Drive to the north, S. 96th Street/Northwest Parkway to the east, and US-36 to the south. The project area is currently vacant but was previously occupied by Storage Tek, which was an active site until the 1990's. The *Study* provides a detailed comparison of potential trip making from the prior Storage Tek uses, the previously approved land uses associated with the ConocoPhillips development and the proposed land use associated with the Redtail Ridge development. In summary, the *Study* estimates that the Redtail Ridge development will generate approximately 28% fewer trips than the formally approved

ConocoPhillips development.

Trip generation of new land use is a significant part of the *Study* as they are modelled as additional trips within the community, and *Study* area roadways and intersections are evaluated for existing and future performance. The *Study* included a motor vehicle trip reduction of 12% to account for the presumed number of external non-single occupant vehicle trips (non-SOV trips)[1]. These trips would be made by walking, biking, carpool, vanpool, shared ride mobility service and/or transit service.

Exhibit 1: Sketch of Redtail Ridge Development and Multi-Modal Facilities (Source: Sterling Bay)

3. Current and Future Non-SOV Mode Share Goals

The new *City of Louisville Transportation Master Plan (TMP)* documented how commuters in Louisville and nearby communities travel to work. This data is based on US Census American Community Survey (https://www.census.gov/programs-surveys/acs) and is summarized in ***Figure 1***. This data is commonly used by agencies across the Denver region as a baseline for TDM programs. The current data is shown below and is the most current estimates available. Based on this data, approximately 28% of people who work in Louisville travel to work by non-SOV modes.

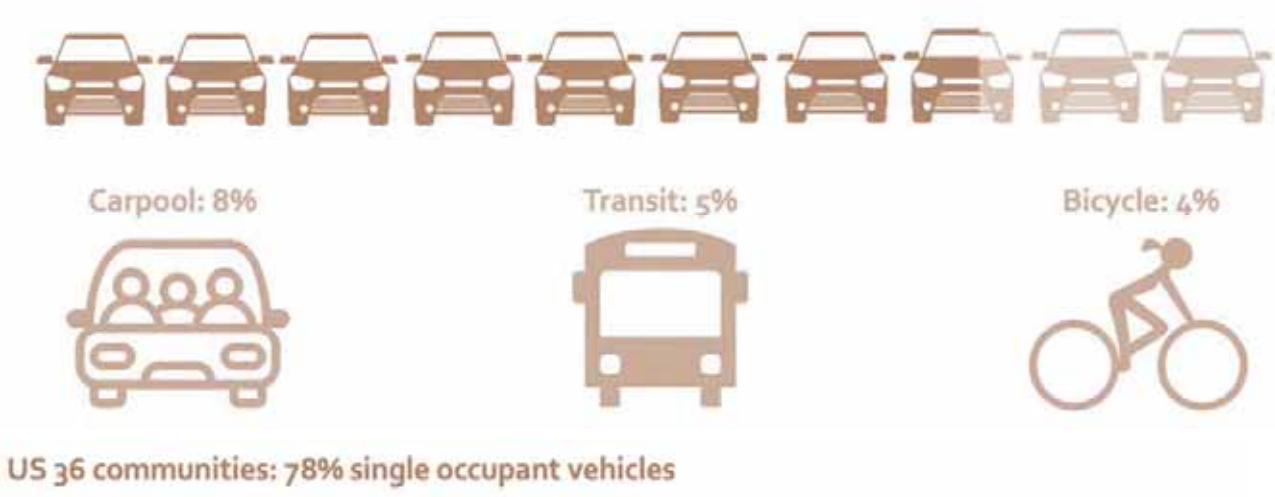
[1] City staff have required that a 12% reduction of SOV trip making potential be used in the *Study*. Analyses in the TDM study suggest this is conservative and the reduction could be as high as 28%.

Figure 1: Louisville and Comparison Area Commute Mode Share (from TMP)

	Drive Alone	Carpool	Transit	Bike	Walk	Work at Home	Other
City of Louisville	72.3%	4.7%	5.9%	2.3%	1.7%	12.7%	0.5%
City of Boulder	51.3%	4.9%	8.3%	10.3%	11.4%	12.5%	1.2%
Boulder County	65.2%	7.6%	5.0%	4.4%	5.3%	11.3%	1.3%
Denver Region	74.8%	8.5%	4.4%	1.2%	2.5%	7.5%	1.0%

The mode share data shown in ***Figure 2*** below is based on survey data from the *2016 Northwest Metro Region Mobility Report*, final draft dated July 2018, prepared by Commuting Solutions. This data shows the mode share for communities along the US 36 corridor, including the City of Louisville. The current data is shown below and is the most current estimates available. Based on this data, approximately 22% of people who work in the US 36 corridor travel to work by non-SOV modes.

Figure 2: US 36 Corridor Commute Mode Shares (from Commuting Solutions)



The anticipated effectiveness of TDM programs is based on their ability to serve commuters of different types of land uses and support trip making through means other than SOV. For the general office, industrial and retail land uses, the *Study* estimated the project would have 12% fewer SOV trips during the peak periods during all development phases.

Redtail Ridge's goal for multi-modal trip reduction is 25%. While substantially higher than the percentage reduction used in the *Study*, it is supported by the information outlined in **Figures 1 and 2**.

While the project team believes that the project's TDM efforts, coupled with existing TDM resources, will result in greater automobile trip reduction, the traffic analysis in the *Study* assumed a conservative trip reduction of 12% for all site uses based on feedback provided by City staff.

4. Planned Land Uses

The Redtail Ridge development at build-out is planning to include the following uses:

- 14,000 square feet of Retail Space (predominantly supporting other internal land use)
- 30,000 square feet of Amenity Space
- 118,750 square feet of Research and Development Space
- 435,000 square foot Hospital/Medical Office space
- 510,000 square feet of Industrial Space
- 534,000 square feet of Life Science Space
- 598,250 square feet of GMP Manufacturing Space
- 360,000 square feet of General Office Space

These land uses are anticipated to be constructed in a series of phases and culminating in full buildout. ***Figure 3*** illustrates the Redtail Ridge site plan to show locations of different land uses[2].

[2] Figure 3 depicts an estimated build out and it is subject to change

Figure 3: Redtail Ridge Development Site Plan

As noted in the site plan, there is a large pad dedicated to the future site of a hospital. The final location, implementation and design are expected to be finalized at the PUD level.

5. Existing Multi-Modal Network

The City of Louisville, Boulder County and the Colorado Department of Transportation (CDOT) have consistently invested in the development of a multi-modal transportation system in this region. The transportation system which serves the project area is a well-balanced mix of local, collector and arterial roadways, intersections with appropriate traffic control, bicycle facilities, pedestrian sidewalks, paths and crossing treatments and frequent transit service connecting to the larger front range area. New travel demand and trip making will be created by the Redtail Ridge development, but the existing and planned multi-modal programs and facilities in this area will ensure that many people can access the site using non-SOV modes of transportation.

The following is a summary of existing multi-modal programs and facilities.

Transit Service

The Redtail Ridge site is located within one mile of the RTD US 36 and East Flatiron Station (see **Photo 1**). This station is serviced by the Flatiron Flyer (routes FF1 and FF2) and the Sky Ride service to Denver International Airport (DEN) via route AB. The station has an underpass under US 36 and is connected to a network of first and final mile destinations. There are approximately 265 parking spaces and eight (8) bike racks at the station. This station is connected to the project site via the Northwest Parkway underpass and it's connecting multi-use path system.

Photo 1: US 36 and East Flatiron Station

The Flatiron Flyer BRT system provides fast and efficient service between Boulder and Denver. Buses are available at the US 36 and East Flatiron Station every 15 minutes during peak and every 30 minutes off peak (on average). Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle. There is capacity for six (6) to eight (8) bikes on board depending on luggage and other passenger storage needs. The buses are equipped with charging for mobile devices.

The vehicles travel in the High Occupancy Vehicle (HOV) lanes on US 36 and I-25. The trip between the US 36 and East Flatiron Station and Denver Union Station is 28 minutes. The trip between downtown Boulder and the US 36 and East Flatiron Station is 23 minutes. The AB route that provides service to DEN is available every 30 minutes during most hours of the day. Large air conditioned and air ride over the road coaches can serve approximately 50 passengers per vehicle also service this route. The trip between DEN and the US 36 and East Flatiron Station is 34 minutes via the Northwest Parkway.

Walking

Most of the existing sidewalk and multi-use path network near the Redtail Ridge project is in the S. 88th Street corridor. This is due to the open lands that mostly front Dillon Road and S. 96th Street in the study area. The S. 88th Street sidewalks and multi-use paths connect the Monarch school campus to neighborhoods in Louisville and Superior. There is an existing underpass under S. 88th Street just south of Dillon Road. This underpass connects the Monarch school campus to the sidewalks on Dillon Road west of S. 88th Street. There are missing sidewalk and trail connections along S. 88th Street, Dillon Road, and S. 96th Street, with an example shown in **Photo 2**.

Photo 2: Coal Creek Regional Trail Informal Connection

It is anticipated that the demand to complete the sidewalk and multi-use path network between the CTC Campus, Redtail Ridge, Monarch school campus, residential areas, and retail centers will be increasingly important in the future as the TMP priorities are implemented. Specifically, new sidewalks and pathways will be necessary given future plans for shared ride mobility and BRT near Dillon Road and in the S. 96th Street corridor.

Figure 4 shows the proposed pedestrian and biking system internal to the site. **Figure 5** highlights the trail system and details the width of each facility.

Figure 4: Pedestrian and Biking System Exhibit

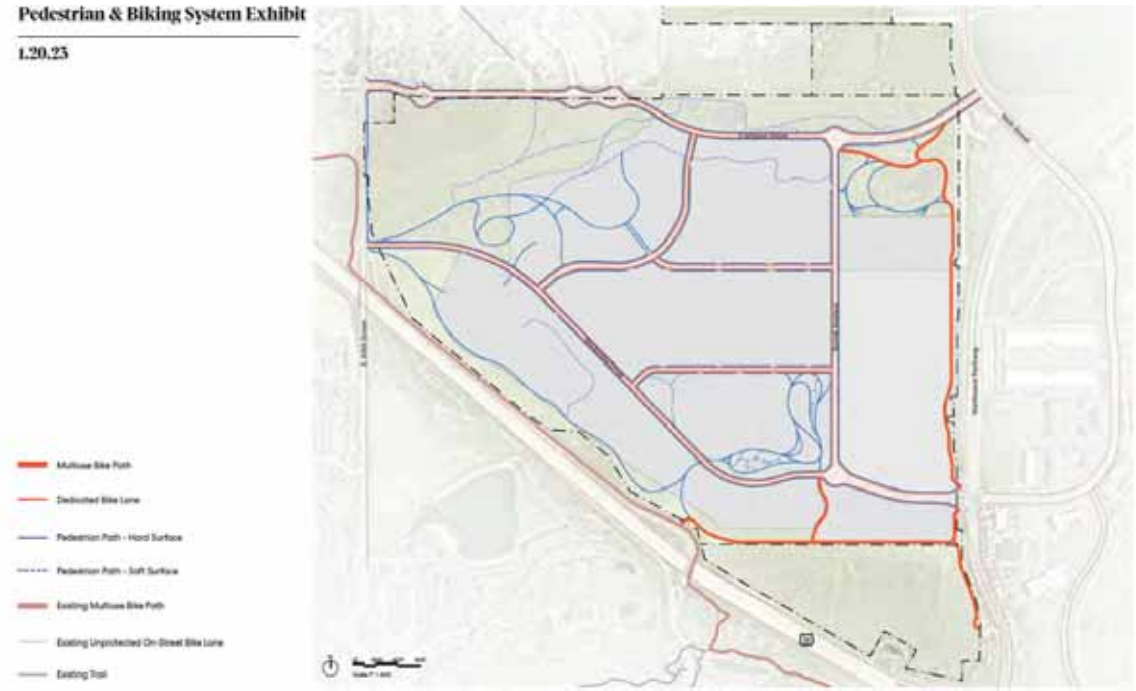
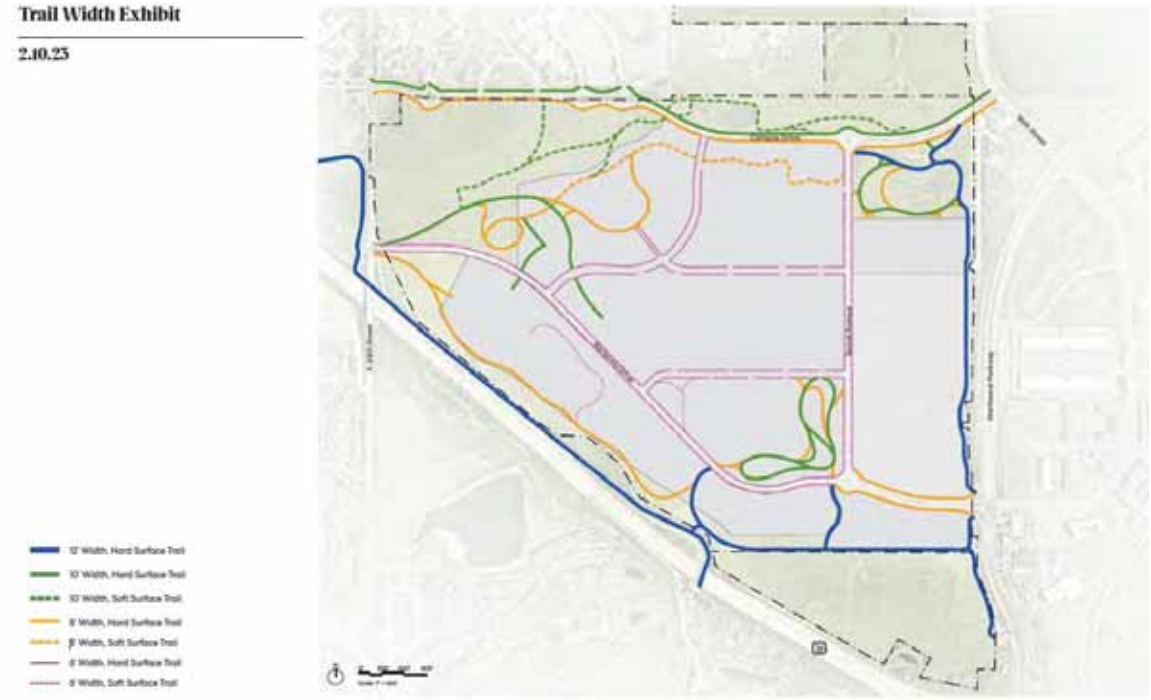


Figure 5: Trail System and Trail Widths Exhibit



The southeast corner of the Redtail Ridge site has an existing underpass that connects under Northwest Parkway (a photo of the underpass is shown in **Photo 3**). This connects sidewalks and multi-use pathways on the westside of Northwest Parkway to the new Broomfield sidewalk network on the eastside of Northwest Parkway. This underpass is also a critical part of the future walking connections to the Rock Creek and Broomfield Trails.

Photo 3: Northwest Parkway Multi-Use Path Underpass

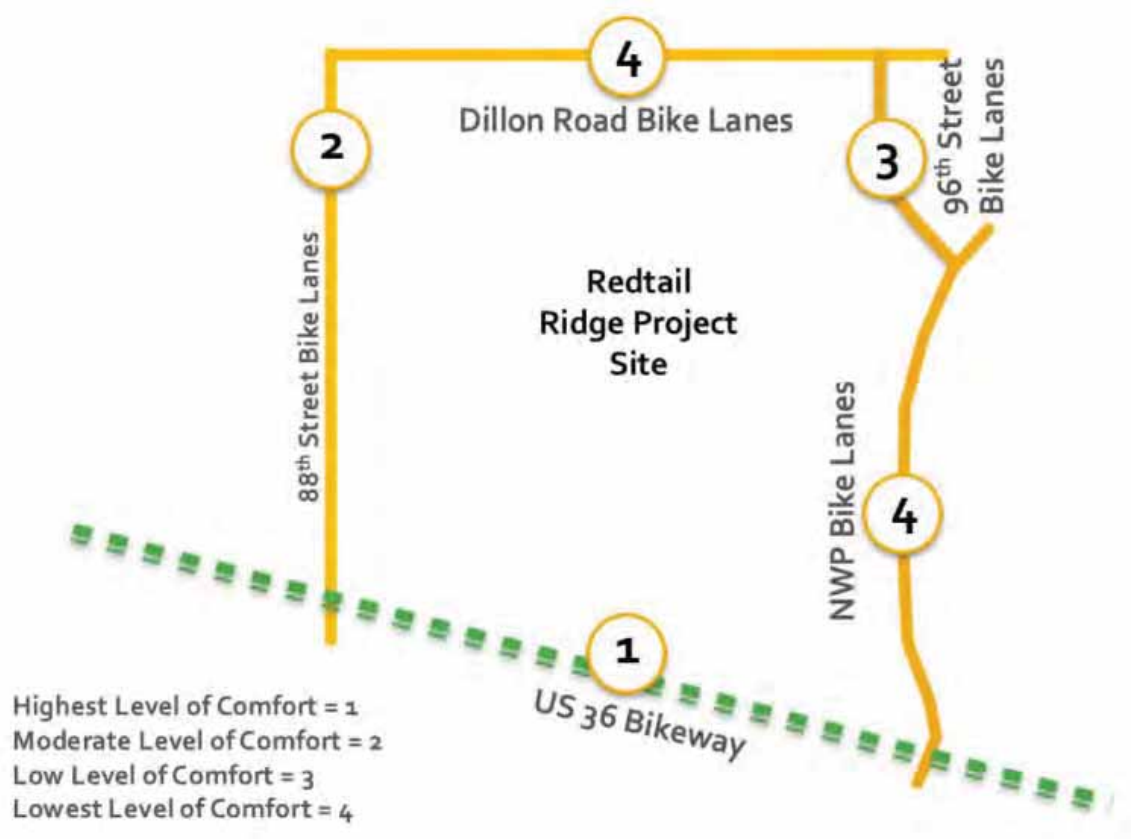
Bicycling

The Redtail Ridge site is located at the confluence of many off-street trails and on-street bicycle lanes. The Coal Creek Trail, Rock Creek Trail and the US 36 Bikeway are located within a short bike ride (5 minutes or less than one mile) of the project site. S. 88th Street, Dillon Road and S. 96th Street currently have on-street bicycle lanes that provide connections to the Coal/Rock Creek Regional Trails and the US 36 Bikeway.

The City of Boulder is located within a six-mile bike ride on the US 36 Bikeway and the RTD US 36 and East Flatiron Station is located within a one-mile bike ride of the project site. Each intersection in the study area has approaches and departures that have accommodations for people on bicycles. The S. 88th Street underpass provides access to the Monarch school campus from Dillon Road.

The City of Louisville TMP evaluated the S. 88th Street, Dillon Road and S. 96th Street corridors/intersections for the level of bicycling comfort (a map summarizing the results of the bicycle level of comfort is illustrated in **Figure 6**). Based on the TMP analysis, the current design of the corridors and intersections have a high level of stress. This appears to be correlated to the high number of crashes at these locations. The high posted speed limits in these corridors and significant peak hour traffic volumes also contribute to the low level of comfort people experience.

Figure 6: Bicycle level of Comfort ratings from City of Louisville TMP



The City plans for future implementation of Great/Complete Street design treatments for the S. 88th Street, Dillon Road, and S. 96th Street corridors and intersections consistent with the TMP's policies. This includes the installing protected bike lanes, multi-use pathways, and intersection treatments throughout the project site and connect to the adjacent arterial roadways, which will provide greater opportunity and protection for all skill levels. Implementation on the public roadways by the City will be subject to public input, topographic limitations, right of way availability, conflicts with utilities and accesses, and construction costs.

6. Future Multi-Modal Network Assumptions

The future multi-modal network improvements around Redtail Ridge project are outlined in the City of Louisville TMP and shown in **Figure 7**. They include a series of bike lanes, transit stops, underpasses, and multiuse trail connections. The TMP also recommends a partnership with the City of Louisville and the business community to provide a shuttle circulator that connects employment areas to regional transit, retail, and other destinations. CTC, Centennial Valley, and Redtail Ridge were identified as service areas for the route. The transit network also includes Bus Rapid Transit (BRT) service in the S. 96th street corridor and two Northwest Rail stations within a mile of Redtail Ridge (see Figure 8). The Northwest Rail stations are planned to be located near the CTC and at the Flatiron and US 36 Park-n-Ride.

Figure 7: Future Multi-modal Network Identified in the City of Louisville TMP

- **A** Bicycle facility connecting Dillon Rd to the US 36 bikeway
- **B** New underpasses at proposed locations along Dillon Road
- **C** Trail connections to provide increased access to the schools and hospital
- **D** Proposed future transit connecting McCaslin Station to the hospital, schools, and CTC
- **E** On-street shoulder bikeway improvements
- **F** Dillon Road capacity improvements to improve intersection operations
- **G** Campus Drive Extension to improve school circulation and improve emergency access
- **H** Paradise Lane realignment to eliminate intersection at S 96th Street. (*Note: Paradise Lane is on County property).
- **I** New signal at Campus Drive and S 96th Street near fire house

Potential Future Transit Service

The *Northwest Area Mobility Study (NAMS)* study identified the S. 96th Street/Highway 42 as one of the six (6) candidate Arterial Bus Rapid Transit (BRT) corridors. All corridors were evaluated, and recommendations were made for transit priority elements such as transit signal priority, queue jump lanes and headway-based scheduling. Operations and maintenance costs for the corridors were also prepared. The NAMS Policy Advisory Committee (PAC) recommended that all six (6) arterial BRT projects be implemented with system-wide service improvements. This corridor was recently identified as a Priority 3 corridor in the *RTD Regional Bus Rapid Transit Study*, the Metro Mayors Caucus is reviewing a ballot initiative to fund this corridor as part of regional ballot initiative, and the City of Louisville has applied for a grant to further study this service as part of a revised Highway 42 corridor study. Refer to **Figure 8** for a map of the identified transit network within the City.

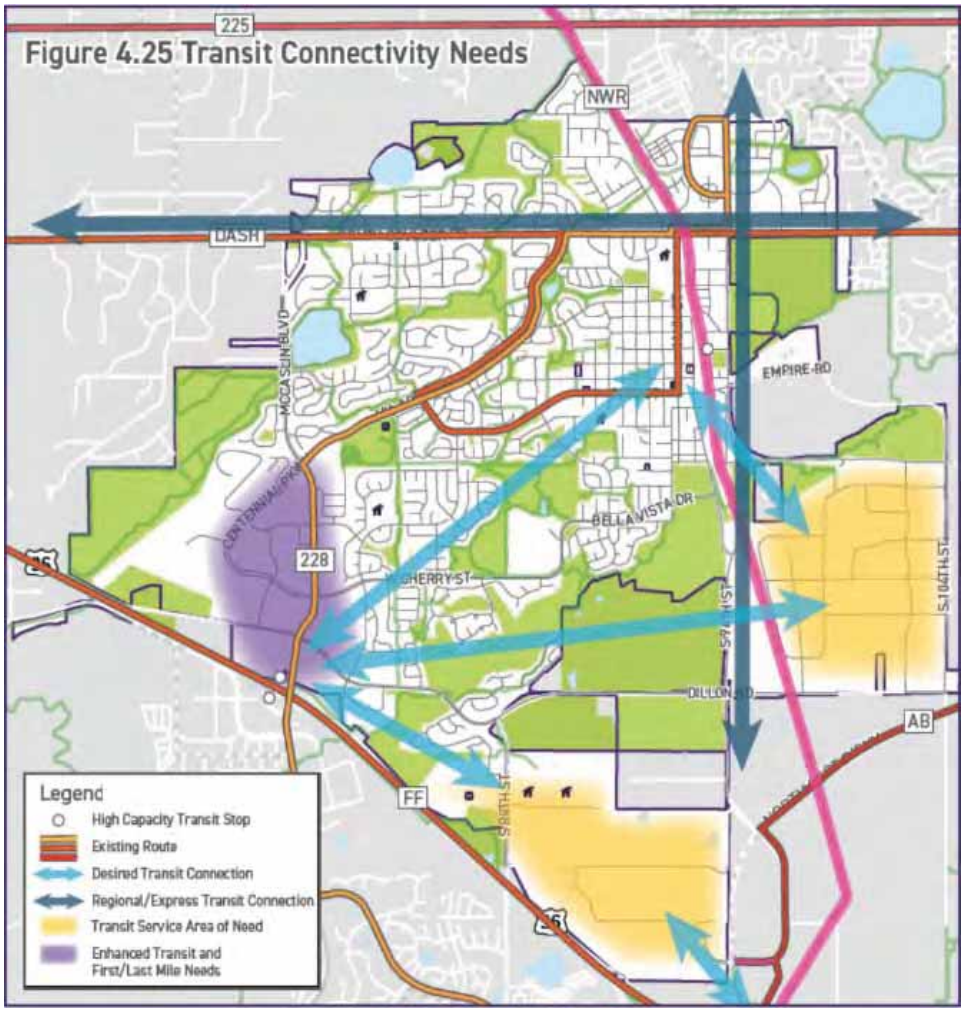


Figure 8: Future Transit Network Identified in the City of Louisville TMP

Proposed Walking and Biking

The Redtail Ridge project will be built over the next 10 years. During this time major shifts in transportation mobility and regional transportation project completion are expected to take place. Transit projects such Northwest Rail, SH 42 BRT, and the RTD local circulator will potentially be operating before Year 2040. In addition, as previously noted, the city's construction of complete streets on S. 88th Street, Dillon Road, and S. 96th Street as well as the new connections within the Red Tail Ridge project on Campus Drive, Rockcress Drive, and Sorrel Avenue will be a major part of the multi-modal transformation in Louisville. These corridors will serve many more travelers and modes in the future and the transformations will use the current right of way to move more people using safe, reliable, connected and sustainable transportation options. **Photo 4** shows an existing on-street bike lane within the study area.

Photo 4: On-Street Bike Lane

The enhanced-future multimodal network that is anticipated to be constructed by the City of Louisville in the vicinity of the Redtail Ridge project is shown in **Table 1**.

Table 1: Enhanced Future Multi-Modal Network Assumptions with Redtail Ridge Project

Schedule	Corridor	Bike Lanes	Multi-use pathways	Sidewalks	Bus Lanes
Background (without Redtail Ridge)	**S. 88th Street** (US 36 to Dillon Road)	buffered or protected	westside or eastside	westside and eastside	none
	Dillon Road (S. 88th to S. 96th Street)	buffered or protected	northside	northside and southside	none
	S. 96th Street (Northwest Parkway to County Road)	buffered or protected	westside	westside and eastside	yes
	Northwest Parkway (S. 96th Street to US 36)	None	eastside	eastside	shoulder running
With Redtail Ridge	**Campus Drive** (S. 88th Street to S. 96th Street)	buffered or protected	southside	northside	none
	Rockcress Drive (S. 88th Street to Northwest Parkway)	buffered or protected	none	northside and southside	none
	Sorrel Avenue (Campus Drive to Rockcress Drive)	buffered or protected	none	eastside and westside	none

** Expanded future multimodal network will include on-site and off-site improvements including connections beyond Louisville that do not exist today but have been identified. See the links to the documents in the "Previous Studies" Section for additional details.*

7. Existing TDM Resources

Redtail Ridge is located within an area that has several existing and proposed TDM measures, and the project will benefit from these existing resources. Along the US 36 corridor, TDM services are provided by 36 Commuting Solutions in partnership with Way to Go.

36 Commuting Solutions is a non-profit organization focused on enhancing mobility along US 36 for all commuting types, with a focus on non-auto travel. The organization is member-driven and advocates for and supports businesses, commuters, and municipalities along the corridor, including the City of Louisville. The program offers numerous services to help travelers, to provide alternative transportation options, and to reduce congestion along the roadways and through communities. The current programs provided by 36 Commuting Solutions for employers and residents within the US 36 corridor are as follows:

- **Free & subsidized transit passes:** The US 36 Master EcoPass Pilot Program subsidizes employers' purchases of EcoPasses for their employees. Eligible commuters can also receive a free 10-ride ticket booklet to try transit.

- **Carpool & Vanpool:** Travelers can use Way to Go services to find carpool and vanpool partners. There is a $75 incentive to individuals who form a new carpool or join a vanpool.

- **Bike & Walk:** In addition to the local and regional multi-use paths, there are interactive maps and education for people that walk and bike.

- **Telework:** In partnership with DRCOG, employers can receive free assistance to establish or expand their telework program.

- **Employer Outreach:** 36 Commuting Solutions staff works with employers to help encourage their employees to commute using sustainable travel modes and to develop commuter programs.

- **Marketing:** Encourages travelers to commute sustainably and participate in the available programs.

- **Advocacy:** 36 Commuting Solutions staff work with local municipalities, businesses, and other stakeholders to develop support for transportation improvements and secure funding for these improvements.

8. TDM Strategies

TDM measures will be an important part of managing safe and efficient transportation operations within and in the areas around the project site. The goal of implementing TDM is to:

- Eliminate or shorten trips,
- Change the mode of travel,
- Change the time of day for a trip,
- Increase participation of carpooling, vanpooling, and transit, and
- Encourage bicycling and walking in place of driving.

TDM strategies also include employer-based programs such as alternative work schedules, which could shift demand away from peak travel times, and telework, which could reduce the need for trips entirely. There are local transportation management solution organizations that coordinate funding and service efforts that the Metro District should consider partnering with to help facilitate and encourage non-SOV travel.

Program summaries are outlined below.

Walking Trips

Walking trips are a key part of the non-SOV mode share goals. The walking trips would likely occur between neighborhood homes, parks and schools. New walking trips will be made on the Complete Street sidewalk and trail network proposed internal to the development. The forecasted typical walk trip will be less than 1/4 mile or 5-minute walk from a home/work to a destination. It is likely that most of the walking trips will be single or multi-purpose trips within the site context. In the future, walking to shared ride mobility and transit services is also likely to increase. This is commonly referred to as the "first and last mile" of a shared ride or transit trip.

Cycling Trips

Cycling trips will increase in the future as the Complete Street and trail network is completed within the development. The future cycling trips will be made by people of all ages and cycling abilities. They will be connecting between neighborhood homes, parks, schools, commercial uses, and transit on and off site. Most of the new cycling trips would be a result of new people making a choice to cycle because of the protected cycle network and underpasses. That network is focused on removing conflicts with motor vehicles and providing safe access from neighborhoods to destinations in the adjacent area. These cycling trips will be approximately 4 to 6 miles and up to a 20-minute ride.

Carpool, Vanpool and Shared Ride Trips

Employers will have access to programs that match people to carpool services and on-demand rideshare opportunities. The commute carpools and shared rides are typically less than 30 miles.

Transit Trips

In the future, "High-Capacity Transit" services will be available within a 10-minute walk or bike ride as outlined in the City of Louisville and Boulder County Transportation Master Plans. These transit services will be accessible via a 10-minute walk or bike ride using the Complete Streets and underpasses. Local transit shuttles to High Capacity Transit stations will also be provided by partnership with the City of Louisville and private business using the operating models being piloted at the 61st and Pena Station (https://www.fulenwider.com/autonomous-shuttle-launches-in-denver.html) and the Lone Tree Link (http://www.lonetreelink.com).

Telecommute/Work From Home

Working hours which do not require commuting during peak periods (full time or part time work) as well as working from home is considered a valuable TDM strategy and this reduction in trip making is included in the non-SOV goals. As a result of changing work conditions and environments resulting from the COVID 19 pandemic, this will be an even larger reduction in historic trip making then in pre-COVID conditions.

9. Proposed TDM Program

Listed below are the TDM programs, tools and funding sources that the Redtail Ridge development will implement to achieve the project's non-SOV mode share goals. The TDM measures are explained within this letter to the detail available for the phase of development at this time. Future submittals will provide supplementary information when additional details on tenants, employees, and building locations are known. The Metro District is partnering with 36 Commuting Solutions, a local expert in transportation management solutions, to help facilitate these TDM measures.

Transit

Shuttles to High-Capacity Transit: The City of Louisville's TMP highly encourages developments to leverage existing and futures investments in transit. With this goal in mind, the Metro District will be contributing funds for a shuttle service that connects the project area to the Flatiron Flyer BRT station and to downtown Louisville. In addition, representatives of the Metro District will participate in the process which develops this shuttle service and will seek additional public and private partners, including RTD as well as neighboring entities such as Avista, Crocs and the CTC. The shuttle service could be operated with an on-demand application and/or be a fixed route service. The funds provided may be used to help contribute to the creation of the service and/or fund a portion of its initial operations. The Metro District will dedicate a fixed amount of funding at the time of building development completion and tenant occupancy. In addition, it will be a requirement of each subsequent building specific TDM program that the tenant occupying space in the development take on their proportional financial obligation in subsequent years for the operation of the shuttle service.

Employee EcoPasses: Regional Transportation District's (RTD) EcoPass is a bulk-rate, discounted

transit pass that is purchased from RTD and provides unlimited usage of RTD services including local and regional bus routes, the Skyride bus service to the airport, light rail and commuter rail. Access to free transit service has proven to be one of the most effective TDM programs for changing travel behavior and reducing the need to own a vehicle or multiple vehicles. Building on the availability of the US-36 Flatiron Flyer service and the intended future transit service planned for this area, the Metro District will encourage employee transit use by financially securing RTD EcoPasses to all employees for a period of two years. To accomplish this, the development will enter into an agreement with RTD to develop a Master Contract for all land uses within the project area. The cost of these EcoPasses through the Master Contract will be determined using RTD's regional formulas based on total number of employees within the Master Contract area. This will ensure that all employees working within the project area have access to free EcoPasses for the first two years of initial occupancy. In addition, it will be a Covenants, Conditions and Restrictions (CC&R) requirement that the tenant occupying space in the development take on their proportional financial obligation of the TDM program in subsequent years. This will ensure that employee EcoPasses are made available for all employees after the initial two years of funding is spent. Access to the *Guaranteed Ride Home Program* will be included in the Master Contract developed with RTD.

Programming and Education

TDM Coordinator: The Metro District will hire and fund, either independently or in partnership with other benefited parties, a TDM Coordinator or work with a local transportation management organization (such as 36 Commuting Solutions) to act as the TDM Coordinator, to manage the TDM program for the project area. The TDM Coordinator will provide employees with important travel information including transit maps and schedules, bicycle maps, local and regional marketing campaigns, and information on the commute benefits provided to employees. The TDM Coordinator's efforts will assist in ensuring the project's non-SOV mode share goals. In addition, the TDM coordinator would be responsible for coordinating the following programs/tools:

- *TDM Plan evaluation*: Provide periodic surveys of employee travel behavior to evaluate the TDM Plan. The survey is designed to collect anonymous travel information and takes less than 10 minutes to complete.

- *Orientation packets*: Prepare electronic orientation packets to employers that will include non-SOV program information and incentives. This information will be located on the

district website.

- *Flexible work schedules and telecommuting:* The Metro District and the TDM Coordinator will work with employers to encourage this program. Each building specific TDM plan will be encouraged to include language which supports this program. Working conditions in the Front Range, after the COVID 19 Pandemic have resulted in a much higher prevalence of telecommuting for jobs where that is possible.

Carpooling and Vanpooling

Employee Carpools and Vanpools: work with vertical developer/employers to encourage use and to implement dedicated parking for these programs on-site.

Carshare: There are a number of programs across the front range which allow persons to make use of carshare or vanpool vehicles. Use of these vehicles can limit the need for motor vehicle ownership and be a valuable component of a TDM program. Employment centers can support the use of these vehicles by provided dedicated space for these vehicles. Within the development, any land use with over 100,000 square feet of building space will allocate up to three parking spaces for dedicated carshare and/or vanpool vehicle parking. It is not intended that the development or the subsequent businesses occupying the buildings will operate either carshare or vanpool programs. Instead, the allocation of these parking spaces will be based on requests from employees who are using these services. The utilization of this service will be monitored to determine the appropriate number of spaces to allocate for carshare.

Walking and Biking

Walk and Bike Month: actively encourage employees and residents to register and participate in Bike to Work Day (June) or Winter Bike to Work Day (January).

Bicycle Access: Bicycle access to the site will be provided via Complete Streets and multi-use trails as shown on the Redtail Ridge Filing 1 Plat and supporting construction documents which connect to the existing and future bicycle infrastructure in the City of Louisville. Every structure will be accessible by bicycle.

Bicycle Parking: Future site plans will include outdoor short-term bicycle parking at a ratio consistent with Leadership in Energy and Environmental Design (LEED) commitments. Long-term bicycle

parking inside buildings or in covered parking areas will be provided at a rate of at least one secure area per building that is over 75,000 square feet of office space. The long-term parking should be a bicycle room with limited access or a caged secure area within a parking area protected from the weather, as appropriate to the use of the facility/building. At least one long-term bike parking area within the development will include a bicycle maintenance area complete with tools and air pumps for employee use. The specific design of long-term bike parking racks will be determined during final site plan development.

On-Site Bicycle Commuter Amenities: Office buildings will include showers and changing facilities for employees within the building consistent with LEED commitments. Future submittals will include detailed designs and access.

Note that all developers in the project will be required to submit a customized TDM plan for their building identifying what programs will be implemented to meet the non-SOV goals of the project and how they comply with the commitments outlined in this TDM report. Periodic surveys will be conducted by the Metro District to evaluate the TDM program effectiveness and adjustments will be made, if needed, to reach the project non-SOV goals.

10. Timeline and Funding for TDM measures

Metropolitan (Metro) Districts are a type of Colorado special district which is formed to provide services, such as Transportation, Water, Solid Waste Disposal, Sanitation and Street Maintenance and Improvement. Metro Districts are independent governmental entities formed to provide services which finance, design, install, construct, operate and or maintain public improvements not otherwise being provided. The existing Metro District will, amongst other things, manage the funding, operations, and maintenance of the TDM plan. A summation of the timeline for implementing recommended TDM strategies at different Phases of development is provided in **Table 2**. Only TDM Strategies with one-time or annual costs are included.

Table 2: Redtail Ridge TDM Plan Funding and Timeline Summation

TDM Strategy	*Timeline and Frequency*	*Amount*
Develop shuttle service	Metro District to contribute a one-time allocation for the planning and implementation of the shuttle service as a condition of Phase I occupancy permits.	Metro District paid through public RFP
Proportional yearly operational costs for shuttle service	Metro District to secure fees from property owners and/or leasees for annual allocation of proportional share of shuttle service operation. Fees provided to whomever is managing the shuttle service.	$75,000/Year
Employee EcoPasses upfront	Metro District to provide one-time allocation to secure employee EcoPasses, through Master Contract with RTD, for all employee in the initial, Phase 1. Fees paid directly to RTD.	$18,000
Long-term Employee EcoPasses	Metro District to secure funds to pay for EcoPasses through an RTD Master Contract fees in subsequent years.	$75,000/Year
Hire TDM Coordinator	Metro District to secure and maintain TDM Coordinator services	$100,000 annually - Metro District fees

SUMMARY OF PROPOSED REDTAIL RIDGE SUBDIVISION IMPROVEMENTS AGREEMENT

The developer of the Redtail Ridge Subdivision (the "Project'), Redtail Ridge Portfolio, LLC, a Delaware limited liability company (the "Developer"), in conjunction with the Redtail Metropolitan District (the "District'), a Colorado special district that has been formed to finance, design, construct, operate and maintain various public improvements associated with the Project, propose to enter into a Subdivision Improvements Agreement ("SIA") with the City of Louisville, Colorado ("City") to contain the following material terms related to the construction and maintenance of various public improvements required by the City in connection with the Project:

1. **Parties and Scope.**

The Developer and/or the District would be jointly obligated to design, construct, and complete a variety of public improvements, including public streets and sidewalks, curb and gutter, street signage, water and wastewater infrastructure, landscaping and irrigation, and drainage and stormwater control features. The Developer and/or the District would also be jointly obligated to construct, or contribute financially toward the construction of, a variety of off-site improvements, to include traffic improvements, trails, and wastewater treatment system improvements (provided that the offsite wastewater system improvements required to serve the Project are presently anticipated to be constructed by the City, with funding or reimbursement by the Developer or the District, pursuant to a separate wastewater treatment system improvements funding agreement to be finalized contemporaneously with the SIA).

2. **Engineered Plans and Specifications.**

The Developer and/or the District would procure engineered plans and specifications for all required public improvements for review and approval by the City.

3. **Financial Guarantees**.

The Developer and/or the District would provide a form of guarantee acceptable to the City to assure the installation of all required public improvements in an approved manner and in a reasonable time pursuant to Municipal Code Section 16.12.100 ("Improvement Guarantee").

4. **Infrastructure Phasing.**

The SIA would establish deadlines for completion of all required public improvements in up to two phases. These deadlines are presently anticipated to be 24 months following final plat recordation for a proposed first phase of Project infrastructure, and 36 months for completion of a second phase of Project infrastructure. The first phase would consist of necessary main arterial roads and infrastructure, including Campus Drive, Sorrell Avenue, 96th Street improvements south of Dillon Road, and wastewater treatment plant

upgrades (to be constructed by the City per separate agreement as noted above). The second phase would include all additional infrastructure necessary to support development along Rockcress Drive, as well as the completion of internal roadways. To avoid any vertical development proceeding that would require the second phase of infrastructure, the SIA would authorize the City to withhold building permits for any vertical development within PUD 3, PUD 4 or PUD 8 (see attached Phasing Plan) until Improvement Guarantees are posted for both infrastructure phases or all required infrastructure is otherwise completed and approved by the City.

5. **Streets and Offsite Traffic Improvements**.

All internal street improvements within the Project, and off-site traffic improvements required to serve the Project, would be designed and constructed by the Developer and/or the District. At this time, the Developer anticipates completing the following off-site improvements:

- Dual eastbound and westbound left-turn lanes on Dillon Road into 96th Street
- Widening 96th Street to four lane road between Dillon Road and NWPY
- New intersection at 96th Street and Dillon Road
- New intersection at 96th Street and Campus Drive
- Triple northbound left turn lanes from the Northwest Parkway onto 96th Street
- Dedicated left turn lane from southbound 88th Street to Rockcress Drive

The Developer is also currently collaborating with the Northwest Parkway to further study traffic impacts and to confirm the scope of any additional off-site traffic improvements along the Parkway corridor.

6. **Public Trails and Bicycle Lanes**.

The Developer and/or the District will design and construct public trails and/or bicycle lanes within the Project to connect to other regional trails and bicycle routes, pursuant to plans to be reviewed and approved by the City.

7. **Landscaping.**

Final landscaping plans shall be required and approved by the City prior to the installation of landscape and hardscape improvements.

8. **Drainage/Stormwater.**

The Developer and the District shall be responsible for designing and constructing all drainage improvements required to serve the Project, including a permanent stormwater facility within Tract D. No building permits shall issue until the City approves plans for all required drainage and stormwater improvements. The Developer, the District or an Owner's Association to be established for the project shall remain responsible for long-

term operation, maintenance, repair and replacement of all drainage improvements, including the stormwater facility to be located on Tract D.

9. **Street Lights.**

The Developer and the District shall be responsible for installation of all street lighting (and/or for causing Public Service Company to install the same), pursuant to plans and specifications to be reviewed and approved by the City concurrently with its review of plans for all proposed public streets within the Project. The Developer currently has a street light location exhibit and model numbers confirmed with Xcel.

10. **Water and Wastewater System Improvements.**

All required potable water delivery infrastructure to serve the Project would be designed and constructed by the Developer and/or the District. All required onsite sewage collection system components would also be designed and constructed by the Developer or the District, excepting that a lift station at the City's existing wastewater treatment plant site and other offsite wastewater treatment system upgrades required to serve the Project would be designed and constructed by the City at the cost of the Developer and/or the District pursuant to a separate wastewater system improvements funding agreement, as described above.

11. **Fire Station Parcel.**

Upon recordation of the Final Plat for the Project, the Developer would dedicate land (Tract H) to the City and/or the Louisville Fire Protection District to facilitate development of a fire station and police annex.

12. **Other Public Land and Easement Dedications.**

In connection with recordation of the Final Plat, the Developer would dedicate to the City those road rights-of-way, easements, and other dedications shown on the Final Plat, including but not limited to Tracts A, B, C, D, E, F, G, I, and K, consisting of a total of approximately 177.75 acres. Approximately an additional 47 acres north of the Project would be dedicated to Boulder County Open Space, and approximately 40 acres south of the Project would be dedicated to the City and County of Broomfield. for recreation, open space, and trail uses.

13. **Water Rights**.

The Developer would dedicate historical irrigation water rights associated with the Project property to the City in exchange for tap fee credits in accordance with City water rights dedication policies.

14. **Warranty.**

Following completion and acceptance of the public improvements by the City, the Developer and the District would provide a two-year warranty to the City.

15. **Maintenance Obligations.**

The Developer and/or the District would continue to maintain and repair the public improvements, including correction of any identified deficiencies, during the two-year warranty period after construction acceptance by the City, excepting that the City would assume immediate responsibility for snow removal from public streets and sidewalks, and ordinary maintenance responsibility for City-owned water and sewer utility infrastructure. Following completion of the two-year warranty period and correction of any deficiencies, the City will assume maintenance responsibility for all required public improvements, excepting that the District will continue to operate and maintain the public improvements to be constructed by the Developer and/or the District upon Tracts D, J and L.

16. **City Ownership.**

All water distribution infrastructure (excepting private water service lines and meters), sewage collection infrastructure (excepting individual sewer service lines)), public streets within City rights-of-way, curbs, gutters, sidewalks, public trails, would be dedicated to and owned by the City, for public use. All currently proposed irrigation systems (including irrigation within public rights-of-way) would continue to be owned by the Developer or the District.

17. **Construction Management.**

The Developer and the District would agree to take all steps necessary to control trash, debris and wind or water erosion during construction. The days and hours of construction would be limited pursuant to City Code.

18. **Breach; Enforcement.**

In the event of any breach of the SIA by the Developer or the District, after providing notice and an opportunity to cure the issue, the City may: (a) correct the same at the expense of the Developer or the District; (b) draw upon the Improvement Guarantee for purposes of completing any required public improvement; and (c) withhold any additional building permits or certificates of occupancy.

19. **Additional Agreements.**

As noted above, it is contemplated that the Developer, the District and the City will contemporaneously enter into a separate cost-sharing agreement for purposes of confirming the Project's responsibility to fund the City's design and construction of various wastewater system improvements needed to serve the Project. It is also

anticipated that additional development or improvements agreements will be required in connection with subsequent PUD approvals for individual lots within the Project.

Attachment #2o

Sterling Bay | West, LLC
100 Bayview, Suite 355
Newport Beach, California,
92660

March 24, 2023

Mr. Rob Zuccaro
Planning and Building Safety Director
City of Louisville
749 Main St
Louisville, CO 80027
Sent via email: RZuccaro@LouisvilleCo.gov

RE: Response to Plan Commission Resolution No. 13, Series 2022

Dear Mr. Zuccaro,

Below please find detailed responses to five reasons the City of Louisville Planning Commission cited as their basis of denial of the preliminary plat on December 8, 2022. For ease of review, the Plan Commissions' concerns are repeated followed by our response.

Section 2. **Based on the testimony of the witnesses and the documents and other evidence made a part of the record of the hearing before the Planning Commission, the Planning Commission finds that the proposed subdivision does not promote the following purposes set forth in Section 16.04.020 of the Louisville Municipal Code ("LMC"), or comply with the following standards set forth in LMC Chapter 16.16 and this title:**

A. The Planning Commission finds that the application from Sterling Bay (the "Applicant") for approval of the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat (the "Application") does not comply with LMC Sec. 16.16.010.D. and E., which states that natural features and vegetation must be preserved to the extent possible and a need for additional open space may be based on vegetation and the type and density of the propose development. The Applicant has not demonstrated that the proposed subdivision adequately preserves natural features, wildlife habitat and vegetation of the property. Previously undeveloped areas on the northern portion of the property include natural vegetation that could be further preserved as public or private open space with clustering of the development lots to the south.

Response: Code Section 16.16.010.D requires natural features and vegetation to "be preserved to the extent possible." Code Section 16.16.010.E generally governs the location of community facilities, parks, and open spaces, and also provides, "The need for additional

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Newport Beach, California,
92660

open space, park, and recreation areas shall be based on the following factors: the city's comprehensive plan; topography, drainage, vegetation and other physical conditions; the type and density of the proposed development; the availability of other open space, park and recreation areas; and the overall need within the proposed development for such areas."

The proposed grading of the site is necessary to meet the development's drainage requirements, so the proposal satisfies Code Section 16.16.010.D's direction to preserve vegetation and natural features "to the extent possible." We will have one of our consultants present on these issues specifically, which should help defuse concerns in this area. Staff was in support of our wildlife programs and indicated that they met the Code's requirements.

Additionally, Code Section 16.16.010.E merely states that open space, like other public use amenities, should be designed to complement the proposed development. The provision does not allow the City to deny an application simply because the proposal could be redesigned to provide more open space. The required public use dedication of 12% is provided by Code Section 16.16.060, and the actual open space we propose dedicating greatly exceeds this threshold.

B. The Planning Commission finds that the Application does not comply with LMC Sec. 16.04.020.K, which states the purpose of a subdivision is to avoid traffic congestion, based on the following:

1. According to the traffic study submitted with the Application, the US 36 and Northwest Parkway interchange reaches a Level of Service F and would need modified by the year 2027-2028 to provide additional vehicular capacity to accommodate the proposed subdivision. The Application does not include proposals for mitigation, road capacity work, or contribution to future road capacity work for the interchange, nor are future improvements planned at this time.

   Response: Code Section 16.04.020.K does not state that an applicant must demonstrate avoidance of traffic congestion; instead, the provision merely states that traffic circulation is one of the many purposes for which the City has the authority to grant a subdivision. Thus, the Resolution's statement that the application "does not comply" with Section 16.04.020.K is not technically correct. The subdivision plat results in much needed and high priority reduction in congestion and dangerous traffic patterns for Monarch High School by extending Campus Drive. The current situation is known to be a safety hazard by the School District, the City and the citizens, and there is strong

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92660

community support and school district support for the extension of Campus Drive to the east, which extension creates the issues with the NW Parkway.

2. The Application does not include a commitment from Northwest Parkway Authority for the acquisition of right of way needed to construct road capacity improvements included in the traffic study as needed to mitigate traffic congestion.

   Response: We continue to work with the NWPA regarding the improvements proposed within their right-of-way as well as the limited easements that are needed to accommodate sidewalks along sections of 96th Street.

C. The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.040 concerning block length, as some blocks proposed in the Application exceed the maximum length of 1,320 feet. Although the Applicant requested a modification pursuant to LMC Chapter 16.24 to allow longer block lengths, the Commission does not find that there are unique physical or topographical circumstances or conditions to justify the modification. Maintaining prescribed block lengths is necessary to ensure an adequate and convenient transportation system to serve the proposed subdivision.

   Response: The preliminary and final plats have been modified to decrease the parcel sizes therefore eliminating the block length maximum being exceeded.

D. The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.020.B., which states that drainage areas should be left in a natural state to the greatest extent possible. The Applicant has not demonstrated that grading of drainage areas within public opens spaces has been limited to the greatest extent possible.

   Response: The redevelopment of the project incorporates numerous criteria that were not in place when the original Storagetek campus was designed and built. Stormwater detention, water quality and drainage criteria have all become more stringent, and expansive soil conditions on the property now require over-excavation resulting in additional disturbance that we are mitigating to the greatest extent possible. We have asked our design team to scrutinize the grading limits, and they have been reduced in certain areas. While the criteria outlined in LMC Sec. 16.16.020.B is subjective in our opinion, our professional engineer and design professionals have done everything they feel possible to minimize impacts through their design of the redevelopment and feel we have satisfied the requirements of the City's municipal code and existing entitlement documents.

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Newport Beach, California,
92660

E. The Planning Commission finds that the Application does not comply with the 2010 ConocoPhillips Campus General Development Plan (GDP). The type and character of the development proposed with the Application is not consistent with the GDP and the street network does not comply with the street network shown on the GDP because it is proposed as publicly dedicated roads rather than private roads.

Response: For (1), the "permitted uses" allowed by the GDP are very broad and include commercial uses, offices, "facilities for the research, development, manufacturing, fabrication, processing, or assembly of scientific and technical products, or other products," and "other uses as established by the City Council." Thus, while our proposed uses may not be precisely the same as what Conoco Phillips was contemplating, the proposed development fits within the general character of development described in the GDP, which is not tied to the specific uses Conoco Phillips might have contemplated.

The same applies to (2), to which we will respond by quoting the GDP's statement regarding the street network: "Traffic circulation patterns depicted within and across Lot A represent internal private drives and are conceptual only and subject to modification." While the GDP mentions private drives, the statement is intended to clarify that the streets depicted in the GDP are merely conceptual and should in no way limit future development. Thus, a site plan including dedicated public streets is not inconsistent with the GDP.

Thank you and your team for your continued efforts towards finalizing the Preliminary Plat and Filing 1 Final Plat for Redtail Ridge. We are available at your convenience to review and discuss any of your comments and our responses.

Respectfully,
STERLING BAY

Evan Pesonen

Evan Pesonen
Vice President – Asset Management and Acquisitions

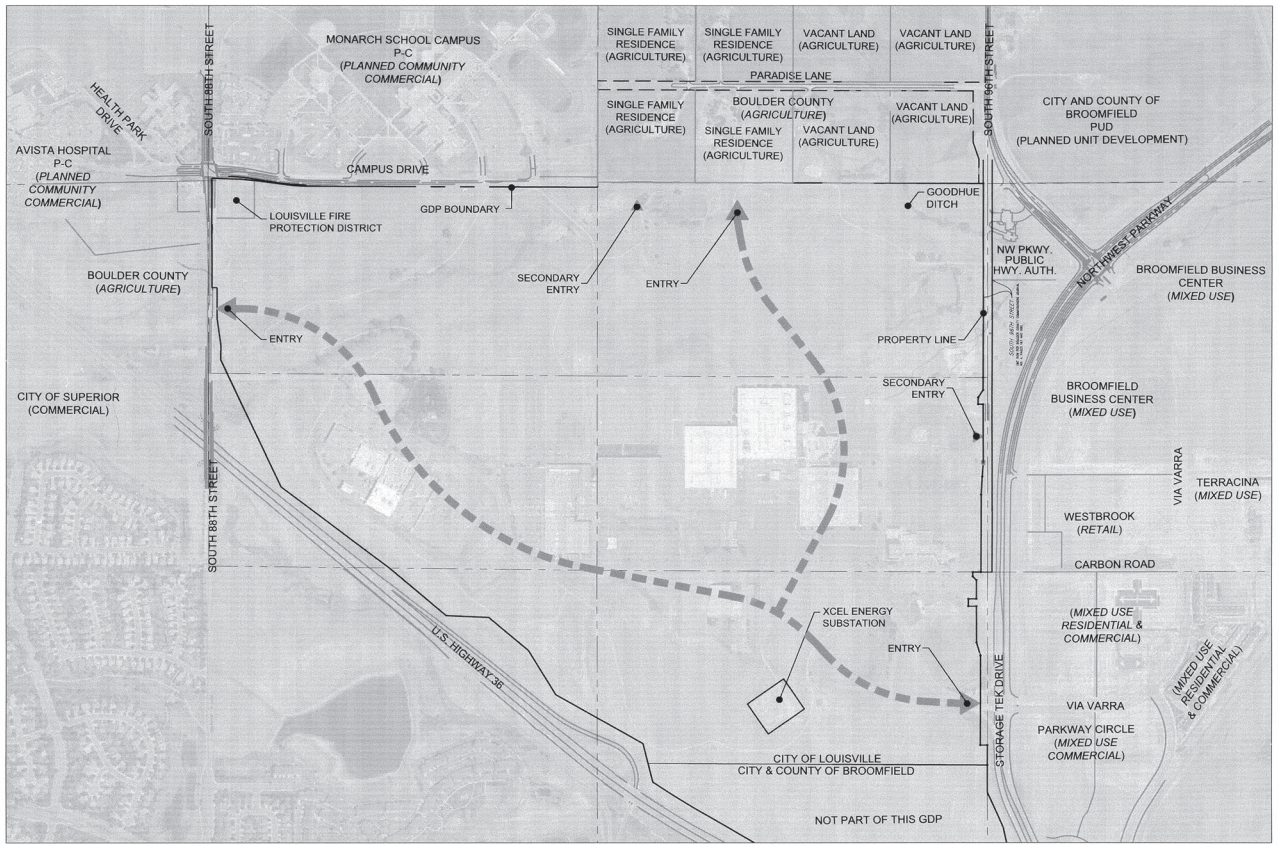
Attachment #3

03088779
Page: 1 of 1
07/30/2010 08:23 AM RF: $11.00
Boulder County Clerk, CO DF: $0.00

CONOCOPHILLIPS CAMPUS

GENERAL DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.
SHEET 1 OF 1



GENERAL DEVELOPMENT PLAN

400 200 0 400 800 N

SCALE: 1" = 400'

GENERAL NOTES:

1. DEVELOPMENT SHALL CONFORM AND BE CONSISTENT WITH THE LOUISVILLE MUNICIPAL CODE AND THE COMMERCIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES UNLESS OTHERWISE WAIVED OR MODIFIED BY THE CITY COUNCIL THROUGH THE PUD DEVELOPMENT PLAN PROCESS.
2. THE CAMPUS SECURITY BOUNDARY WILL NOT EXTEND OUTSIDE OF THE SITE BOUNDARY.
3. TRAFFIC CIRCULATION PATTERNS DEPICTED WITHIN AND ACROSS LOT A REPRESENT INTERNAL PRIVATE DRIVES AND ARE CONCEPTUAL ONLY AND SUBJECT TO MODIFICATION.
4. EXISTING FREE STANDING CMRS FACILITIES WITHIN LOT A SHALL CONSTITUTE A PERMISSIBLE NON-CONFORMING USE.
5. PUBLIC LAND DEDICATION OF AT LEAST 12% WILL COMPLY WITH SECTION 16.16.060.B OF THE LOUISVILLE MUNICIPAL CODE.

SITE INFORMATION

GROSS DEVELOPABLE AREA (PUD BOUNDARY):	391.719 ACRES (MAXIMUM 0.15 F.A.R.) FOR LEGAL DESCRIPTION SEE EXHIBIT A OF ORDINANCE NO. 1569 SERIES 2010
ZONING:	PLANNED COMMUNITY ZONED DISTRICT (PCZD) - COMMERCIAL WITH PUD-C OVERLAY
PLANNED ACCESS:	NORTHWEST PARKWAY, CAMPUS DRIVE, SOUTH 88TH STREET

PERMITTED USES

PERMITTED USE	COMMENTS / REMARKS	PARKING REQUIREMENTS
PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES	-	4 / 1,000 S.F.
EDUCATIONAL AND TRAINING FACILITIES	MEETING ROOMS AND SOCIAL SPACE FOR EMPLOYEES AND VISITORS	0.5/1000 S.F.
PRIVATE SHORT TERM LODGING FOR CONOCOPHILLIPS EMPLOYEES AND GUESTS	OVERNIGHT ACCOMMODATIONS FOR EMPLOYEES/VISITORS	0.5 / ROOM
PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS	-	-
PRIVATE, NONCOMMERCIAL, RECREATIONAL AND SOCIAL FACILITIES	-	1 / 1,000 S.F.
PARKING LOTS AND PARKING BUILDINGS	SURFACE AND STRUCTURED PARKING	-
CAMPUS ORIENTED CHILDCARE CENTER	PRIVATE CHILDCARE FOR EMPLOYEES	1.5 SPACES PER TEACHER PLUS ONE SPACE PER ADMINISTRATIVE EMPLOYEE
RESEARCH/OFFICE AND CORPORATE USES AND FACILITIES FOR THE RESEARCH, DEVELOPMENT, MANUFACTURING, FABRICATION, PROCESSING, OR ASSEMBLY OF SCIENTIFIC OR TECHNICAL PRODUCTS, OR OTHER PRODUCTS	-	1.25 / 1,000 S.F.
BUILDING MOUNTED CMRS FACILITIES	-	-
CAMPUS ORIENTED FOOD SERVICE	RESTAURANTS, CAFETERIAS, OR CAFES FOR USE BY EMPLOYEES/VISITORS INTEGRATED THROUGHOUT THE CAMPUS	-
COMMERCIAL USES, INCLUDING BUT NOT LIMITED TO BUILDING CONTRACTORS' EQUIPMENT YARDS, TRANSPORTATION CENTERS AND SERVICES, WAREHOUSES, AND STORAGE FACILITIES	STORAGE OF MATERIALS IN SUPPORT OF THE CAMPUS RESEARCH AND DEVELOPMENT FACILITY, HELIPAD (SPECIAL REVIEW USE)	1 / 1,000 S.F.
PRIVATE UTILITY USES	TO ALLOW THE EXISTING SANITARY LIFT STATION, POTENTIAL SUBSURFACE GEO EXCHANGE FIELD, SOLAR PANELS, BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES, AND CENTRAL MECHANICAL, ELECTRICAL, AND PLUMBING FACILITY	-
OTHER USES AS ESTABLISHED BY THE CITY COUNCIL AS FOUND TO BE SPECIFICALLY COMPATIBLE FOR COMMERCIAL AND OFFICE PLANNING AREAS	-	-

YARD AND BULK REQUIREMENTS

1. MAXIMUM BUILDING HEIGHTS PROPOSED ON THE PUD DEVELOPMENT PLAN EXCEED LIMITATIONS SET FORTH IN THE COMMERCIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES (CDDSG). BUILDING HEIGHTS ARE EXPECTED TO RANGE FROM 35' IN SOME AREAS, TO 65' OR 95' IN OTHER AREAS. PROPOSED MAXIMUM BUILDING HEIGHTS IN EXCESS OF CDDSG REQUIREMENTS REQUIRE CITY COUNCIL APPROVAL EITHER BY SEPARATE VESTING AGREEMENT OR THROUGH THE PUD DEVELOPMENT PLAN REVIEW PROCESS, AND ARE NOT APPROVED BY THIS GDP.

MINIMUM BUILDING SETBACKS
(FOR BUILDING FOOTPRINTS LESS THAN OR EQUAL TO 30,000 GROSS SQUARE FEET)

STREET R.O.W. LINE:
- ARTERIAL STREET 30 FT.
- COLLECTOR STREET 20 FT.
- INTERNAL/PRIVATE DRIVE 10 FT.

(FOR BUILDING FOOTPRINTS GREATER THAN OR EQUAL TO 30,000 GROSS SQUARE FEET)

STREET R.O.W. LINE:
- ARTERIAL STREET 50 FT.
- COLLECTOR STREET 40 FT.
- INTERNAL/PRIVATE DRIVE 10 FT.

MINIMUM PARKING SETBACKS
(FROM ALL PERIMETER PROPERTY LINES OR RIGHTS-OF-WAYS)
- PROPERTY LINES ADJACENT TO U.S. 36 40 FT.
- ARTERIAL STREET R.O.W. 25 FT.
- COLLECTOR STREET R.O.W. 15 FT.
- INTERNAL/COMMON PROPERTY BOUNDARY 10 FT.

CERTIFICATIONS/SIGNATURE BLOCKS

CITY COUNCIL CERTIFICATION:

APPROVED THIS 6 DAY OF APRIL, 20 10 BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO.

ORDINANCE NO. 1569, SERIES 2010.

MAYOR SIGNATURE

CITY CLERK SIGNATURE

CITY OF LOUISVILLE SEAL COLORADO

PLANNING COMMISSION CERTIFICATION:

APPROVED THIS 25 DAY OF FEBRUARY, 20 10 BY THE PLANNING COMMISSION OF THE CITY OF LOUISVILLE, COLORADO.

RESOLUTION NO. 3, SERIES 2010

CLERK AND RECORDER CERTIFICATE - COUNTY OF BOULDER, STATE OF COLORADO:

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED IN MY OFFICE AT 8:23 O'CLOCK A M., THIS 30 DAY OF July, 20 10, AND IS RECORDED IN PLAN FILE _____, FEE 11.00, PAID _____, FILM NO. _____, RECEPTION. 3088779

Hilburn Hall
CLERK AND RECORDER

DEPUTY

LOUISVILLE FIRE PROTECTION DISTRICT SIGNATURE BLOCK:

WITNESS OUR HANDS AND SEALS THIS 20th DAY OF May, 20 10

OWNER / LOUISVILLE FIRE PROTECTION DISTRICT REPRESENTATIVE

NOTARY SEAL

MY COMMISSION EXPIRES May 7 2013

May 7 2013

OWNERSHIP SIGNATURE BLOCK:

BY SIGNING THIS GDP, THE OWNER ACKNOWLEDGES AND ACCEPTS ALL THE REQUIREMENTS AND INTENT SET FORTH IN THIS GDP, WITNESS OUR HANDS AND SEALS

THIS 10th DAY OF May, 20 10

OWNER
CONOCOPHILLIPS COMPANY
A DELAWARE CORPORATION

Mark R Headley — Attorney-In-Fact
BY: SIGNATURE — TITLE

Carolyn Reeder
NOTARY NAME AND SIGNATURE
Carolyn Reeder
MY COMMISSION EXPIRES 1-31-11

h+k
2190 E 17TH AVENUE
Denver, CO 80206 USA
ƒ +1 303 832 1712
t +1 303 832 1713
PLANNER / LANDSCAPE ARCHITECT

CYL
CONSULTANTS OF COLORADO, INC.
CIVIL ENGINEERING · LAND SURVEYING
7901 E. Belleview Avenue
Suite 150
Englewood, CO 80111
Tel: (720) 482-9526
Fax: (720) 482-9546
CIVIL ENGINEER

Drexel, Barrell & Co.
Engineers/Surveyors
1800 30th Street
Boulder, CO 80301
Tel: (303) 442-4338
Fax: (303) 442-4373
SURVEYOR

ISSUE / REVISION	DATE
GDP SUBMITTAL	11/12/2009
RESUBMITTAL	2/01/2010
RESUBMITTAL	3/08/2010
RESUBMITTAL	3/29/2010
MYLAR RECORDING	4/26/2010

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

GENERAL DEVELOPMENT PLAN

DRAWN	TEAM
CHK	TEAM
PRJ #	09.01001.00

SHEET NUMBER:

1 OF 1

Attachment #4

01/25/2013 08:46 AM RF: $71.00
Boulder County Clerk, CO
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Page: 1 of 13
DF: $0.00

PLANNED COMMUNITY ZONE DISTRICT ZONING AGREEMENT
ConocoPhillips Colorado Campus General Development Plan

THIS PLANNED COMMUNITY ZONE DISTRICT ZONING AGREEMENT ("Agreement") is made and entered into this 20th day of April, 2010, by and between the CONOCOPHILLIPS COMPANY, a Delaware corporation authorized to do business in the State of Colorado, hereinafter referred to as "Owner," and the CITY OF LOUISVILLE, a Colorado home rule municipal corporation, hereinafter referred to as "Louisville" or "City." The Owner and Louisville are collectively referred to as the "Parties."

WITNESSETH:

WHEREAS, the Owner desires to enter into a Planned Community Zone District ("PCZD") zoning agreement for that land more particularly described on Exhibit "A," which is attached hereto, incorporated herein, and made a part hereof by this reference (such property is hereinafter referred to as "the Property"); and

WHEREAS, the Owner and the City acknowledge that PCZD zoning provides a mechanism by which the Owner may assemble the Property into the framework of an overall General Development Plan, in order to coordinate development, design, access, circulation, and infrastructure requirements into a unified plan; and

WHEREAS, the Owner acknowledges that the Property and the use and development of the Property will be subject to all ordinances, resolutions, and other regulations of the City of Louisville, as they may be amended from time to time; and

WHEREAS, the Owner acknowledges that the need for conveyances and dedication of certain property, including but not limited to property for right-of-ways and easements, and for public use lands, as contemplated in this Agreement, are directly related to and generated by development intended to occur within the Property and that no taking thereby will occur requiring any compensation; and

WHEREAS, the PCZD regulations of the City require such a zone district be accompanied by an agreement, and the development regulations of the City require that public improvement obligations be guaranteed in a form acceptable to the City; and

WHEREAS, this Agreement is intended to set forth mutual understandings of the Parties regarding certain matters related to the zoning and development of the Property;

NOW, THEREFORE, in consideration of the above premises and the covenants as hereinafter set forth, it is agreed by and between the Parties as follows:

1.0 GENERAL CONDITIONS.

1.1 Incorporation of Recitals. The foregoing recitals are hereby incorporated into and made a part of this Agreement.

3/5

5L

1.2 Purpose. The purpose of this Agreement is to set forth the Parties' mutual agreement and understanding concerning certain matters related to the zoning and development of the Property within the **Planned Community Zone District – Commercial ("PCZD-C")** zone district, and to set forth the Parties' agreement concerning certain matters related to the use and development of the Property, including subdivision of the Property; the requirement for submission of development and public improvement phasing and construction plans; the requirement for dedication of open space/public use lands; permissible uses of the Property; and other matters. All terms and conditions herein are in addition to all requirements concerning zoning, subdivision and development contained in the Louisville Municipal Code ("LMC"). This Agreement shall not preclude the requirement for execution of a subdivision or development agreement at the time of any subdivision or development of the Property, or other future agreements between the Parties.

1.3 PCZD-C General Development Plan. A copy of the approved **ConocoPhillips Campus General Development Plan** is set forth as Exhibit "B" attached hereto and is incorporated herein and made a part hereof by this reference. Such **ConocoPhillips Campus General Development Plan**, together with any amendments thereto as may be adopted, is hereafter referred to as the "General Development Plan." The General Development Plan shall be binding upon the Owner and shall limit and control the issuance and validity of all building and occupancy permits for the Property. The General Development Plan shall further serve to restrict and limit the construction, location, use and operation of all land and structures included within Property to all conditions and limitations set forth in the General Development Plan. Further, all development within the General Development Plan shall occur in accordance with the provisions of titles 16 and 17 of the LMC, and as a Planned Unit Development – Commercial ("PUD-C") overlay district as further described in Section 3.1, below.

1.4 Responsibility to Subdivide. The Owner agrees that, except as otherwise expressly provided in this Agreement, prior to any division of the Property for the purposes of any sale or development, and prior to commencement of any development activities (excepting only overlot grading) or construction of any structure upon any portion of the Property, the Owner shall obtain City approval of a final subdivision plat for the Property. Such subdivision request shall be processed through the City's preliminary and final subdivision process. The Owner further agrees that no portion of the Property shall be divided for the purposes of any sale or building development, and that no permits, licenses or notices to proceed for any development activities (excepting only overlot grading) or construction of any structure upon any portion of the Property shall be issued until an approved final plat and the accompanying subdivision agreement for the affected portion of the Property have been recorded in the Office of the Boulder County Clerk and Recorder. Notwithstanding the foregoing, it is expressly understood and agreed by the Parties that the Owner shall not be required to plat the Property, nor any portion thereof, prior to commencing work on existing private utilities or irrigation facilities owned by third parties, nor shall the foregoing or anything contained in this Agreement preclude phased platting and development of the Property in accordance with a City approved phasing plan.

1.5 Subdivision Agreement. Prior to the presentation and acceptance of a final subdivision plat by the City Council, the Owner shall execute a subdivision agreement with the

City that guarantees the construction of all required public improvements and completion of all landscaping improvements upon public lands set forth on the approved final PUD development plan landscape plans. The subdivision agreement may provide for phasing of public improvements; however, any phasing plan shall be acceptable to and approved by the City Council. Further, building permits, as well as approvals or notices to proceed for public improvements as set forth herein above, will be issued for only that phase of development of the Property for which the required financial guarantee has been provided. The required guarantee shall be a cash escrow or an irrevocable letter of credit in form and substance acceptable to the City. The subdivision agreement shall detail the amount, duration and terms of release of such guarantee.

1.6 Public Improvements. The Owner agrees to design, improve, construct, install and provide signage, lighting, and signalization for, all public streets and other public ways within or adjacent to the Property in accordance with City ordinances, resolutions and other applicable standards, subject to any reimbursement which may be provided for in such ordinances, resolutions, and standards. The Owner further agrees to design, improve, construct, install and provide such other utility, landscaping, parks, open space, trails and other improvements as set forth on the final subdivision plats and development plans for the Property, and to make such other improvements as required by City ordinances, resolutions and standards. The Owner shall guarantee construction of all required public improvements and, if requested by the City, shall dedicate to the City any or all such required public improvements. In addition to those improvements which may be described in Exhibit "B" of the required subdivision agreement, the Owner shall also be responsible for coordination of and payment for installation of all required on-site and off-site electric, streetlights, natural gas, telephone and utilities. All utilities shall be placed underground to the extent required by the LMC or applicable City standards.

1.7 Development Phasing. Development of the Property shall proceed in accordance with a detailed, City-approved phasing plan as established in an executed and recorded subdivision agreement. Any phasing plan shall be acceptable to and approved by the City. The phasing plan shall establish acceptable completion schedules (including deadlines within which specified public improvements serving the Property must be completed and receive construction acceptance by the City) in order for the Owner to receive building permits, certificates of occupancy or other approvals or notices to proceed in order to build, develop or occupy portions of the development. The completion of each phase of development of the Property, including completion of public and private improvements, shall occur in accordance with the completion schedules and deadlines set forth in the approved phasing plan, or City approved modifications thereof. All modifications shall be in writing and signed by the City Manager or the City Manager's designee. The Owner specifically agrees that a detailed phasing plan shall be submitted to and receive City approval prior to commencement of any development activities (excepting only overlot grading and work on existing private utilities or irrigation facilities owned by third parties) or construction of any structure upon any portion of the Property. Without limiting the foregoing, the Owner agrees that the full width of Campus Drive from 88th Street to 96th Street, including, without limitation, all roadway improvements and associated landscaping, medians, bikeways, signage and other improvements, shall be completed and receive construction acceptance as part of the first phase of improvements and by the deadline(s)

established in the subdivision agreement which shall accompany the first final subdivision plat for the Property.

1.8 Plan Submission and Approval. Prior to development and in accordance with subdivision requirements of the LMC, the Owner shall furnish to the City complete plans for each phase of public improvements. Except as otherwise expressly provided in this Agreement, the Owner shall obtain approval of each phase prior to commencing any construction work thereon. No work shall commence on any phase of improvements until the City has approved the plans therefor, the City and the Owner have executed the subdivision agreement governing such improvements, and the Owner has posted the required improvement guarantee for all public improvements in such phase of improvements. The improvement guarantee shall include, without limitation, street construction, public trail construction, improvements to public use lands, including all landscaping improvements upon public lands set forth on the approved final PUD development plan landscape plans, streetlights, public water, sewer, storm sewer, erosion control and drainage improvements. Building permits and other approvals or notices to proceed shall be issued for only that phase of the development for which said guarantee has been furnished.

1.9 Engineering Services. The Owner agrees to furnish, at its expense, all necessary engineering services relating to the design, development and construction of the Property and public improvements to serve the Property. Said engineering services shall be performed by or under the supervision of a Registered Professional Engineer or Registered Land Surveyor, or other professionals as appropriate, licensed by the State of Colorado, and in accordance with applicable Colorado law; and shall conform to the standards and criteria for public improvements as established and approved by the City as of the date of submittal to the City.

1.10 Existing Utility Capacity. The City shall provide Owner credit for the sewer and water capacity previously purchased by Storage Technology Corporation for the Property, the amount of which credit shall be mutually determined by the City and Owner and set forth in the initial subdivision agreement for the Property. The credit shall be appurtenant to and used solely for development on the Property.

1.11 It is recognized by the Parties that the City may, in the future, vacate all or a portion of the 96th Street right-of-way adjacent to the Property, and that such land, by operation of law, may revert to the Owner. In the event of such a vacation, Owner may seek to include vacated right-of-way within this Agreement by amendment to Exhibit A and within the General Development Plan pursuant to the procedures within Section 17.72.060 of the LMC.

2.0 PUBLIC USE DEDICATION.

2.1 Public Use Dedication. The Owner shall, at or prior to the recording of the first final subdivision plat for the Property, comply with the public use dedication requirements within Section 16.16.060.B. of the LMC, in order to provide for parks, open space, trails or other public use lands with respect to 309 acres of the Property, which equals the entirety of Property less and except 81 acres which the City previously released from such public use dedication requirements pursuant to an annexation agreement with Owner's predecessors in title to the Property. It is

intended that all or some portion of the required public use dedication will be to establish and enhance trail connectivity in or through the City. Therefore, if the City so requires, the Owner shall at or prior to recording of the first final subdivision plat convey to the City, by easement or fee title absolute, as the City shall determine, public land, right-of-way or a combination thereof necessary for the entirety of the public trail system as established on such plat.

Conveyance of public use land shall be by Special Warranty Deed in form and substance satisfactory to the City Manager or the City Manager's designee. The Owner shall, at Owner's expense, furnish a commitment for title insurance on any property proposed to be dedicated to the City. The property shall be free and clear of liens, taxes and encumbrances, except for ad valorem real property taxes for the year of conveyance (which shall be prorated and paid by the Owner) and thereafter, but subject to all easements, rights-of-way, reservations, restrictions, or other title burdens of record which are acceptable to the City in its discretion. The Owner shall, at its expense, cause a title policy in conformance herewith to be delivered to the City at the time of the conveyance. Nothing herein is intended to or shall be construed to affect the discretion of the Louisville Planning Commission or City Council to evaluate and approve or reject any proposed public use dedication under the criteria set forth in the LMC; to require cash payment in lieu of dedication; to require open space pursuant to Section 17.28.080 of the LMC, or to modify requirements pursuant to the provisions of Sections 16.24.020 and 17.28.110 of the LMC. The Owner acknowledges that dedications required pursuant to Section 16.16.060.B are in addition to those required by Section 16.16.060.A of the LMC.

3.0 DEVELOPMENT STANDARDS AND USES.

3.1 Development Standards. All of the Property shall be developed as a PUD-C overlay district. The PUD-C overlay requires that a preliminary Planned Unit Development ("PUD") development plan and one or more final PUD development plan(s) be submitted for development within the Property, and that such development occur in accordance with the Commercial Development Design Standards and Guidelines ("CDDSG") and PUD-C standards and criteria in the LMC, subject to such waivers or modifications of applicable requirements as are approved through the PUD development plan approval process.

3.2 Development Density. The maximum density for the Property shall be as set forth in the General Development Plan. It is acknowledged that application of City development standards and criteria may serve to limit or prevent development of density upon the Property.

3.3 Permitted Uses. Uses of the Property are limited to those uses specifically set forth on the General Development Plan, and to such other uses as established by the City Council as found to be specifically compatible for commercial and office planning areas. No permitted uses may be commenced unless the City has approved a preliminary and final PUD development plan for such use pursuant to the PUD procedures, standards and criteria set forth in the LMC, as in effect from time to time. It is acknowledged that application of the foregoing standards and criteria may serve to limit or prevent development of particular uses and/or density upon the Property. Uses not expressly listed on the General Development Plan, or otherwise established by the City Council in the LMC as found to be specifically compatible for commercial and office planning areas are prohibited, and the City shall have the right to pursue an action for injunctive

relief to require cessation of any prohibited use or to require the Owner's compliance with provisions of the General Development Plan.

3.4 Traffic Demand Management Plan. The Owner agrees that the first final subdivision plat and final PUD development plan for the Property shall be accompanied by a comprehensive traffic demand management ("TDM") plan. The TDM plan shall cover the entire Property and all anticipated phases of development of the Property. The TDM plan shall detail the improvements, programs and strategies the Owner intends to implement in its development and use of the Property to reduce vehicle trips, manage transportation demands, and encourage the use of alternative modes of transportation. The Owner agrees to give consideration to comments on the TDM plan that are received from the City and other real parties in interest. The Owner further agrees to adopt a TDM plan prior to initial occupancy of the Property, to update the TDM plan from time to time, and to use commercially reasonable efforts to implement the TDM plan. The requirement herein for the Owner to adopt a TDM plan is in addition to compliance with applicable procedures, standards and criteria set forth in the LMC.

4.0 MISCELLANEOUS PROVISIONS.

4.1 Reference to Amendment. As used in this Agreement, unless otherwise specifically provided herein or in any separate vesting agreement, any reference to any provision of any City ordinance, resolution, rule, regulation, standard or policy is intended to refer to any subsequent amendments or revisions thereto, and the Parties agree such amendments or revisions shall be binding upon the Owner.

4.2 Binding Agreement. As used in this Agreement, the term "Owner" includes the undersigned Owner and any of the transferees, successors, or assigns of the undersigned Owner, and all such parties shall have the right to enforce this Agreement, and shall be subject to the terms of this Agreement, as if they were the original Parties thereto. This Agreement shall be binding upon and inure to the benefit of the transferees, successors, and assigns hereof, and shall constitute covenants running with the land. This Agreement shall be recorded with the County Clerk of Boulder County, Colorado, at the Owner's expense.

4.3 Remedies and Vested Rights. The Parties agree that they shall work cooperatively and use reasonable best efforts to resolve any dispute arising under or relating to this Agreement prior to pursuing any available legal or equitable remedies for the alleged breach of any provision hereof. The Owner acknowledges that certain actions, such as the review of subdivision plats and site-specific development plans are matters of quasi-judicial discretion, and no promises or assurances of favorable exercise of such discretion have been made to or relied upon by the Owner. The Owner further acknowledges that this Agreement does not constitute a vested rights agreement pursuant to C.R.S. 24-68-101 et seq. or Chapter 17.54 of the LMC.

4.4 Conformity with Laws. The Owner agrees that the design, improvement, construction, development, and use of the Property shall be in conformance with, and that the Owner shall comply with, all City ordinances and resolutions including, without limitation, ordinances and resolutions pertaining to subdivision, zoning, storm drainage, utilities, and flood control.

4.5 No Repeal of Laws. Nothing contained in this Agreement shall constitute or be interpreted as a repeal of the City's ordinances or resolutions, or as a waiver of the City's legislative, governmental, or police powers to promote and protect the health, safety, and welfare of the City and its inhabitants; nor shall this Agreement prohibit the enactment or increase by the City of any tax or fee.

4.6 Amendment. This Agreement may be amended by the City and any Owner of the Property or any portion thereof without the consent of any other Owner as long as such amendment affects only that portion of the Property owned by such Owner at the time of such amendment. Such amendments shall be in writing and recorded with the County Clerk of Boulder County.

4.7 Construction. In the event of any direct and express conflict between any provision of this Agreement and any provision of an annexation agreement affecting any portion of the property, this Agreement shall control. This Agreement is not intended to nor shall it be deemed to confer any rights on third parties. The laws of the State of Colorado shall govern the validity, performance, and enforcement of this Agreement. Should either party institute legal suit or action for enforcement of any obligation contained herein, it is agreed that the venue of such suit or action shall be in Boulder County, Colorado or the federal district courts for Colorado. The paragraph headings in this Agreement shall not be used in the construction or interpretation hereof as they have no substantive effect and are for convenience only.

OWNER:
ConocoPhillips Company, a Delaware corporation

By: Mark R. Headley
Name: Mark R. Headley
Title: Attorney-in-Fact

ACKNOWLEDGEMENT

STATE OF Oklahoma)
)ss
COUNTY OF Washington)

The above and foregoing signature of Mark R. Headley, as Attorney-in-Fact of ConocoPhillips Company, a Delaware corporation, was subscribed and sworn to before me this 15 day of April, 2010.

Witness my hand and official seal.

My commission expires on: 8/21/11.

(SEAL) SANDRA PARKS NOTARY # 07007859 EXP. 08/21/11 PUBLIC STATE OF OKLAHOMA

Sandra Parks

CITY OF LOUISVILLE,
a Colorado home rule municipal corporation

By:_____
Charles Sisk
Mayor

ATTEST:

Nancy Varra
City Clerk

Exhibit "A"
Legal Description of ConocoPhillips Colorado Campus Property

A TRACT OF LAND LOCATED IN THE S1/2 OF SECTION 20 AND IN THE N1/2 OF THE N1/2 OF SECTION 29, T1S, R69W OF THE 6TH P.M., COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE EAST LINE OF THE SE1/4 OF SECTION 20 ASSUMED TO BEAR N00°02'11"W.

COMMENCING AT THE E1/4 CORNER OF SAID SECTION 20, THENCE N89°48'41"W, 30.00 FEET ALONG THE NORTH LINE OF THE SE1/4 OF SAID SECTION 20 TO THE WEST LINE OF THE EAST 30 FEET OF THE SE1/4 OF SAID SECTION 20 AND THE TRUE POINT OF BEGINNING;
THENCE S00°02'11"E, 1412.21 FEET PARALLEL WITH THE EAST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 2386686 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHWESTERLY, WESTERLY AND SOUTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 2386686 THE FOLLOWING THREE (3) COURSES:
1) S33°27'49"W, 60.64 FEET;
2) S01°40'51"W, 45.12 FEET;
3) S88°19'09"E, 34.84 FEET TO THE WEST LINE OF THE EAST 30 FEET OF THE SE1/4 OF SAID SECTION 20;
THENCE S00°02'11"E, 404.21 FEET PARALLEL WITH THE EAST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE MOST NORTHERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED AS PARCEL TK-71 IN DEED RECORDED AT RECEPTION NO. 2309730 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE WESTERLY LINES OF PARCEL TK-71 AND PARCEL TK-71-1 AS DESCRIBED AT SAID RECEPTION NO. 2309730 THE FOLLOWING THREE (3) COURSES:
1) SOUTHERLY, 86.27 FEET ALONG THE ARC OF A CURVE CONCAVE TO THE EAST TO A POINT TANGENT, SAID ARC HAVING A RADIUS OF 2441.83 FEET, A CENTRAL ANGLE OF 02°01'28" AND BEING SUBTENDED BY A CHORD THAT BEARS S04°26'51"W, 86.27 FEET;
2) S03°26'07"W, 124.37 FEET;
3) S00°02'11"E, 529.70 FEET TO THE SOUTH LINE OF SAID SECTION 20 AND THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT D IN DEED RECORDED ON FILM 2088 AT RECEPTION NO. 1560711 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHERLY AND WESTERLY LINES OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT D ON SAID FILM 2088 AT RECEPTION NO. 1560711 THE FOLLOWING FOUR (4) COURSES:
1) N89°43'22"W, 55.72 FEET;
2) S00°00'51"W, 30.00 FEET;
3) S44°51'10"E, 35.44 FEET;
4) S00°00'51"W, 127.21 FEET TO THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED ON FILM 1229 AT RECEPTION NO. 520800 OF THE

RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHERLY, WESTERLY AND SOUTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED ON SAID FILM 1229 AT RECEPTION NO. 520800 THE FOLLOWING THREE (3) COURSES:
1) N89°59'09"W, 55.00 FEET;
2) S00°00'51"W, 50.00 FEET;
3) S89°59'09"E, 55.00 FEET TO THE WEST LINE OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT C ON SAID FILM 2088 AT RECEPTION NO. 1560711;
THENCE ALONG THE WESTERLY LINES OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT C ON SAID FILM 2088 AT RECEPTION NO. 1560711 THE FOLLOWING TWO (2) COURSES:
1) S00°00'51"W, 247.79 FEET;
2) S16°40'10"E, 93.73 FEET TO THE WESTERLY LINE OF PARCEL TK-75 AS DESCRIBED AT SAID RECEPTION NO 2309730;
THENCE ALONG THE WESTERLY AND SOUTHERLY LINES OF PARCEL TK-75 AS DESCRIBED AT SAID RECEPTION NO. 2309730 THE FOLLOWING TWO (2) COURSES:
1) S00°00'51"W, 611.16 FEET
2) S89°48'29"E, 48.09 FEET TO THE EAST LINE OF THE NE1/4 OF SAID SECTION 29;
THENCE S00°00'51"W, 136.13 FEET ALONG THE EAST LINE OF THE NE1/4 OF SAID SECTION 29 TO THE SOUTHEAST CORNER OF PARCEL 5 AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 2906901 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE N89°43'22"W, 2308.90 FEET PARALLEL WITH THE NORTH LINE OF THE NE1/4 OF SAID SECTION 29 TO THE NORTHEASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 36 AS DESCRIBED AS PARCEL E IN DEED RECORDED AT RECEPTION NO. 2013403 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 36 AS DESCRIBED AS PARCELS E, B AND C AT SAID RECEPTION NO. 2013403 AND IN DEEDS RECORDED IN BOOK 878 AT PAGE 507 AND BOOK 880 AT PAGE 98 OF THE RECORDS OF BOULDER COUNTY, COLORADO, THE FOLLOWING EIGHT (8) COURSES:
1) N14°10'39"W, 139.83 FEET;
2) N60°40'32"W, 682.73 FEET;
3) N31°43'34"W, 355.23 FEET;
4) N50°05'55"W, 351.45 FEET;
5) N87°28'56"W, 291.28 FEET;
6) N50°04'31"W, 504.79 FEET;
7) N53°12'12"W, 923.62 FEET;
8) N25°29'10"W, 857.10 FEET TO THE NORTH LINE OF THE S1/2 OF THE SW1/4 OF SAID SECTION 20;
THENCE S89°35'16"E, 0.64 FEET ALONG THE NORTH LINE OF THE S1/2 OF THE SW1/4 OF SAID SECTION 20 TO THE MOST EASTERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED IN BOOK 878 AT PAGE 503 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE N25°38'10"W, 103.33 FEET ALONG THE EASTERLY LINE OF THAT TRACT OF LAND AS DESCRIBED IN SAID BOOK 878 AT PAGE 503 TO THE EASTERLY LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 1989419 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE EASTERLY AND NORTHERLY LINES OF THAT TRACT OF LAND

AS DESCRIBED AT SAID RECEPTION NO. 1989419 THE FOLLOWING FOUR (4) COURSES:
1) N00°57'04"E, 95.84 FEET;
2) N08°19'13"W, 184.77 FEET;
3) N00°09'40"W, 213.70 FEET;
4) S89°50'20"W, 59.06 FEET TO THE WEST LINE OF THE N1/2 OF THE SW1/4 OF SAID SECTION 20;
THENCE N00°09'40"W, 473.73 FEET ALONG THE WEST LINE OF THE N1/2 OF THE SW1/4 OF SAID SECTION 20 TO THE SOUTH LINE EXTENDED WESTERLY OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 1819920 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE S89°48'41"E, 290.23 FEET ALONG THE SOUTH LINE EXTENDED WESTERLY AND ALONG THE SOUTH LINE OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1819920 TO THE SOUTHEAST CORNER THEREOF;
THENCE N00°09'40"W, 256.00 FEET ALONG THE EAST LINE OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1819920 TO THE NORTH LINE OF THE SW1/4 OF SAID SECTION 20;
THENCE S89°48'41"E, 50.03 FEET ALONG THE NORTH LINE OF THE SW1/4 OF SAID SECTION 20 TO THE MOST WESTERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED ON FILM 2169 AT RECEPTION NO. 1658713 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND AS DESCRIBED ON SAID FILM 2169 AT RECEPTION NO. 1658713 THE FOLLOWING THREE (3) COURSES:
1) S82°25'31"E, 202.22 FEET TO A POINT OF CURVE TO THE LEFT;
2) SOUTHEASTERLY, 139.86 FEET ALONG THE ARC OF SAID CURVE TO A POINT TANGENT, SAID ARC HAVING A RADIUS OF 1085.00 FEET, A CENTRAL ANGLE OF 07°23'09" AND BEING SUBTENDED BY A CHORD THAT BEARS S86°07'07"E, 139.77 FEET;
3) S89°48'41"E, 1975.06 FEET TO THE WEST LINE OF THE SE1/4 OF SAID SECTION 20;
THENCE N00°02'10"E, 35.00 FEET ALONG THE WEST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE CENTER 1/4 CORNER OF SAID SECTION 20; THENCE S89°48'41"E, 2625.65 FEET ALONG THE NORTH LINE OF THE SE1/4 OF SAID SECTION 20 TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PORTION CONVEYED TO PUBLIC SERVICE COMPANY OF COLORADO BY DEED RECORDED FEBRUARY 3, 1983 ON FILM 1238 AS RECEPTION NO. 531604 OF THE RECORDS OF BOULDER COUNTY, COLORADO.

AREA= 390.013 ACRES, MORE OR LESS
LEGAL DESCRIPTION PREPARED BY:
WILLIAM K. WRIGHT, PLS #23529
DREXEL, BARRELL & CO.
1800 38TH STREET
BOULDER, CO 80301

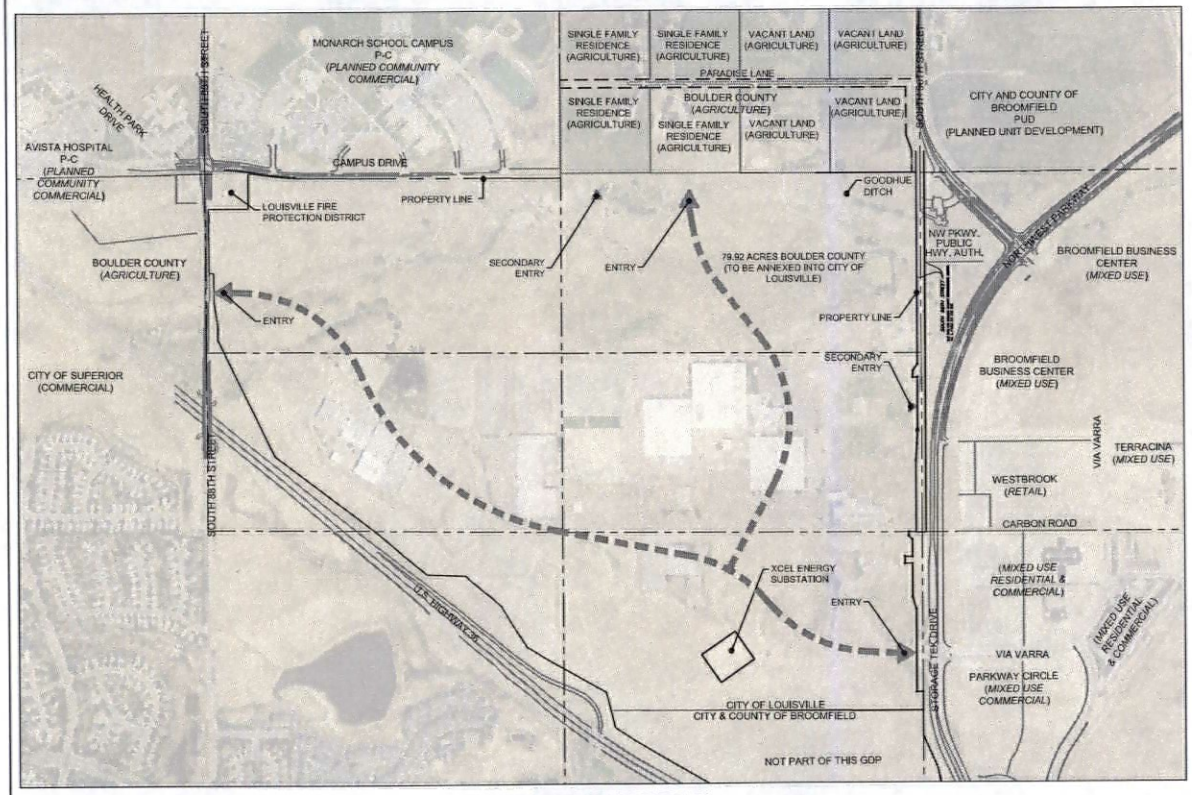
Exhibit "B"
Copy of ConocoPhillips Colorado Campus General Development Plan

CONOCOPHILLIPS CAMPUS

GENERAL DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

SHEET 1 OF 1



GENERAL DEVELOPMENT PLAN

400 200 0 400 800

SCALE: 1" = 400'

GENERAL NOTES:

1. DEVELOPMENT SHALL CONFORM AND BE CONSISTENT WITH THE LOUISVILLE MUNICIPAL CODE AND THE COMMERCIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES UNLESS OTHERWISE WAIVED OR MODIFIED BY THE CITY COUNCIL THROUGH THE PUD DEVELOPMENT PLAN PROCESS.
2. THE CAMPUS SECURITY BOUNDARY WILL NOT EXTEND OUTSIDE OF THE SITE BOUNDARY.
3. TRAFFIC CIRCULATION PATTERNS DEPICTED WITHIN AND ACROSS LOT A REPRESENT INTERNAL PRIVATE DRIVES AND ARE CONCEPTUAL ONLY AND SUBJECT TO MODIFICATION.
4. EXISTING FREE STANDING CMRS FACILITIES WITHIN LOT A SHALL CONSTITUTE A PERMISSIBLE NON-CONFORMING USE.
5. PUBLIC LAND DEDICATION OF AT LEAST 12% WILL COMPLY WITH SECTION 16.16.280.B OF THE LOUISVILLE MUNICIPAL CODE.

SITE INFORMATION

GROSS DEVELOPABLE AREA (PUD BOUNDARY):	382.213 ACRES (MAXIMUM 0.15 F.A.R.)
ZONING:	PLANNED COMMUNITY ZONED DISTRICT (PCZD) - COMMERCIAL WITH PUD-C OVERLAY
PLANNED ACCESS:	NORTHWEST PARKWAY CAMPUS DRIVE, SOUTH 88TH STREET

PERMITTED USES

PERMITTED USE	COMMENTS / REMARKS	PARKING REQUIREMENTS
PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES	-	4 / 1,000 S.F.
EDUCATIONAL AND TRAINING FACILITIES	MEETING ROOMS AND SOCIAL SPACE FOR EMPLOYEES AND VISITORS	0.5/1000 S.F.
PRIVATE SHORT TERM LODGING FOR CONOCOPHILLIPS EMPLOYEES AND GUESTS	OVERNIGHT ACCOMMODATIONS FOR EMPLOYEES/VISITORS	0.5 / ROOM
PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS	-	-
PRIVATE, NONCOMMERCIAL RECREATIONAL AND SOCIAL FACILITIES	-	1 / 1,000 S.F.
PARKING LOTS AND PARKING BUILDINGS	SURFACE AND STRUCTURED PARKING	-
CAMPUS ORIENTED CHILDCARE CENTER	PRIVATE CHILDCARE FOR EMPLOYEES	1.5 SPACES PER TEACHER PLUS ONE SPACE PER ADMINISTRATIVE EMPLOYEE
RESEARCH/OFFICE AND CORPORATE USES AND FACILITIES FOR THE RESEARCH, DEVELOPMENT, MANUFACTURING, FABRICATION, PROCESSING, OR ASSEMBLY OF SCIENTIFIC OR TECHNICAL PRODUCTS, OR OTHER PRODUCTS	-	1.25 / 1,000 S.F.
BUILDING MOUNTED CMRS FACILITIES	-	-
CAMPUS ORIENTED FOOD SERVICE	RESTAURANTS, CAFETERIAS, OR CAFES FOR USE BY EMPLOYEES/VISITORS INTEGRATED THROUGHOUT THE CAMPUS	-
COMMERCIAL USES, INCLUDING BUT NOT LIMITED TO BUILDING CONTRACTORS' EQUIPMENT YARDS, TRANSPORTATION CENTERS AND SERVICES, WAREHOUSES, AND STORAGE FACILITIES	STORAGE OF MATERIALS IN SUPPORT OF THE CAMPUS RESEARCH AND DEVELOPMENT FACILITY. HELIPAD (SPECIAL REVIEW USE)	1 / 1,000 S.F.
PRIVATE UTILITY USES	TO ALLOW THE EXISTING SANITARY LIFT STATION, POTENTIAL SUBSURFACE GEO EXCHANGE FIELD, SOLAR PANELS, BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES, AND CENTRAL MECHANICAL, ELECTRICAL AND PLUMBING FACILITY	-
OTHER USES AS ESTABLISHED BY THE CITY COUNCIL AS FOUND TO BE SPECIFICALLY COMPATIBLE FOR COMMERCIAL AND OFFICE PLANNING AREAS	-	-

YARD AND BULK REQUIREMENTS

1. MAXIMUM BUILDING HEIGHTS PROPOSED ON THE PUD DEVELOPMENT PLAN EXCEED LIMITATIONS SET FORTH IN THE COMMERCIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES (CDDSG). BUILDING HEIGHTS ARE EXPECTED TO RANGE FROM 35' IN SOME AREAS, TO 60' OR 80' IN OTHER AREAS. PROPOSED MAXIMUM BUILDING HEIGHTS IN EXCESS OF CDDSG REQUIREMENTS REQUIRE CITY COUNCIL APPROVAL EITHER BY SEPARATE VESTING AGREEMENT OR THROUGH THE PUD DEVELOPMENT PLAN REVIEW PROCESS, AND ARE NOT APPROVED BY THIS GDP.

MINIMUM BUILDING SETBACKS
(FOR BUILDING FOOTPRINTS LESS THAN OR EQUAL TO 30,000 GROSS SQUARE FEET)

STREET R.O.W. LINE:
- ARTERIAL STREET 30 FT.
- COLLECTOR STREET 20 FT.
- INTERNAL/PRIVATE DRIVE 10 FT.

(FOR BUILDING FOOTPRINTS GREATER THAN OR EQUAL TO 30,000 GROSS SQUARE FEET)

STREET R.O.W. LINE:
- ARTERIAL STREET 50 FT.
- COLLECTOR STREET 40 FT.
- INTERNAL/PRIVATE DRIVE 10 FT.

MINIMUM PARKING SETBACKS
(FROM ALL PERIMETER PROPERTY LINES OR RIGHTS-OF-WAYS)
- PROPERTY LINES ADJACENT TO U.S. 36 40 FT.
- ARTERIAL STREET R.O.W. 25 FT.
- COLLECTOR STREET R.O.W. 15 FT.
- INTERNAL/COMMON PROPERTY BOUNDARY 10 FT.

CERTIFICATIONS/SIGNATURE BLOCKS

CITY COUNCIL CERTIFICATION:

APPROVED THIS ____ DAY OF _____, 20____ BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO.

ORDINANCE NO. _____ SERIES _____.

CITY SEAL

MAYOR SIGNATURE

CITY CLERK SIGNATURE

PLANNING COMMISSION CERTIFICATION:

APPROVED THIS ____ DAY OF _____, 20____ BY THE PLANNING COMMISSION OF THE CITY OF LOUISVILLE, COLORADO.

RESOLUTION NO. _____ SERIES____.

CLERK AND RECORDER CERTIFICATE - COUNTY OF BOULDER, STATE OF COLORADO:

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED IN MY OFFICE AT ____ O'CLOCK ____ M., THIS ____ DAY OF _____, 20____ AND IS RECORDED IN PLAN FILE _____ FEE _____ PAID _____ FILM NO. _____ RECEPTION _____.

CLERK AND RECORDER

DEPUTY

OWNERSHIP SIGNATURE BLOCK:

BY SIGNING THIS GDP, THE OWNER ACKNOWLEDGES AND ACCEPTS ALL THE REQUIREMENTS AND INTENT SET FORTH IN THIS GDP, WITNESS OUR HANDS AND SEALS

THIS ____ DAY OF _____, 20____.

OWNER
CONOCOPHILLIPS COMPANY
A DELAWARE CORPORATION

BY: SIGNATURE

TITLE

NOTARY NAME AND SIGNATURE

MY COMMISSION EXPIRES _____.

2100 E 97TH AVENUE
Denver, CO 80229 USA
t +1 303 832 1712
f +1 303 832 1712
PLANNER // LANDSCAPE ARCHITECT

CONSULTANTS OF COLORADO, INC.
CIVIL ENGINEERS LAND SURVEYORS
7901 E. Belleview Avenue
Suite 150
Englewood, CO 80111
Tel: (720) 482-9576
Fax: (720) 482-9546
CIVIL ENGINEER

Dietzel, Burrell & Co.
Engineers/Surveyors
1800 30th Street
Boulder, CO 80301
Tel: (303) 442-4338
Fax: (303) 442-4373
SURVEYOR

ISSUE / REVISION	DATE
GDP SUBMITTAL	10/2009
RESUBMITTAL	05/2010
RESUBMITTAL	09/2010
RESUBMITTAL	03/2011

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

GENERAL DEVELOPMENT PLAN

DRAWN	TEAM
CHK	TEAM
PROJ #	10.0100.20

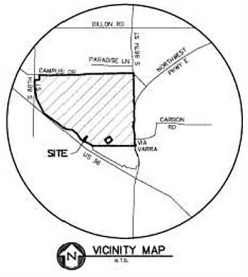
SHEET NUMBER

1 OF 1

CONOCOPHILLIPS CAMPUS

PRELIMINARY PLAT

A RESUBDIVISION OF STORAGETEK BUILDING SIX SUBDIVISION AND A SUBDIVISION OF A TRACT OF LAND LOCATED IN THE S1/2 OF SECTION 20 AND IN THE N1/2 OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.
COUNTY OF BOULDER, STATE OF COLORADO
AREA = 390.013 ACRES, MORE OR LESS
SHEET 1 OF 3



LEGAL DESCRIPTION

A TRACT OF LAND LOCATED IN THE S1/2 OF SECTION 20 AND IN THE N1/2 OF THE N1/2 OF SECTION 29, T1S, R69W OF THE 6TH P.M., COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE EAST LINE OF THE SE1/4 OF SECTION 20 ASSUMED TO BEAR N00°02'11"W.

COMMENCING AT THE E1/4 CORNER OF SAID SECTION 20, THENCE N89°48'41"W, 30.00 FEET ALONG THE NORTH LINE OF THE SE1/4 OF SAID SECTION 20 TO THE WEST LINE OF THE EAST 30 FEET OF THE SE1/4 OF SAID SECTION 20 AND THE TRUE POINT OF BEGINNING;
THENCE S00°02'11"E, 1412.21 FEET PARALLEL WITH THE EAST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 2386686 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHWESTERLY, WESTERLY AND SOUTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 2386686 THE FOLLOWING THREE (3) COURSES:
1) S33°27'49"W, 60.64 FEET;
2) S01°40'51"W, 45.12 FEET;
3) S88°19'09"E, 34.84 FEET TO THE WEST LINE OF THE EAST 30 FEET OF THE SE1/4 OF SAID SECTION 20;
THENCE S00°02'11"E, 404.21 FEET PARALLEL WITH THE EAST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE MOST NORTHERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED AS PARCEL TK-71 IN DEED RECORDED AT RECEPTION NO. 2309730 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE WESTERLY LINES OF PARCEL TK-71 AND PARCEL TK-71-1 AS DESCRIBED AT SAID RECEPTION NO. 2309730 THE FOLLOWING THREE (3) COURSES:
1) SOUTHERLY, 66.27 FEET ALONG THE ARC OF A CURVE CONCAVE TO THE EAST TO A POINT TANGENT, SAID ARC HAVING A RADIUS OF 2441.83 FEET, A CENTRAL ANGLE OF 02°01'26" AND BEING SUBTENDED BY A CHORD THAT BEARS S04°26'51"W, 66.27 FEET;
2) S03°28'07"W, 124.37 FEET;
3) S00°02'11"E, 529.70 FEET TO THE SOUTH LINE OF SAID SECTION 20 AND THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT D IN DEED RECORDED ON FILM 2088 AT RECEPTION NO. 1560711 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHERLY AND WESTERLY LINES OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT D ON SAID FILM 2088 AT RECEPTION NO. 1560711 THE FOLLOWING FOUR (4) COURSES:
1) N89°43'22"W, 55.72 FEET;
2) S00°00'51"W, 30.00 FEET;
3) S44°51'10"E, 35.44 FEET;
4) S00°00'51"W, 127.21 FEET TO THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED ON FILM 1229 AT RECEPTION NO. 520800 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHERLY, WESTERLY AND SOUTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED ON SAID FILM 1229 AT RECEPTION NO. 520800 THE FOLLOWING THREE (3) COURSES:
1) N89°59'09"E, 55.00 FEET;
2) S00°00'51"W, 50.00 FEET;
3) S89°59'09"E, 55.00 FEET TO THE WEST LINE OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT C ON SAID FILM 2088 AT RECEPTION NO. 1560711;
THENCE ALONG THE WESTERLY LINES OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT C ON SAID FILM 2088 AT RECEPTION NO. 1560711 THE FOLLOWING TWO (2) COURSES:
1) S00°00'51"W, 247.79 FEET;
2) S16°40'10"E, 93.73 FEET TO THE WESTERLY LINE OF PARCEL IK-75 AS DESCRIBED AT SAID RECEPTION NO 2309730;
THENCE ALONG THE WESTERLY AND SOUTHERLY LINES OF PARCEL TK-75 AS DESCRIBED AT SAID RECEPTION NO. 2309730 THE FOLLOWING TWO (2) COURSES:
1) S00°00'51"W, 611.16 FEET;
2) S89°48'29"E, 48.09 FEET TO THE EAST LINE OF THE NE1/4 OF SAID SECTION 29;
THENCE S00°00'51"W, 136.13 FEET ALONG THE EAST LINE OF THE NE1/4 OF SAID SECTION 29 TO THE SOUTHEAST CORNER OF PARCEL 5 AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 2906901 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE N89°43'22"W, 2308.90 FEET PARALLEL WITH THE NORTH LINE OF THE NE1/4 OF SAID SECTION 29 TO THE NORTHEASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 36 AS DESCRIBED AS PARCEL E IN DEED RECORDED AT RECEPTION NO. 2013403 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 36 AS DESCRIBED AS PARCELS E, B AND C AT SAID RECEPTION NO. 2013403 AND IN DEEDS RECORDED IN BOOK 878 AT PAGE 507 AND BOOK 880 AT PAGE 98 OF THE RECORDS OF BOULDER COUNTY, COLORADO, THE FOLLOWING EIGHT (8) COURSES:
1) N14°10'38"W, 139.83 FEET;
2) N60°40'32"W, 682.73 FEET;
3) N31°43'34"W, 353.23 FEET;
4) N50°05'50"W, 354.45 FEET;
5) N87°28'56"W, 291.28 FEET;
6) N50°04'31"W, 304.79 FEET;
7) N53°12'12"W, 923.62 FEET;
8) N25°29'10"W, 857.10 FEET TO THE NORTH LINE OF THE S1/2 OF THE SW1/4 OF SAID SECTION 20;

LEGAL DESCRIPTION (CONT'D)

THENCE S89°35'16"E, 0.84 FEET ALONG THE NORTH LINE OF THE S1/2 OF THE SW1/4 OF SAID SECTION 20 TO THE MOST EASTERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED IN BOOK 878 AT PAGE 503 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE N25°38'10"W, 103.33 FEET ALONG THE EASTERLY LINE OF THAT TRACT OF LAND AS DESCRIBED IN SAID BOOK 878 AT PAGE 503 TO THE EASTERLY LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 1989419 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE EASTERLY AND NORTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1989419 THE FOLLOWING FOUR (4) COURSES:
1) N00°57'04"E, 95.84 FEET;
2) N08°19'13"W, 184.77 FEET;
3) N00°09'40"W, 213.70 FEET;
4) S89°50'20"W, 59.08 FEET TO THE WEST LINE OF THE N1/2 OF THE SW1/4 OF SAID SECTION 20;
THENCE N00°09'40"W, 473.73 FEET ALONG THE WEST LINE OF THE N1/2 OF THE SW1/4 OF SAID SECTION 20 TO THE SOUTH LINE EXTENDED WESTERLY OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 1819920 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE S89°48'41"E, 280.23 FEET ALONG THE SOUTH LINE EXTENDED WESTERLY AND ALONG THE SOUTH LINE OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1819920 TO THE SOUTHEAST CORNER THEREOF;
THENCE N00°09'0"W, 256.00 FEET ALONG THE EAST LINE OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1819920 TO THE NORTH LINE OF THE SW1/4 OF SAID SECTION 20;
THENCE S89°48'41"E, 50.03 FEET ALONG THE NORTH LINE OF THE SW1/4 OF SAID SECTION 20 TO THE MOST WESTERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED ON FILM 2169 AT RECEPTION NO. 1658713 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND AS DESCRIBED ON SAID FILM 2169 AT RECEPTION NO. 1658713 THE FOLLOWING THREE (3) COURSES:
1) S82°25'31"E, 202.22 FEET TO A POINT OF CURVE TO THE LEFT;
2) SOUTHEASTERLY, 139.86 FEET ALONG THE ARC OF SAID CURVE TO A POINT TANGENT, SAID ARC HAVING A RADIUS OF 1085.00 FEET, A CENTRAL ANGLE OF 07°23'09" AND BEING SUBTENDED BY A CHORD THAT BEARS S86°07'07"E, 139.77 FEET;
3) S89°48'41"E, 1975.06 FEET TO THE WEST LINE OF THE SE1/4 OF SAID SECTION 20;
THENCE N00°02'10"E, 35.00 FEET ALONG THE WEST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE CENTER 1/4 CORNER OF SAID SECTION 20;
THENCE S89°48'41"E, 2625.65 FEET ALONG THE NORTH LINE OF THE SE1/4 OF SAID SECTION 20 TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PORTION CONVEYED TO PUBLIC SERVICE COMPANY OF COLORADO BY DEED RECORDED FEBRUARY 3, 1983 ON FILM 1238 AS RECEPTION NO. 531604 OF THE RECORDS OF BOULDER COUNTY, COLORADO.

AREA= 390.013 ACRES, MORE OR LESS

LEGAL DESCRIPTION PREPARED BY:
WILLIAM K. WRIGHT, PLS #23529
DREXEL, BARRELL & CO.
1800 38TH STREET
BOULDER, CO 80301

NOTES

1. SEE THE ALTA SURVEY PREPARED BY DREXEL, BARRELL & CO. JOB NO. 3652-328, DATED SEPTEMBER 29, 2007, LAST REVISED AUGUST 14, 2009, DRAWING NO. A35-16 FOR EXISTING TOPOGRAPHY, EXISTING UTILITIES AND EXISTING EASEMENTS AND ENCUMBRANCES.
2. NEW PUBLIC UTILITY AND/OR EMERGENCY ACCESS EASEMENTS TO BE GRANTED, AND/OR NEW PUBLIC RIGHTS-OF-WAY TO BE DEDICATED, AND EXISTING EASEMENTS TO REMAIN WILL BE DELINEATED ON THE FINAL PLAT OF THIS PROPERTY.
3. AN ACCESS EASEMENT TO THE TRACT OF LAND OWNED BY PUBLIC SERVICE COMPANY WILL BE DELINEATED ON THE FINAL PLAT OF THIS PROPERTY.
4. STREET NAMES WILL BE SET FORTH IN THE FINAL DEVELOPMENT PLAN(S).
5. PRIVATE UTILITY EASEMENTS SHALL BE AVAILABLE FOR GAS, ELECTRIC, AND TELECOMMUNICATIONS BY CONOCOPHILLIPS GRANTING OF NON-EXCLUSIVE EASEMENTS BY SEPARATE INSTRUMENT.
6. EMERGENCY ACCESS SHALL BE SOLELY LIMITED TO LAW ENFORCEMENT, FIRE AND EMERGENCY MEDICAL VEHICLES AND PERSONNEL.
7. MAINTENANCE ACCESS TO ALL STORM DRAINAGE FACILITIES ON THE CAMPUS IS GRANTED TO THE CITY OF LOUISVILLE TO ASSURE CONTINUOUS OPERATIONAL CAPABILITY OF THE DRAINAGE SYSTEM. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL DRAINAGE FACILITIES INCLUDING INLETS, PIPES, CULVERTS, CHANNELS, DITCHES, HYDRAULIC STRUCTURES AND DETENTION BASINS LOCATED ON THE SITE. SHOULD THE OWNER FAIL TO MAINTAIN SAID FACILITIES, THE CITY, AFTER PROVIDING OWNER WITH WRITTEN NOTICE OF SPECIFIC MAINTENANCE ITEMS TO BE CORRECTED AND A REASONABLE OPPORTUNITY TO CURE, MAY PROVIDE NECESSARY MAINTENANCE AND ASSESS THE MAINTENANCE COST TO THE OWNER OF THE PROPERTY UPON WHICH THE FACILITY IS LOCATED.
8. ACCESS TO ALL PUBLIC WATER AND SEWER FACILITIES IS GRANTED TO THE CITY OF LOUISVILLE FOR THE PURPOSE OF INSPECTING, MAINTAINING, REPAIRING AND REPLACING PUBLIC WATER AND SANITARY SEWER IMPROVEMENTS. ANY PRIVATE WATER AND SANITARY SEWER FACILITY LOCATED ON THE SITE SHALL BE MAINTAINED BY THE OWNER OF THE PROPERTY UPON WHICH THE FACILITY IS LOCATED. THE CITY OF LOUISVILLE SHALL HAVE THE RIGHT TO ENTER THE SITE TO INSPECT SAID WATER AND SANITARY SEWER FACILITIES. IF THESE PRIVATE WATER AND SEWER FACILITIES ARE NOT PROPERLY MAINTAINED, THE CITY, AFTER PROVIDING THE OWNER WITH WRITTEN NOTICE OF SPECIFIC MAINTENANCE ITEMS TO BE CORRECTED AND A REASONABLE OPPORTUNITY TO CURE, MAY PROVIDE NECESSARY MAINTENANCE AND ASSESS THE MAINTENANCE COST TO THE OWNER OF THE PROPERTY UPON WHICH THE FACILITY IS LOCATED.
9. ALL ROADWAYS INTERNAL TO THE SITE, STREETS A-F, ARE PRIVATE AND WILL BE PRIVATELY OWNED AND MAINTAINED, ACCESSIBLE ONLY TO CONOCOPHILLIPS EMPLOYEES, AUTHORIZED VISITORS AND ACCESS EASEMENT HOLDERS.
10. THE PUBLIC LAND DEDICATION SHALL BE LIMITED TO LAND OUTSIDE OF THE CAMPUS SECURITY BOUNDARY AS SET FORTH AND DEPICTED HEREIN. THE RESPONSIBILITIES OF THE CITY AND CONOCOPHILLIPS RESPECTIVELY, AS WELL AS ANY RESTRICTIONS PERTAINING TO USE, LOCATION, AESTHETICS AND MAINTENANCE OF THE LAND AND IMPROVEMENTS, SHALL BE SET FORTH BY DEED RESTRICTIONS AND/OR SEPARATE AGREEMENT(S) OR OTHER INSTRUMENT(S) TO BE AGREED UPON BY AND BETWEEN THE CITY AND CONOCOPHILLIPS AND SHALL BE CONSISTENT WITH CONOCOPHILLIPS' FINAL DEVELOPMENT PLAN(S). NOTWITHSTANDING THE FOREGOING, ALLOWED USES OF DEDICATED PUBLIC LAND SHALL INCLUDE ROADWAY CONNECTIONS AND UTILITY IMPROVEMENTS UNLESS SPECIFICALLY EXCLUDED BY AGREEMENT OF THE PARTIES IN WRITING.

H+K
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F +1 303 832 1713
PLANNER / LANDSCAPE ARCHITECT

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Engineers/Surveyors
1800 38th Street
Boulder, CO 80301
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Fax: (303) 442-4373
SURVEYOR

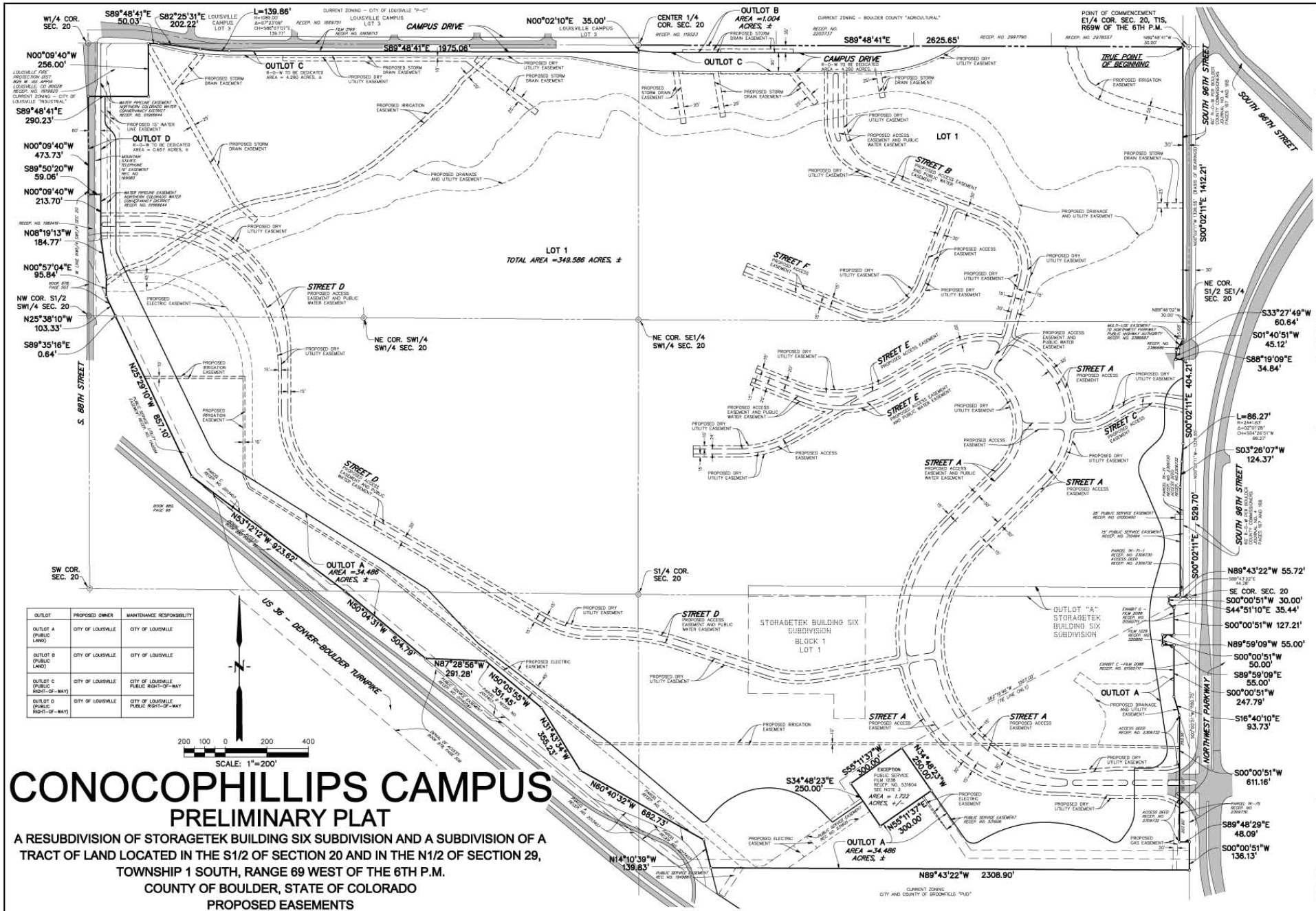
ISSUE / REVISION	DATE
PRELIMINARY PLAT SUBMITTAL	11/12/2009
RESUBMITTAL	3/31/2010

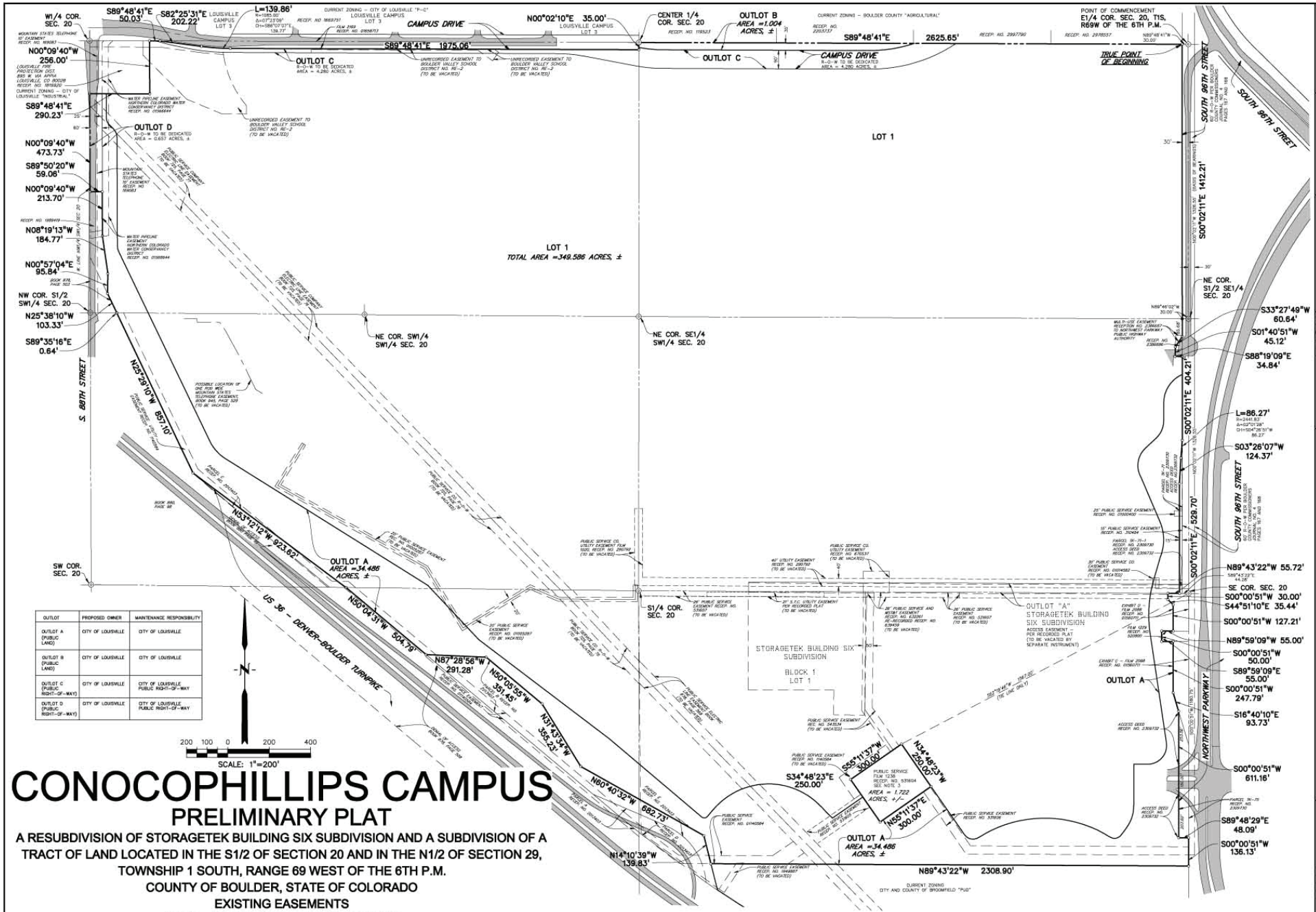
CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

PRELIMINARY PLAT

1 OF 3

S:\33652-328\DWG\MDS\MDS-STATE-PLAN\VIEWS\LATEST PLAT\33652-328P01-C3D.dwg, 1/29/2010 10:15:57 AM, Drexel, Barrell & Co.


W1/4 COR. SEC. 20
S89°48'41"E 50.03'
S82°25'31"E 202.22'
L=139.86'
R=1085.00'
Δ=07°23'09"
CH=S86°07'07"E
139.77'
CAMPUS DRIVE
N00°02'10"E 35.00'
CENTER 1/4 COR. SEC. 20
OUTLOT B
AREA =1.004 ACRES, ±
S89°48'41"E 2625.65'
POINT OF COMMENCEMENT
E1/4 COR. SEC. 20, T1S, R69W OF THE 6TH P.M.
TRUE POINT OF BEGINNING
S89°48'41"E 1975.06'
N00°09'40"W 256.00'
OUTLOT C
AREA = 4.280 ACRES, ±
S89°48'41"E 290.23'
OUTLOT D
AREA = 0.657 ACRES, ±
N00°09'40"W 473.73'
S89°50'20"W 59.06'
N00°09'40"W 213.70'
N08°19'13"W 184.77'
N00°57'04"E 95.84'
NW COR. S1/2 SW1/4 SEC. 20
N25°38'10"W 103.33'
S89°35'16"E 0.64'
LOT 1
TOTAL AREA =349.586 ACRES, ±
NE COR. S1/2 SE1/4 SEC. 20
S00°02'11"E 1412.21'
S00°02'11"E 404.21'
S00°02'11"E 529.70'
S33°27'49"W 60.64'
S01°40'51"W 45.12'
S88°19'09"E 34.84'
L=86.27'
R=2441.83'
Δ=02°01'28"
CH=S84°28'51"W 86.27'
S03°26'07"W 124.37'
NE COR. SW1/4 SW1/4 SEC. 20
NE COR. SE1/4 SW1/4 SEC. 20
S1/4 COR. SEC. 20
SW COR. SEC. 20
S. 88TH STREET
SOUTH 96TH STREET
NORTHWEST PARKWAY
STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
N89°43'22"W 55.72'
SE COR. SEC. 20
S00°00'51"W 30.00'
S44°51'10"E 35.44'
S00°00'51"W 127.21'
N89°59'09"W 55.00'
S00°00'51"W 50.00'
S89°59'09"E 55.00'
S00°00'51"W 247.79'
S16°40'10"E 93.73'
S00°00'51"W 611.16'
S89°48'29"E 48.09'
S00°00'51"W 136.13'
N89°43'22"W 2308.90'
N25°29'10"W 857.10'
N53°12'12"W 923.82'
N50°04'31"W 504.79'
N87°28'56"W 291.28'
N50°05'55"W 351.45'
N37°43'34"W 395.23'
N60°40'32"W 682.73'
N14°10'39"W 139.83'
US 36 - DENVER-BOULDER TURNPIKE
OUTLOT A
AREA =34.486 ACRES, ±
S34°48'23"E 250.00'
S55°11'37"W 300.00'
N34°48'23"W 250.00'
N55°11'37"E 300.00'
EXCEPTION
PUBLIC SERVICE FILM 1238
RECEP. NO. 531604
SEE NOTE 3
AREA = 1.722 ACRES, +/-
STORAGETEK BUILDING SIX SUBDIVISION
BLOCK 1
LOT 1
OUTLOT "A" STORAGETEK BUILDING SIX SUBDIVISION
CURRENT ZONING – CITY OF LOUISVILLE "P–C"
CURRENT ZONING – BOULDER COUNTY "AGRICULTURAL"
CURRENT ZONING – CITY OF LOUISVILLE "INDUSTRIAL"
CURRENT ZONING CITY AND COUNTY OF BROOMFIELD "PUD"
LOUISVILLE CAMPUS LOT 3
LOUISVILLE CAMPUS LOT 1
PROPOSED ACCESS EASEMENT AND PUBLIC WATER EASEMENT
PROPOSED ACCESS EASEMENT
PROPOSED DRY UTILITY EASEMENT
PROPOSED STORM DRAIN EASEMENT
PROPOSED IRRIGATION EASEMENT
PROPOSED DRAINAGE AND UTILITY EASEMENT
PROPOSED ELECTRIC EASEMENT
PROPOSED GAS EASEMENT
PUBLIC SERVICE EASEMENT REC. NO. 1940806
PUBLIC SERVICE EASEMENT RECEP. NO. 2308730
ACCESS DEED RECEP. NO. 2308732
EXHIBIT C – FILM 2088 RECEP. NO. 2156071
EXHIBIT D – FILM 1229 RECEP. NO. 530800
EXHIBIT D – FILM 1229 RECEP. NO. 2156070
15' PUBLIC SERVICE EASEMENT RECEP. NO. 2010040
15' PUBLIC SERVICE EASEMENT RECEP. NO. 350494
28' PUBLIC SERVICE EASEMENT RECEP. NO. 2010040
MULTI-USE EASEMENT TO NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY RECEP. NO. 2308660
PARCEL 36–TH–1 RECEP. NO. 2308730 ACCESS DEED RECEP. NO. 2308732
PARCEL 36–TH–2 RECEP. NO. 2308730 ACCESS DEED RECEP. NO. 2308732
PARCEL 36–TH–3 RECEP. NO. 2308730 ACCESS DEED RECEP. NO. 2308732
PARCEL 36–TH–4 RECEP. NO. 2308730 ACCESS DEED RECEP. NO. 2308732
PARCEL


W1/4 COR. SEC. 20
S89°48'41"E 50.03'
S82°25'31"E 202.22'
L=139.86'
CAMPUS DRIVE
N00°02'10"E 35.00'
CENTER 1/4 COR. SEC. 20
OUTLOT B
AREA = 1.004 ACRES, ±
S89°48'41"E 2625.65'
POINT OF COMMENCEMENT E1/4 COR. SEC. 20, T1S, R69W OF THE 6TH P.M.
TRUE POINT OF BEGINNING
S89°48'41"E 1975.06'
OUTLOT C
R-O-W TO BE DEDICATED AREA = 4.280 ACRES, ±
N00°09'40"W 256.00'
S89°48'41"E 290.23'
OUTLOT D
R-O-W TO BE DEDICATED AREA = 0.657 ACRES, ±
N00°09'40"W 473.73'
S89°50'20"W 59.06'
N00°09'40"W 213.70'
N08°19'13"W 184.77'
N00°57'04"E 95.84'
NW COR. S1/2 SW1/4 SEC. 20
N25°38'10"W 103.33'
S89°35'16"E 0.64'
LOT 1
TOTAL AREA =349.586 ACRES, ±
NE COR. SW1/4 SW1/4 SEC. 20
NE COR. SE1/4 SW1/4 SEC. 20
NE COR. S1/2 SE1/4 SEC. 20
S00°02'11"E 1412.21'
S33°27'49"W 60.64'
S01°40'51"W 45.12'
S88°19'09"E 34.84'
S00°02'11"E 404.21'
L=86.27'
S03°26'07"W 124.37'
S00°02'11"E 529.70'
N89°43'22"W 55.72'
SE COR. SEC. 20
S00°00'51"W 30.00'
S44°51'10"E 35.44'
S00°00'51"W 127.21'
N89°59'09"W 55.00'
S00°00'51"W 50.00'
S89°59'09"E 55.00'
S00°00'51"W 247.79'
S16°40'10"E 93.73'
S00°00'51"W 611.16'
S89°48'29"E 48.09'
S00°00'51"W 136.13'
N89°43'22"W 2308.90'
S. 88TH STREET
SOUTH 96TH STREET
NORTHWEST PARKWAY
N25°29'10"W 857.10'
SW COR. SEC. 20
OUTLOT A
AREA =34.486 ACRES, ±
US 36 - DENVER-BOULDER TURNPIKE
N53°12'12"W 923.62'
N50°04'31"W 504.79'
N87°28'56"W 291.28'
N50°05'55"W 351.45'
N37°43'34"W 355.23'
N80°40'32"W 682.73'
N14°10'39"W 139.83'
S1/4 COR. SEC. 20
STORAGETEK BUILDING SIX SUBDIVISION
BLOCK 1
LOT 1
OUTLOT "A" STORAGETEK BUILDING SIX SUBDIVISION
ACCESS EASEMENT - PER RECORDED PLAT (TO BE VACATED BY SEPARATE INSTRUMENT)
OUTLOT A
S34°48'23"E 250.00'
S55°11'37"W 300.00'
N34°48'23"W 250.00'
N55°11'37"E 300.00'
AREA = 1.722 ACRES, +/-
OUTLOT A
AREA =34.486 ACRES, ±
CURRENT ZONING CITY AND COUNTY OF BROOMFIELD "PUD"
CURRENT ZONING — CITY OF LOUISVILLE "P-C"
CURRENT ZONING — BOULDER COUNTY "AGRICULTURAL"
CURRENT ZONING — CITY OF LOUISVILLE "INDUSTRIAL"
LOUISVILLE CAMPUS LOT 3
UNRECORDED EASEMENT TO BOULDER VALLEY SCHOOL DISTRICT NO. RE-2 (TO BE VACATED)
UNRECORDED EASEMENT TO BOULDER VALLEY SCHOOL DISTRICT NO. RE-1 (TO BE VACATED)
MOUNTAIN STATES TELEPHONE 10' EASEMENT RECEP. NO. 169083
LOUISVILLE FIRE PROTECTION DIST. 695 W. MA APPIA LOUISVILLE, CO 80028 RECEP. NO. 19159370
WATER PIPELINE EASEMENT NORTHERN COLORADO WATER CONSERVANCY DISTRICT RECEP. NO. 03566944
PUBLIC SERVICE COMPANY EASEMENT BOOK 876, PAGE 329 (TO BE VACATED)
POSSIBLE LOCATION OF ONE ROD WIDE MOUNTAIN STATES TELEPHONE EASEMENT, BOOK 945, PAGE 329 (TO BE VACATED)
PUBLIC SERVICE EASEMENT RECEP. NO. 03550097 (TO BE VACATED)
PUBLIC SERVICE CO. UTILITY EASEMENT FILM 1510, RECEP. NO. 2807753 (TO BE VACATED)
PUBLIC SERVICE CO. UTILITY EASEMENT RECEP. NO. 4705537 (TO BE VACATED)
40' UTILITY EASEMENT RECEP. NO. 2807753 (TO BE VACATED)
21' S.C.I.C. UTILITY EASEMENT PER RECORDED PLAT (TO BE VACATED)
26' PUBLIC SERVICE EASEMENT AND WESTAT EASEMENT RECEP. NO. 4128941 AMENDED RECEP. NO. 4129455 (TO BE VACATED)
26' PUBLIC SERVICE EASEMENT RECEP. NO. 529407 (TO BE VACATED)
25' PUBLIC SERVICE EASEMENT RECEP. NO. 01000400
15' PUBLIC SERVICE EASEMENT RECEP. NO. 352404
PARCEL 3K-71-1 RECEP. NO. 2309730 ACCESS DEED RECEP. NO. 2309732
30' PUBLIC SERVICE CO. EASEMENT RECEP. NO. 03074582 (TO BE VACATED)
EXHIBIT D FILM 2088 RECEP. NO. 03560771
CHART C - FILM 2088 RECEP. NO. 03560771
ACCESS DEED RECEP. NO. 2309732
PARCEL 3K-75 RECEP. NO. 2309730
PUBLIC SERVICE EASEMENT RECEP. NO. 1140584
PUBLIC SERVICE EASEMENT FILM 1238 RECEP. NO. 931604 SEE NOTE 3
PUBLIC SERVICE EASEMENT RECEP. NO. 1944865 (TO BE VACATED)
PUBLIC SERVICE EASEMENT RECEP. NO. 329508
MULTI-USE EASEMENT RECEPTION NO. 2366827 TO NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY
RECEP. NO. 2366566
MOUNTAIN STATES TELEPHONE 10' EASEMENT RECEP. NO. 169083
WATER PIPELINE EASEMENT NORTHERN COLORADO WATER CONSERVANCY DISTRICT RECEP. NO. 03566944
BOOK 876, PAGE 322
RECEP. NO. 1989419
PARCEL 5, RECEP. NO. 2574421
BOOK 895, PAGE 98
BOOK 945, PAGE 329
BOOK 876, PAGES 322, 323
BOOK 1, PAGE 20
BOOK 876, PAGE 329
BOOK 1, PAGE 20
BOOK 1, PAGE 20
BOOK 1, PAGE 20

CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

COVER SHEET

SHEET 1 OF 11

Attachment #6

LEGAL DESCRIPTION:

A TRACT OF LAND LOCATED IN THE S1/2 OF SECTION 20 AND IN THE N1/2 OF THE SECTION 29, T1S, R69W OF THE 6TH P.M., COUNTY OF BOULDER, STATE OF COLORADO, DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE EAST LINE OF THE SE1/4 OF SECTION 20 ASSUMED TO BEAR N00°02'11"W.

COMMENCING AT THE E1/4 CORNER OF SAID SECTION 20, THENCE N89°48'41"W, 30.00 FEET ALONG THE NORTH LINE OF THE SE1/4 OF SAID SECTION 20 TO THE WEST LINE OF THE EAST 30 FEET OF THE SE1/4 OF SAID SECTION 20 AND THE TRUE POINT OF BEGINNING;
THENCE S00°02'11"E, 1412.21 FEET PARALLEL WITH THE EAST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 2386686 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHWESTERLY, WESTERLY AND SOUTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 2386686 THE FOLLOWING THREE (3) COURSES:
1) S33°27'49"W, 60.64 FEET;
2) S01°40'51"W, 45.13 FEET;
3) S88°19'09"E, 34.84 FEET TO THE WEST LINE OF THE EAST 30 FEET OF THE SE1/4 OF SAID SECTION 20;
THENCE S00°02'11"E, 404.21 FEET PARALLEL WITH THE EAST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE MOST NORTHERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED AS PARCEL TK-71 IN DEED RECORDED AT RECEPTION NO. 2309730 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE WESTERLY LINES OF PARCEL TK-71 AND PARCEL TK-71-1 AS DESCRIBED AT SAID RECEPTION NO. 2309730 THE FOLLOWING THREE (3) COURSES:
1) SOUTHERLY, 86.27 FEET ALONG THE ARC OF A CURVE CONCAVE TO THE EAST TO A POINT TANGENT, SAID ARC HAVING A RADIUS OF 2441.83 FEET, A CENTRAL ANGLE OF 02°01'28" AND BEING SUBTENDED BY A CHORD THAT BEARS S04°26'51"W, 86.27 FEET;
2) S03°26'07"W, 124.37 FEET;
3) S00°02'11"E, 529.70 FEET TO THE SOUTH LINE OF SAID SECTION 20 AND THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT D IN DEED RECORDED ON FILM 2088 AT RECEPTION NO. 1560711 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHERLY AND WESTERLY LINES OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT D ON SAID FILM 2088 AT RECEPTION NO. 1560711 THE FOLLOWING FOUR (4) COURSES:
1) N89°43'22"W, 55.72 FEET;
2) S00°00'51"W, 30.00 FEET;
3) S44°8'31"E, 35.44 FEET;
4) S00°00'51"W, 127.21 FEET TO THE NORTH LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED ON FILM 1229 AT RECEPTION NO. 520800 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHERLY, WESTERLY AND SOUTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED ON SAID FILM 1229 AT RECEPTION NO. 520800 THE FOLLOWING THREE (3) COURSES:
1) N89°59'09"W, 55.00 FEET;
2) S00°00'51"W, 50.00 FEET;
3) S89°59'09"E, 55.00 FEET TO THE WEST LINE OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT C ON SAID FILM 2088 AT RECEPTION NO. 1560711;
THENCE ALONG THE WESTERLY LINES OF THAT TRACT OF LAND AS DESCRIBED IN EXHIBIT C ON SAID FILM 2088 AT RECEPTION NO. 1560711 THE FOLLOWING TWO (2) COURSES:
1) S00°00'51"W, 247.79 FEET;
2) S16°40'10"E, 93.73 FEET TO THE WESTERLY LINE OF PARCEL TK-75 AS DESCRIBED AT SAID RECEPTION NO 2309730;
THENCE ALONG THE WESTERLY AND SOUTHERLY LINES OF PARCEL TK-75 AS DESCRIBED AT SAID RECEPTION NO. 2309730 THE FOLLOWING TWO (2) COURSES:
1) S00°00'51"W, 611.16 FEET;
2) S89°48'29"E, 48.09 FEET TO THE EAST LINE OF THE NE1/4 OF SAID SECTION 29;
THENCE S00°00'51"W, 136.13 FEET ALONG THE EAST LINE OF THE NE1/4 OF SAID SECTION 29 TO THE SOUTHEAST CORNER OF PARCEL S AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 2906901 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE N89°43'22"W, 2308.80 FEET PARALLEL WITH THE NORTH LINE OF THE NE1/4 OF SAID SECTION 29 TO THE NORTHEASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 36 AS DESCRIBED AS PARCEL E IN DEED RECORDED AT RECEPTION NO. 2013403 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE NORTHEASTERLY RIGHT-OF-WAY LINE OF U.S. HIGHWAY NO. 36 AS DESCRIBED AS PARCELS E, B AND C AT SAID RECEPTION NO. 2013403 AND IN DEEDS RECORDED IN BOOK 878 AT PAGE 507 AND BOOK 880 AT PAGE 98 OF THE RECORDS OF BOULDER COUNTY, COLORADO, THE FOLLOWING EIGHT (8) COURSES:
1) N14°10'39"W, 139.83 FEET;
2) N60°40'32"W, 682.73 FEET;
3) N31°43'34"W, 355.23 FEET;
4) N50°09'55"W, 351.45 FEET;
5) N87°28'56"W, 291.26 FEET;
6) N50°04'31"W, 504.79 FEET;
7) N53°12'12"W, 923.82 FEET;
8) N20°29'10"W, 857.10 FEET TO THE NORTH LINE OF THE S1/2 OF THE SW1/4 OF SAID SECTION 20;
THENCE S89°35'16"E, 0.84 FEET ALONG THE NORTH LINE OF THE S1/2 OF THE SW1/4 OF SAID SECTION 20 TO THE MOST EASTERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED IN BOOK 878 AT PAGE 503 OF THE RECORDS OF BOULDER COUNTY, COLORADO;

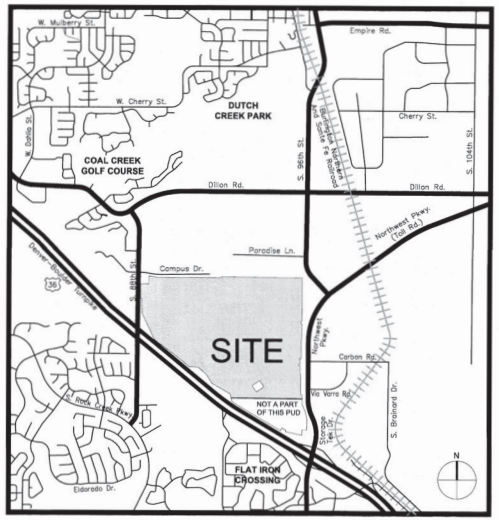
CONTINUED...

THENCE N25°38'10"W, 103.33 FEET ALONG THE EASTERLY LINE OF THAT TRACT OF LAND AS DESCRIBED IN SAID BOOK 878 AT PAGE 503 TO THE EASTERLY LINE OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 1989419 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE EASTERLY AND NORTHERLY LINES OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1989419 THE FOLLOWING FOUR (4) COURSES:
1) N00°57'04"E, 95.84 FEET;
2) N08°19'13"W, 184.77 FEET;
3) N00°09'40"W, 213.70 FEET;
4) S89°50'20"W, 59.06 FEET TO THE WEST LINE OF THE N1/2 OF THE SW1/4 OF SAID SECTION 20;
THENCE N00°09'40"W, 473.73 FEET ALONG THE WEST LINE OF THE N1/2 OF THE SW1/4 OF SAID SECTION 20 TO THE SOUTH LINE EXTENDED WESTERLY OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED AT RECEPTION NO. 1819920 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE S89°48'41"E, 290.23 FEET ALONG THE SOUTH LINE EXTENDED WESTERLY AND ALONG THE SOUTH LINE OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1819920 TO THE SOUTHEAST CORNER THEREOF;
THENCE N00°09'40"W, 256.00 FEET ALONG THE EAST LINE OF THAT TRACT OF LAND AS DESCRIBED AT SAID RECEPTION NO. 1819920 TO THE NORTH LINE OF THE SW1/4 OF SAID SECTION 20;
THENCE S89°48'41"E, 50.03 FEET ALONG THE NORTH LINE OF THE SW1/4 OF SAID SECTION 20 TO THE MOST WESTERLY CORNER OF THAT TRACT OF LAND AS DESCRIBED IN DEED RECORDED ON FILM 2169 AT RECEPTION NO. 1658713 OF THE RECORDS OF BOULDER COUNTY, COLORADO;
THENCE ALONG THE SOUTHERLY LINE OF THAT TRACT OF LAND AS DESCRIBED ON SAID FILM 2169 AT RECEPTION NO. 1658713 THE FOLLOWING THREE (3) COURSES:
1) S82°25'31"E, 202.22 FEET TO A POINT OF CURVE TO THE LEFT;
2) SOUTHEASTERLY, 139.86 FEET ALONG THE ARC OF SAID CURVE TO A POINT TANGENT, SAID ARC HAVING A RADIUS OF 1085.00 FEET, A CENTRAL ANGLE OF 07°23'09" AND BEING SUBTENDED BY A CHORD THAT BEARS S86°07'07"E, 139.77 FEET;
3) S89°48'41"E, 1975.06 FEET TO THE WEST LINE OF THE SE1/4 OF SAID SECTION 20;
THENCE N00°02'10"E, 35.00 FEET ALONG THE WEST LINE OF THE SE1/4 OF SAID SECTION 20 TO THE CENTER 1/4 CORNER OF SAID SECTION 20; THENCE S89°48'41"E, 2625.65 FEET ALONG THE NORTH LINE OF THE SE1/4 OF SAID SECTION 20 TO THE TRUE POINT OF BEGINNING.

EXCEPT THAT PORTION CONVEYED TO PUBLIC SERVICE COMPANY OF COLORADO BY DEED RECORDED FEBRUARY 3, 1983 ON FILM 1238 AS RECEPTION NO. 531604 OF THE RECORDS OF BOULDER COUNTY, COLORADO.

AREA= 390.013 ACRES, MORE OR LESS

LEGAL DESCRIPTION PREPARED BY:
WILLIAM K. WRIGHT, PLS #23529
DREXEL, BARRELL & CO.
1800 38TH STREET
BOULDER, CO 80301



VICINITY MAP

SCALE: 1" = 2000'

SHEET INDEX

1	COVER SHEET
2	MASTER PLAN AND GENERAL NOTES
3	TRANSPORTATION PLAN
4	PRELIMINARY UTILITY PLAN
5	PRELIMINARY UTILITY PLAN
6	PRELIMINARY OFFSITE WATER
7	PRELIMINARY GRADING AND DRAINAGE PLAN
8	PRELIMINARY GRADING AND DRAINAGE PLAN
9	LANDSCAPE PLAN
10	LANDSCAPE NARRATIVE AND PLANT SCHEDULE
11	VEHICULAR/PEDESTRIAN CIRCULATION PLAN

NOTES:

1. OFFSITE PARCEL BOUNDARIES SHOWN ARE APPROXIMATE, BASED ON COMMUNITY MASTER PLANNING MAPS AND BOULDER COUNTY TAX ASSESSOR MAPS.
2. THE SURVEY INFORMATION SHOWN IN THIS PRELIMINARY PUD DEVELOPMENT PLAN IS PER THE ALTA SURVEY DATED AUGUST, 2009 BY DREXEL BARRELL AND COMPANY.
3. THE FLOODPLAIN DEPICTED ON THIS PRELIMINARY PUD DEVELOPMENT PLAN IS FOR ROCK CREEK WITHIN ZONE A BASED ON THE FEMA FIRM 08007300599F, DATED AUGUST 18, 2004. ZONE X IS CLASSIFIED AS AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1.0% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1' OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 100-YEAR FLOOD. THIS FLOODPLAIN IS LOCATED WITHIN THE CITY AND COUNTY OF BROOMFIELD AND NOT A PART OF THIS PRELIMINARY PUD DEVELOPMENT PLAN.
4. NO HISTORIC STRUCTURES EXIST ON THE SITE.
5. THE EXISTING XCEL SUBSTATION IS NOT A PART OF THIS PRELIMINARY PUD DEVELOPMENT PLAN.

GENERAL NOTES AND STANDARDS/ALL PLANNING AREAS:

1. DEVELOPMENT SHALL CONFORM AND BE CONSISTENT WITH THE LOUISVILLE MUNICIPAL CODE AND THE COMMERCIAL DEVELOPMENT DESIGN STANDARDS AND GUIDELINES AS MODIFIED BY THIS PRELIMINARY PUD DEVELOPMENT PLAN, THE GENERAL DEVELOPMENT PLAN OR THE FINAL DEVELOPMENT PLAN(S).
2. PUBLIC IMPROVEMENTS WILL BE CONSTRUCTED IN ACCORDANCE WITH THE PHASING SCHEDULE OUTLINED IN THE DEVELOPMENT AGREEMENT.
3. MAINTENANCE ACCESS TO ALL STORM DRAINAGE FACILITIES ON THE CAMPUS IS GRANTED TO THE CITY OF LOUISVILLE TO ASSURE CONTINUOUS OPERATIONAL CAPABILITY OF THE DRAINAGE SYSTEM. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL DRAINAGE FACILITIES INCLUDING INLETS, PIPES, CULVERTS, CHANNELS, DITCHES, HYDRAULIC STRUCTURES AND DETENTION BASINS LOCATED ON THE SITE. SHOULD THE OWNER FAIL TO MAINTAIN SAID FACILITIES, THE CITY, AFTER PROVIDING OWNER WITH WRITTEN NOTICE OF SPECIFIC MAINTENANCE ITEMS TO BE CORRECTED AND A REASONABLE OPPORTUNITY TO CURE, MAY PROVIDE NECESSARY MAINTENANCE AND ASSESS THE MAINTENANCE COST TO THE OWNER OF THE PROPERTY UPON WHICH THE FACILITY IS LOCATED
4. ACCESS TO ALL PUBLIC WATER FACILITIES IS GRANTED TO THE CITY OF LOUISVILLE FOR THE PURPOSE OF INSPECTING, MAINTAINING, REPAIRING AND REPLACING PUBLIC WATER IMPROVEMENTS. ANY PRIVATE WATER AND SANITARY SEWER FACILITY LOCATED ON THE SITE SHALL BE MAINTAINED BY THE OWNER OF THE PROPERTY UPON WHICH THE FACILITY IS LOCATED. THE CITY OF LOUISVILLE SHALL HAVE THE RIGHT TO ENTER THE SITE TO INSPECT SAID WATER FACILITIES. IF THESE PRIVATE WATER AND SEWER FACILITIES ARE NOT PROPERLY MAINTAINED, THE CITY, AFTER PROVIDING THE OWNER WITH WRITTEN NOTICE OF SPECIFIC MAINTENANCE ITEMS TO BE CORRECTED AND A REASONABLE OPPORTUNITY TO CURE, MAY PROVIDE NECESSARY MAINTENANCE AND ASSESS THE MAINTENANCE COST TO THE OWNER OF THE PROPERTY UPON WHICH THE FACILITY IS LOCATED.
5. EXISTING BODIES OF WATER, DRAINAGE CHANNELS AND DITCH ALIGNMENTS MAY BE ALTERED, RELOCATED OR CHANNELIZED TO CONFORM TO THE CITY OF LOUISVILLE, BOULDER COUNTY STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA MANUAL AND OTHER APPLICABLE REGULATIONS PROVIDED CONSENT FROM THIRD PARTIES POSSESSING A PROPERTY RIGHT IN SUCH WATER OR WATER FACILITIES IS SECURED IN ADVANCE.
6. ALL PEDESTRIAN AND BICYCLE TRAILS WITHIN THE CAMPUS SECURITY BOUNDARY SHALL REMAIN A PRIVATE AMENITY FOR CONOCOPHILLIPS EMPLOYEES AND AUTHORIZED VISITORS.
7. PROPOSED PEDESTRIAN AND BICYCLE TRAILS OUTSIDE OF THE CAMPUS SECURITY BOUNDARY SHALL CONNECT TO THE LOUISVILLE COMPREHENSIVE TRAIL SYSTEM.
8. ANY IMPACTS ON RESIDENTIAL DWELLINGS ADJACENT TO CAMPUS DRIVE, AS EXTENDED, SHALL BE MITIGATED THROUGH THE USE OF SUCH BUFFERING MECHANISMS AS LANDSCAPING, EARTHEN BERMS AND/OR FENCING.
9. THE SITE WILL BE SECURE AND ACCESSIBLE TO ONLY CONOCOPHILLIPS EMPLOYEES AND AUTHORIZED VISITORS. ALL ROADWAYS INTERNAL TO THE SITE ARE PRIVATE ROADS ACCESSIBLE TO CONOCOPHILLIPS EMPLOYEES AND AUTHORIZED VISITORS ONLY AND SHALL BE THE MAINTENANCE RESPONSIBILITY OF CONICOPHILLIPS.
10. THE ALIGNMENT OF ALL ACCESS POINTS, INTERNAL ROADS AND DRAINAGE FACILITIES ARE CONCEPTUAL AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FINAL DEVELOPMENT PLAN(S).
11. A VARIETY OF PERIMETER BARRIER TYPES WILL BE UTILIZED TO SECURE THE SITE; THE HEIGHTS, STYLES AND LOCATION OF WHICH SHALL BE ESTABLISHED ON THE FINAL DEVELOPMENT PLAN(S).
12. THE CAMPUS SECURITY BOUNDARY WILL NOT EXTEND OUTSIDE OF THE SITE BOUNDARY.
13. SIGNAGE STANDARDS, DIMENSIONS, LOCATIONS, TYPES AND DESIGNS WILL BE SET FORTH IN THE FINAL DEVELOPMENT PLAN(S).

CERTIFICATIONS/SIGNATURE BLOCKS

CITY COUNCIL CERTIFICATION:

APPROVED THIS _____ DAY OF _____, 20____ BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO.

RESOLUTION NO. _____, SERIES _____.

CITY SEAL

MAYOR SIGNATURE

CITY CLERK SIGNATURE

PLANNING COMMISSION CERTIFICATION:

APPROVED THIS _____ DAY OF _____, 20____ BY THE PLANNING COMMISSION OF THE CITY OF LOUISVILLE, COLORADO.

RESOLUTION NO. _____, SERIES_____.

CLERK AND RECORDER CERTIFICATE - COUNTY OF BOULDER, STATE OF COLORADO:

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED IN MY OFFICE AT _____ O'CLOCK, ____ M., THIS ____ DAY OF _____, 20____, AND IS RECORDED IN PLAN FILE _____ FEE _____ PAID _____ FILM NO. _____ RECEPTION. _____

CLERK AND RECORDER

DEPUTY

OWNERSHIP SIGNATURE BLOCK:

BY SIGNING THIS PRELIMINARY PUD DEVELOPMENT PLAN, THE OWNER ACKNOWLEDGES AND ACCEPTS ALL THE REQUIREMENTS AND INTENT SET FORTH IN THIS PRELIMINARY PUD DEVELOPMENT PLAN. WITNESS OUR HANDS AND SEALS

THIS 21 DAY OF January, 20 11

OWNER
CONOCOPHILLIPS COMPANY
A DELAWARE CORPORATION

BY: Mark R. Bradley SIGNATURE — Attorney-In-Fact TITLE

NOTARY NAME AND SIGNATURE Carolyn Reeder

MY COMMISSION EXPIRES 1-31-15

Notary Public State of Oklahoma CAROLYN REEDER (Printed) ON COUNTY Commission #07010 Comm. Exp. 01-31-2015

PROPERTY AREA TABLE

GROSS PROPERTY AREA:	431.578 ACRES
GROSS DEVELOPABLE AREA (PUD BOUNDARY):	390.013 ACRES
AREA WITHIN CITY of LOUISVILLE LIMITS	310.091 ACRES
AREA WITHIN BOULDER COUNTY (TO BE ANNEXED TO CITY of LOUISVILLE)	79.922 ACRES
AREA WITHIN CITY and COUNTY OF BROOMFIELD	41.565 ACRES
ZONING:	PLANNED COMMUNITY ZONED DISTRICT (PCZD) - COMMERCIAL WITH PUD-C OVERLAY
PLANNED ACCESS:	NORTHWEST PARKWAY, CAMPUS DRIVE, SOUTH 88TH STREET

PRIVATE COMMON OPEN SPACE SUMMARY:

1. THE IDENTIFICATION OF PRIVATE COMMON OPEN SPACE AREA IS CONCEPTUAL AND SHOULD NOT BE INTERPRETED TO ESTABLISH PRECISE DIMENSIONS OR ACREAGE. THE LOCATION AND AMOUNT OF ANY PRIVATE COMMON OPEN SPACE, WHICH BY DEFINITION SHALL INCLUDE, WITH THE EXCEPTION OF ROADWAYS, ALL NON-HARDSCAPE PERVIOUS AREAS WITHIN THE GROSS DEVELOPABLE AREA, MAY BE ADJUSTED BASED ON FINAL ENGINEERING AND SITE PLAN CONSIDERATIONS. ANY MODIFICATIONS TO THE AMOUNT AND LOCATION OF PRIVATE COMMON OPEN SPACE SHALL NOT REQUIRE ANY AMENDMENT TO THIS PUD. THE PRIVATE COMMON OPEN SPACE SHALL REMAIN PRIVATE AND AVAILABLE ONLY FOR THE USE AND ENJOYMENT OF CONOCOPHILLIPS EMPLOYEES AND AUTHORIZED VISITORS. THE PRIVATE COMMON OPEN SPACE SHALL CONTAIN SUCH IMPROVEMENTS AS MAY BE APPROPRIATE TO ENHANCE THE USE AND FUNCTIONALITY OF THE PRIVATE COMMON OPEN SPACE, SUCH AS UTILITY EASEMENTS/CORRIDORS, DETENTION AND WATER QUALITY PONDS, SIGNAGE, TRAILS, PONDS, BENCHES, STORM WATER IMPROVEMENTS, LIGHTING, SECURITY MEASURES, LANDSCAPING, IRRIGATION, FENCING, LANDSCAPE WALLS, AGRICULTURAL OR FARMING USES, SMALL TRASH RECEPTACLES, GRILLS, PICNIC AREAS, STRUCTURED PAVILIONS, RECREATIONAL AMENITIES, SPORTING FIELDS, COURSES AND COURTS AND SUCH OTHER APPURTENANCES AS MAY BE SUPPORTIVE OF THE FUNCTIONALITY AND USE OF THE PRIVATE COMMON OPEN SPACE.
2. PRIVATE COMMON OPEN SPACE AREAS SHALL BE THE MAINTENANCE RESPONSIBILITY OF CONOCOPHILLIPS.

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ISSUE / REVISION	DATE
EXTENSION REQUESTED	2/13/2011
PRELIMINARY PUD DEVELOPMENT PLAN SUBMITTAL	11/12/2009
RESUBMITTAL	2/01/2010
RESUBMITTAL	3/29/2010

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

COVER SHEET

DRAWN	TEAM
CHK	TEAM
PRJ #	09.01001.00

SHEET NUMBER:

1 OF 11

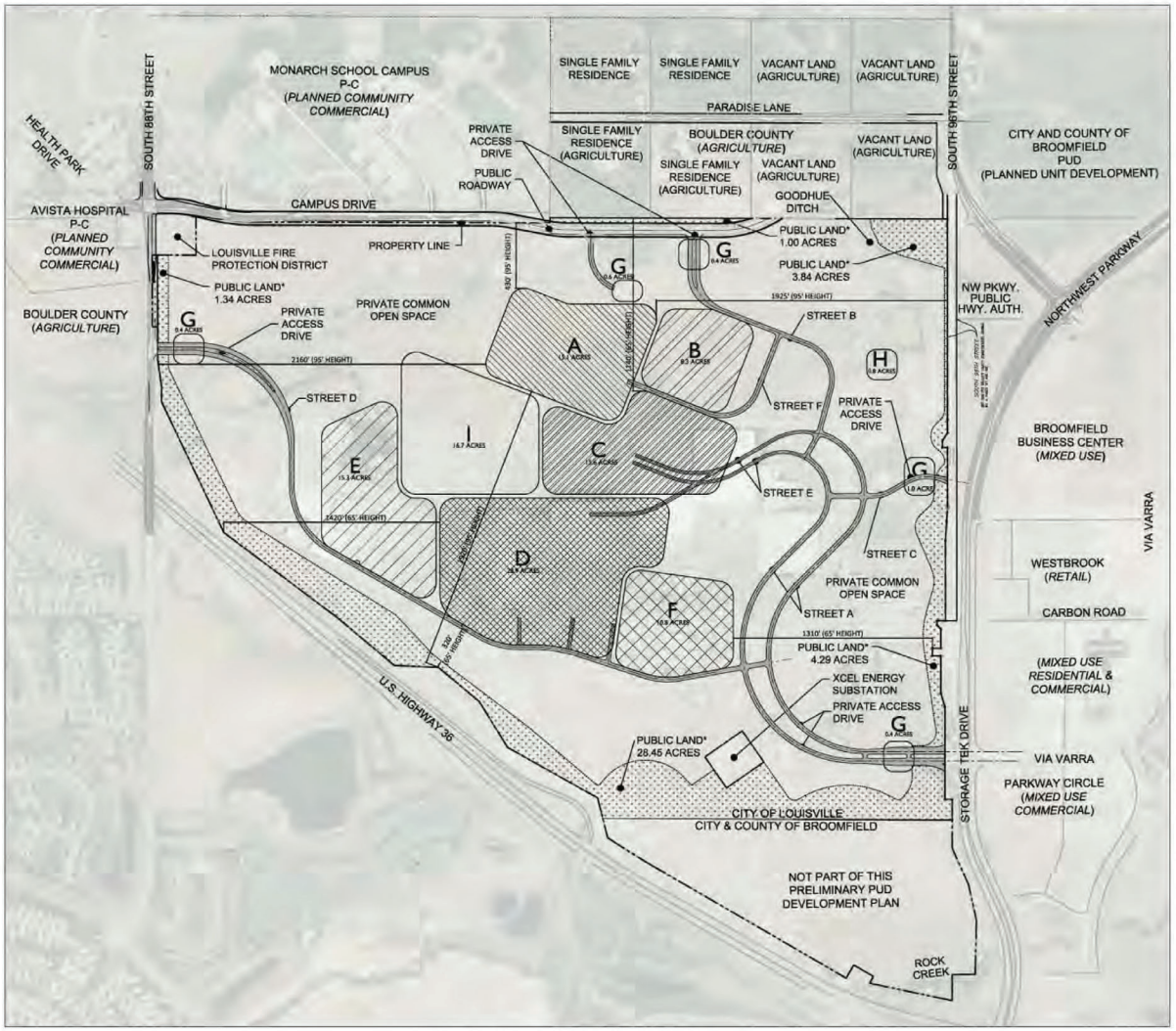
CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

MASTER PLAN AND GENERAL NOTES

SHEET 2 OF 11



PLANNING AREA MASTER PLAN

400 200 0 400 800

SCALE: 1" = 400'

N

PUBLIC LAND:

1. EXCEPT AS SET FORTH IN THE FOLLOWING NOTE NO. 2, THE PUBLIC LAND DEDICATION SHALL BE LIMITED TO LAND OUTSIDE OF THE CAMPUS SECURITY BOUNDARY AS SET FORTH AND DEPICTED HEREIN. THE RESPONSIBILITIES OF THE CITY AND CONOCOPHILLIPS, RESPECTIVELY, AS WELL AS ANY RESTRICTIONS PERTAINING TO USE, LOCATION, AESTHETICS AND MAINTENANCE OF THE LAND AND IMPROVEMENTS, SHALL BE SET FORTH BY DEED RESTRICTIONS AND/OR SEPARATE AGREEMENT(S) OR OTHER INSTRUMENT(S) TO BE AGREED UPON BY AND BETWEEN THE CITY AND CONOCOPHILLIPS AND SHALL BE CONSISTENT WITH CONOCOPHILLIPS' FINAL DEVELOPMENT PLAN(S). NOTWITHSTANDING THE FOREGOING, ALLOWED USES OF DEDICATED PUBLIC LAND SHALL INCLUDE ROADWAY CONNECTIONS AND UTILITY IMPROVEMENTS UNLESS SPECIFICALLY EXCLUDED BY AGREEMENT OF THE PARTIES IN WRITING."
2. CONOCOPHILLIPS SHALL CONVEY APPROXIMATELY 20 ADDITIONAL ACRES OF PUBLIC LAND TO THE CITY, EITHER IN FEE OR BY CONSERVATION EASEMENT OR A COMBINATION THEREOF, TO SUPPLEMENT THE PUBLIC LAND DEDICATION DEPICTED HEREIN, WHICH ADDITIONAL PUBLIC LAND SHALL BE LOCATED IMMEDIATELY NORTH OF THE SITE, SOUTH OF PARADISE LANE AND WEST OF SOUTH 96TH STREET. SUCH SUPPLEMENTAL AND ADDITIONAL PUBLIC LAND DEDICATION SHALL BE CREDITED TO CONOCOPHILLIPS PUBLIC LAND DEDICATION REQUIREMENTS SET FORTH IN SECTION 16.16.060.B OF THE LOUISVILLE MUNICIPAL CODE.

AREA TRANSFER:

1. THE DELINEATED PLANNING AREAS ARE CONCEPTUAL AND MAY BE ADJUSTED.
2. THE DELINEATED PLANNING AREAS WERE CREATED TO DEFINE LOCATIONS OF VARIOUS BUILDING HEIGHTS.

PHASING NOTES:

1. IT IS ANTICIPATED THAT INITIAL OCCUPANCY OF IMPROVEMENTS CONSTRUCTED DURING PHASE 1 WILL OCCUR IN 2013.
2. IT IS ANTICIPATED THAT INITIAL OCCUPANCY OF IMPROVEMENTS CONSTRUCTED DURING PHASE 2 WILL OCCUR IN 2018.
3. IT IS ANTICIPATED THAT INITIAL OCCUPANCY OF IMPROVEMENTS CONSTRUCTED DURING PHASE 3 WILL OCCUR IN 2032.
4. THE PHASING OF DEVELOPMENT, AS DESCRIBED IN THE DEVELOPMENT SUMMARY BELOW, IS CONCEPTUAL ONLY AND IS SUBJECT TO CHANGE.
5. PUBLIC IMPROVEMENTS WILL BE CONSTRUCTED IN ACCORDANCE WITH THE PHASING SCHEDULE OUTLINED IN THE DEVELOPMENT AGREEMENT.
6. A PORTION OF A PLANNING AREA CAN BE COMPLETELY OR PARTIALLY CONSTRUCTED WITHIN A RESPECTIVE PHASE.
7. EACH PHASE SHALL HAVE DUAL ACCESS AND A LOOPED WATER SYSTEM FOR LIFE SAFETY PURPOSES.

DEVELOPMENT SUMMARY:

	PLANNING AREA	LAND USE	GROSS AREA (ACRES)	F.A.R.	MAXIMUM BUILDING HEIGHT (STORIES) (1)	MAXIMUM BUILDING HEIGHT (FEET)	ANTICIPATED PHASING
	A	EDUCATIONAL AND TRAINING FACILITIES; PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS; PARKING LOTS AND PARKING BUILDINGS; RESEARCH/OFFICE AND CORPORATE USES AND FACILITIES FOR THE RESEARCH, DEVELOPMENT, MANUFACTURING, FABRICATION, PROCESSING, OR ASSEMBLY OF SCIENTIFIC OR TECHNICAL PRODUCTS, OR OTHER PRODUCTS; BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	15.1	1.7	4	95	PHASE 1, PHASE 2, PHASE 3
	B	PARKING LOTS AND PARKING BUILDINGS; HELIPAD (SPECIAL REVIEW USE); PRIVATE UTILITY USES; BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	8.3	0.31	2	35	PHASE 1
	C	PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES; EDUCATIONAL AND TRAINING FACILITIES; PRIVATE SHORT TERM LODGING FOR CONOCOPHILLIPS EMPLOYEES AND GUESTS; PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS; PRIVATE, NONCOMMERCIAL, RECREATIONAL AND SOCIAL FACILITIES; PARKING LOTS AND PARKING BUILDINGS; HELIPAD (SPECIAL REVIEW USE); CAMPUS ORIENTED CHILDCARE CENTER; CAMPUS ORIENTED FOOD SERVICE; BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	15.6	0.49	3	65	PHASE 1
	D	PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES; PARKING LOTS AND PARKING BUILDINGS; PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS; CAMPUS ORIENTED FOOD SERVICE; PRIVATE UTILITY USES; HELIPAD (SPECIAL REVIEW USE); BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	28.9	0.44	5	65	PHASE 1
	E	PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES; MEETING ROOM; PRIVATE, SHORT TERM LODGING FOR CONOCOPHILLIPS EMPLOYEES AND GUESTS; PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS; PARKING LOTS AND PARKING BUILDINGS; CAMPUS ORIENTED FOOD SERVICE; PRIVATE UTILITY USES; HELIPAD (SPECIAL REVIEW USE); BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	15.3	0.06	1	35	PHASE 1, PHASE 2
	F	PROFESSIONAL, BUSINESS AND ADMINISTRATIVE OFFICES; PEDESTRIAN PLAZAS AND PEDESTRIAN WAYS; PARKING LOTS AND PARKING BUILDINGS; CAMPUS ORIENTED FOOD SERVICE; HELIPAD (SPECIAL REVIEW USE); BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	10.8	0.70	5	65	PHASE 3
	G	SECURITY SCREENING; PRIVATE UTILITY USES; BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	2.8	0.13	2	35	PHASE 1, PHASE 2, PHASE 3
	H	MEETING ROOM; BUILDING MOUNTED CMRS FACILITIES; SOLAR PANELS; AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION FACILITIES	0.8	0.9	2	35	PHASE 1
	I	PRIVATE UTILITY USES	14.7				PHASE 1, PHASE 2, PHASE 3
		TOTAL	**114.3**				PHASE 3
	PUBLIC LAND*	OPEN SPACE	38.52				PHASE 1
	PRIVATE COMMON OPEN SPACE	OPEN SPACE	222.05				PHASE 1, PHASE 2, PHASE 3
	INTERNAL ROADS	ROADS	14.74				PHASE 1
		TOTAL	**390.013**				PHASE 3

(1) THE MAXIMUM BUILDING HEIGHTS SET FORTH IN THE DEVELOPMENT SUMMARY ARE CALCULATED FROM THE PROPOSED BUILDING FINISH FLOOR ELEVATION TO THE TOP OF THE ROOFTOP MECHANICAL SCREEN AND ANY PARAPET OR ARCHITECTURAL ELEMENT NOT OTHERWISE EXEMPTED BY SEC. 17.16.080 OF THE LOUISVILLE MUNICIPAL CODE. ANY BUILDING MOUNTED CMRS FACILITIES, SOLAR PANELS, AND/OR BUILDING MOUNTED WIND POWERED ELECTRICAL GENERATION IMPROVEMENTS SHALL BE EXEMPTED FROM THE MAXIMUM BUILDING HEIGHTS ESTABLISHED HEREIN.

(2) THE DESIGNATION OF SPECIFIC LAND USES WITH THE PLANNING AREAS SHALL NOT PRECLUDE THE DEVELOPMENT OF OTHER USES PERMITTED UNDER THE PCZD-COMMERCIAL WITH PUD-C OVERLAY. RELOCATION OF LAND USES WITHIN PLANNING AREAS MAY ALSO OCCUR WITHOUT AMENDMENT OF THIS PRELIMINARY PUD DEVELOPMENT PLAN.

(3) TOTAL BUILDING SQUARE FOOTAGE SHALL NOT EXCEED 2,500,000 SQUARE FEET, EXCLUSIVE OF STAIRWELLS; ELEVATOR SHAFTS; HALLWAYS; BALCONIES; PATIOS; SPACE OCCUPIED BY HEATING, AIR CONDITIONING OR OTHER UTILITY OR MECHANICAL EQUIPMENT; SPACE DEVOTED EXCLUSIVELY TO STORAGE; AND SPACE DEVOTED TO OFF-STREET PARKING OR LOADING AREAS, INCLUDING PARKING GARAGES.

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RESUBMITTAL	2/21/2010
RESUBMITTAL	3/29/2010

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

MASTER PLAN AND GENERAL NOTES

DRAWN	TCM
CHK	TCM
PRJ #	09.25001.00

SHEET NUMBER

2 OF 11

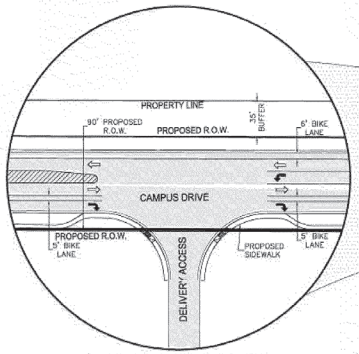
CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

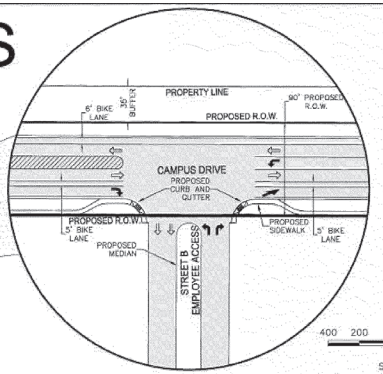
A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

TRANSPORTATION PLAN

SHEET 3 OF 11

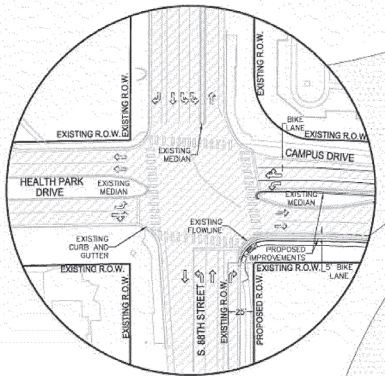


NEW INTERSECTION (UNSIGNALIZED)
N.T.S.



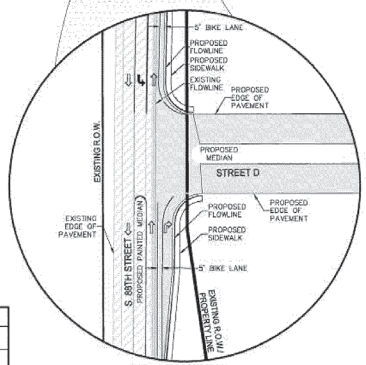
NEW INTERSECTION (UNSIGNALIZED)
N.T.S.

SCALE: 1" = 400'



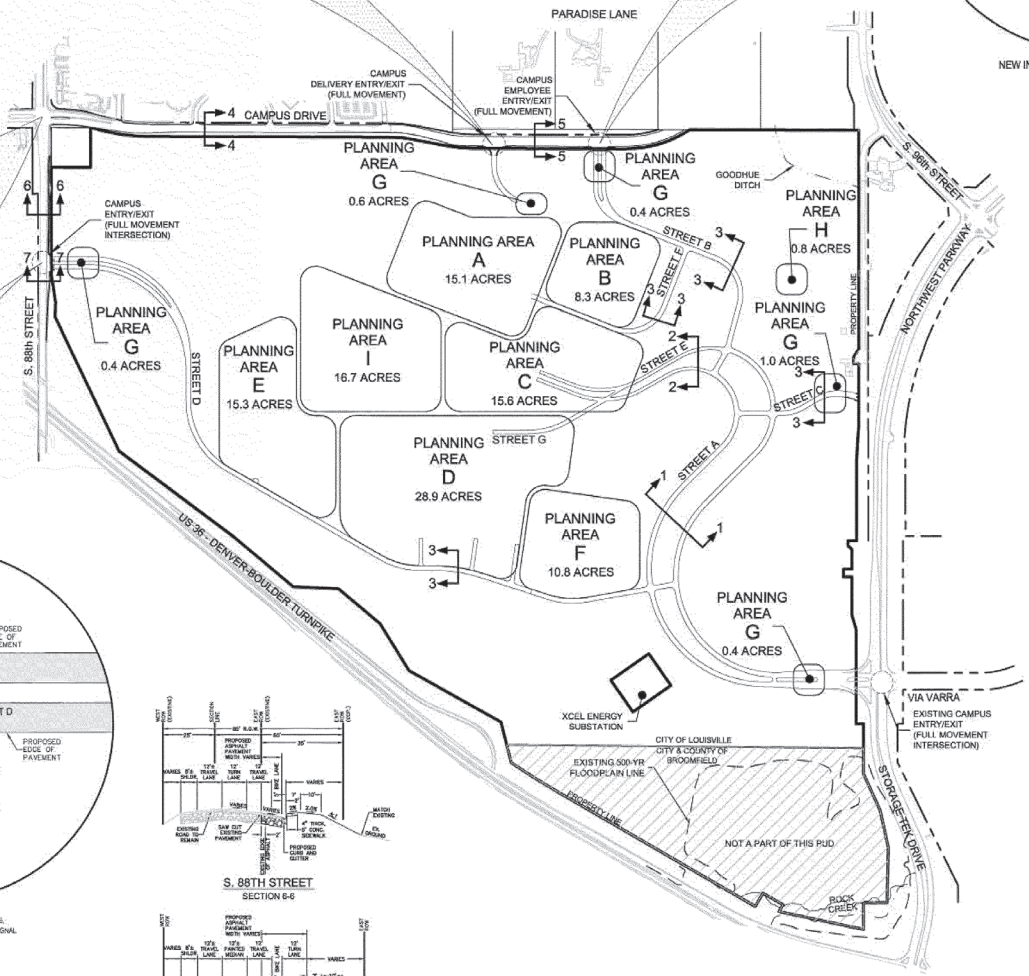
EXISTING INTERSECTION

PROPOSED BIKE LANES ON CAMPUS DRIVE, EXISTING MEDIAN NARROWING, NEW CURB AND GUTTER ON SOUTH SIDE OF CAMPUS DRIVE
N.T.S.



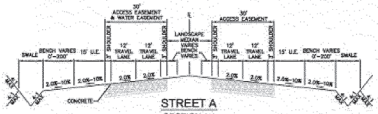
NEW INTERSECTION

PROPOSED NORTHBOUND RIGHT TURN LANE, SOUTHBOUND LEFT TURN LANE AND TRAFFIC SIGNAL
N.T.S.

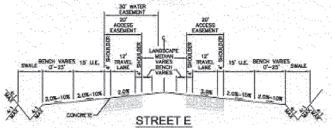


S. 88TH STREET
SECTION 6-6

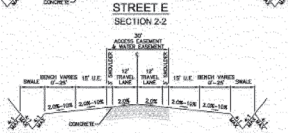
S. 88TH STREET
SECTION 7-7



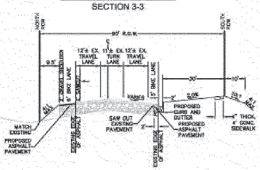
STREET A
SECTION 1-1



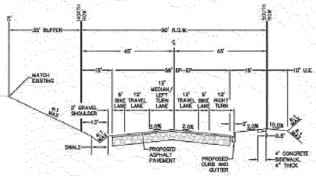
STREET E
SECTION 2-2



STREETS B, C, D & F
SECTION 3-3



EXISTING CAMPUS DRIVE
SECTION 4-4



PROPOSED CAMPUS DRIVE
SECTION 5-5

LEGEND	
	EXISTING PAVEMENT
	PROPOSED PAVEMENT
⇨	ARROW SHOWN FOR INFORMATION ONLY
➡	PROPOSED ARROW TO BE INSTALLED

TRANSPORTATION NOTES:

1. INTERSECTIONS SHOWN DEPICT ULTIMATE BUILDOUT CONFIGURATION.
2. LANE CONFIGURATIONS FOR THE BLOWUP INTERSECTIONS ARE PER THE TRAFFIC STUDY BY FELSBURG HOLT & ULLEVIG DATED OCTOBER, 2009.
3. ALL ROADWAYS INTERNAL TO THE SITE, STREETS A–F, ARE PRIVATE AND WILL BE PRIVATELY OWNED AND MAINTAINED, ACCESSIBLE ONLY TO CONOCOPHILLIPS EMPLOYEES, AUTHORIZED VISITORS AND ACCESS EASEMENT HOLDERS.

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ISSUE / REVISION	DATE
PRELIMINARY PUD DEVELOPMENT PLAN SUBMITTAL	11/12/2009
FIRST RESUBMITTAL	02/01/10

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

TRANSPORTATION PLAN

DRAWN	TAH
CHK	MEL
PRJ #	5.13.01.00003

SHEET NUMBER:

3 OF 11

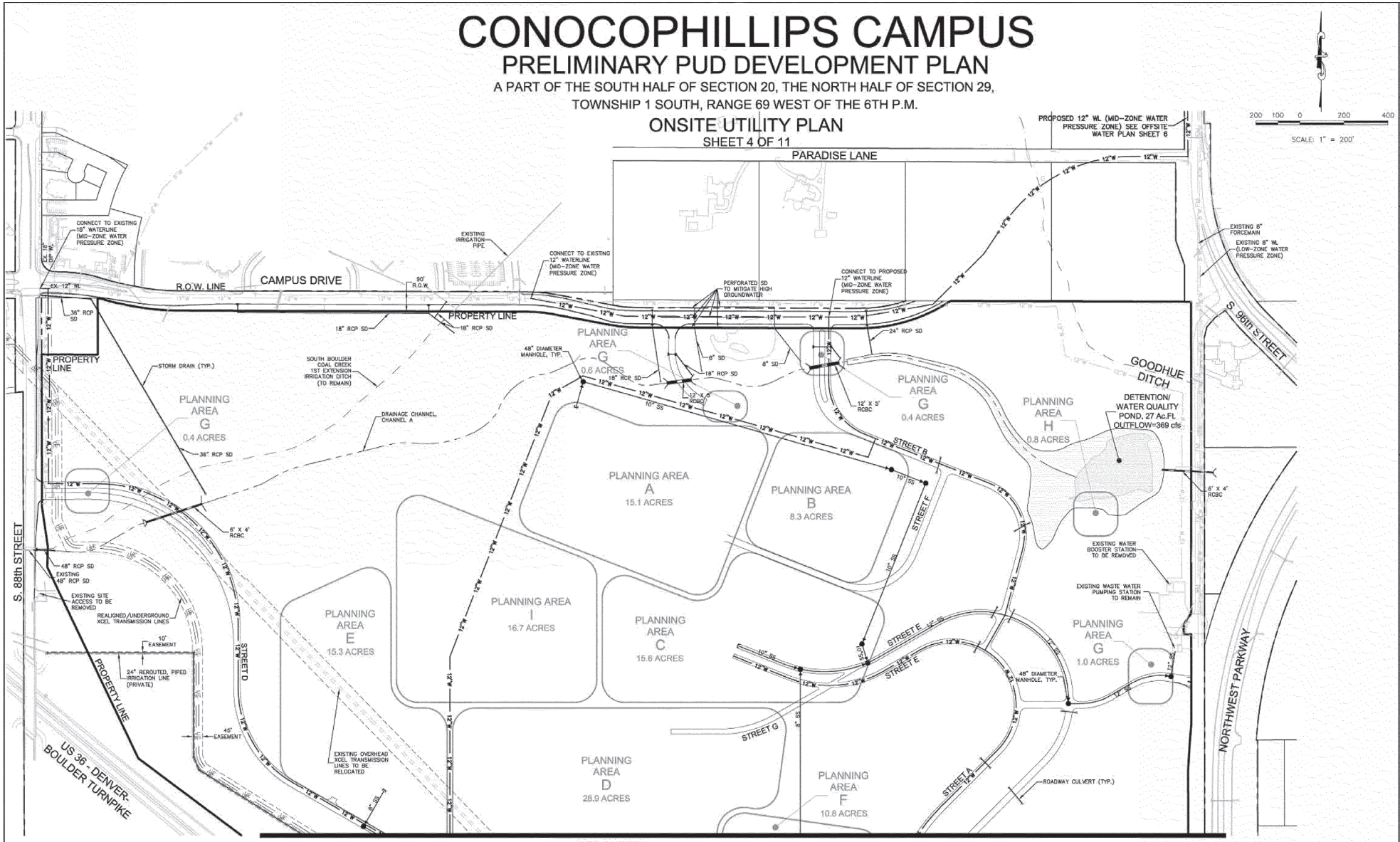
CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

ONSITE UTILITY PLAN

SHEET 4 OF 11



200 100 0 200 400

SCALE: 1" = 200'

SEE SHEET 5

SANITARY SEWER COLLECTION SYSTEM NOTES:

1. CONOCOPHILLIPS PROPOSES TO UTILIZE THE EXISTING OFFSITE SANITARY FORCE MAIN AND GRAVITY SYSTEMS TO THEIR CAPACITIES TO SERVE THE PROPOSED PROJECT.
2. CONOCOPHILLIPS PROPOSES CONTINUED USE OF THE EXISTING ONSITE SANITARY SEWER LIFT STATION. CONOCOPHILLIPS ANTICIPATES OWNERSHIP AND MAINTENANCE RESPONSIBILITY FOR THIS FACILITY AS THE SOLE USER.
3. SANITARY MAINLINES DEPICTED HEREON ARE LOCATED TO INDICATE GENERAL COLLECTION INTENT FOR THE SITE. FINAL ALIGNMENTS WILL BE DESIGNED IN ACCORDANCE WITH THE FINAL DEVELOPMENT PLAN(S). FINAL DIAMETERS SHALL BE CONFIRMED BASED ON FINAL ARCHITECTURE AND MECHANICAL ENGINEERING DESIGNS.
4. PRIVATELY OWNED AND MAINTAINED SANITARY SEWER LINES SHALL BE INSTALLED NO CLOSER THAN 11' LATERALLY (10' CLEAR PER COLORADO DEPARTMENT OF HEALTH) AND 2' VERTICALLY AT CROSSINGS TO A CITY MAINTAINED UTILITY. SLEEVED UTILITIES MAY BE CONSTRUCTED CLOSER.
5. THE ONSITE SANITARY SEWER SHOWN WITHIN THE CONOCOPHILLIPS CAMPUS IS PROPOSED TO BE PRIVATELY OWNED AND MAINTAINED.

WATER DISTRIBUTION SYSTEM NOTES:

1. PRELIMINARY WATERMAIN LOCATIONS INDICATE SERVICE FROM THE CITY OF LOUISVILLE MID-ZONE WATER PRESSURE ZONES.
2. LOOPED SERVICE WILL BE PROVIDED TO THE BUILDING(S) BASED UPON THE FINAL DEVELOPMENT PLAN(S) DESIGN OF INTERIOR STREET SYSTEMS.
3. WATERMAIN DIAMETERS WILL BE DETERMINED BY FINAL DESIGN DEMANDS AND IN COMMUNICATION WITH THE CITY OF LOUISVILLE PUBLIC WORKS DEPARTMENT.
4. ALL PUBLIC WATER MAINS SHALL BE CONSTRUCTED IN EASEMENTS DEDICATED TO THE CITY OF LOUISVILLE.

GENERAL NOTES:

1. WATER AND SEWER UTILITIES SHALL BE CONSTRUCTED WITH A 10' CLEAR SEPARATION.
2. ENTRY LOCATIONS INTO THE PLANNING AREAS ARE CONCEPTUAL ONLY.
3. CITY UTILITY LINES SHALL BE INSTALLED WITH ADEQUATE CLEARANCE FROM OTHER PRIVATELY OWNED DRY UTILITIES. DRY UTILITIES SHALL BE CONSTRUCTED NO CLOSER THAN 6' LATERALLY AND 2' VERTICALLY AT CROSSINGS TO A CITY MAINTAINED UTILITY. SLEEVED UTILITIES MAY BE CONSTRUCTED CLOSER.

LEGEND

- EXISTING FIRE HYDRANT (FH)
- PROPOSED SANITARY MANHOLE (SSMH)
- PROPOSED GRAVITY SANITARY SEWER (SS)
- EXISTING WATER LINE (WL)
- 8"W — PROPOSED 8" WATER LINE (WL)
- 12"W — PROPOSED 12" WATER LINE (WL)

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CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

ONSITE UTILITY PLAN

DRAWN	TAH
CHK	MEL
PRJ #	5.13.01.0003

SHEET NUMBER

4 OF 11

CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

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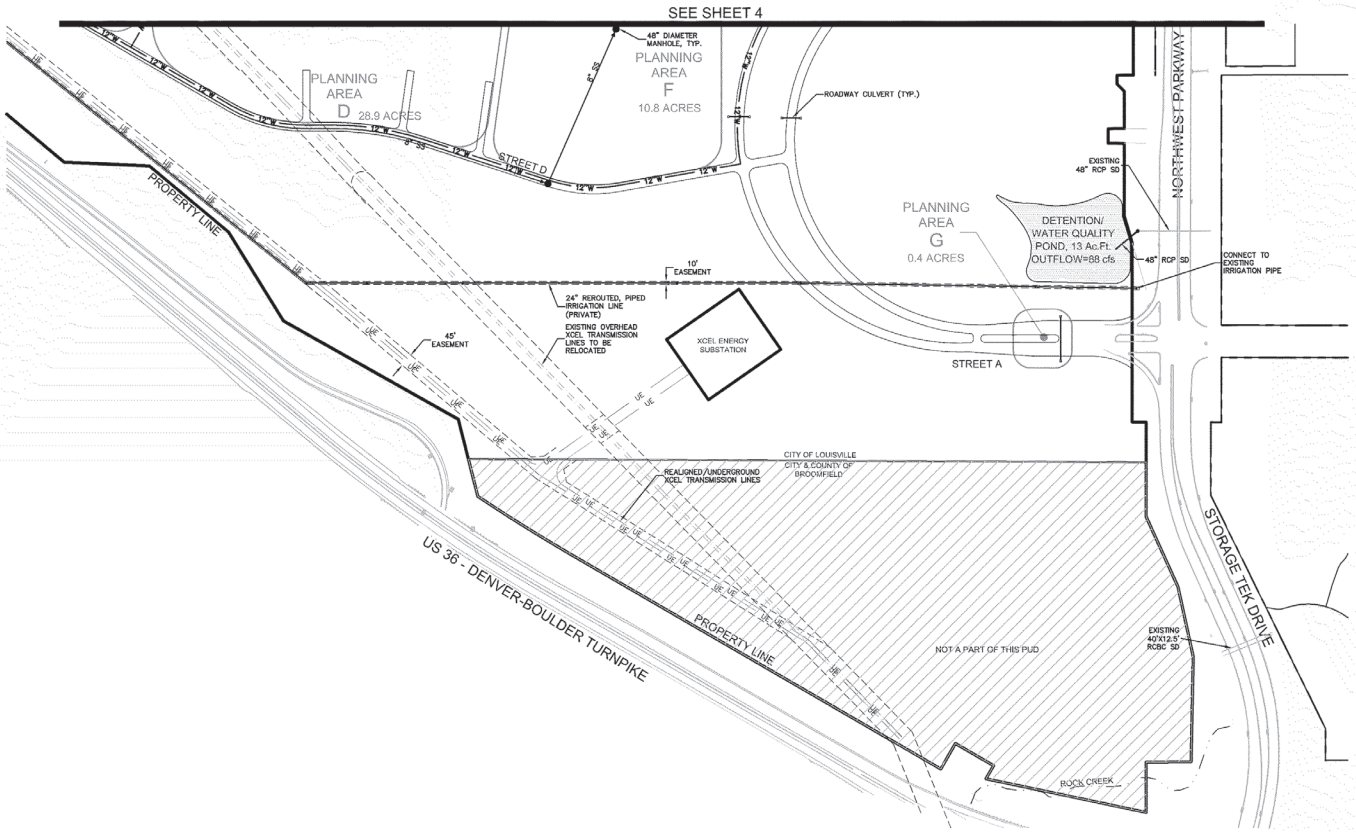
ONSITE UTILITY PLAN

SHEET 5 OF 11



200 100 0 200 400

SCALE: 1" = 200'

LEGEND	
	EXISTING FIRE HYDRANT (FH)
	PROPOSED SANITARY MANHOLE (SSMH)
	PROPOSED GRAVITY SANITARY SEWER (SS)
	EXISTING WATER LINE (WL)
8"W	PROPOSED 8" WATER LINE (WL)
12"W	PROPOSED 12" WATER LINE (WL)

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SURVEYOR

ISSUE / REVISION	DATE
PRELIMINARY PUD DEVELOPMENT PLAN SUBMITTAL	11/12/2009
FIRST RESUBMITTAL	02/01/10

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

ONSITE UTILITY PLAN

DRAWN	TAH
CHK	MEL
PN / #	8.19.01.M005

SHEET NUMBER:

5 OF 11

CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

OFFSITE WATER PLAN

SHEET 6 OF 11

200 100 0 200 400

SCALE: 1" = 200'

NOTES:

1. EXISTING UTILITIES IDENTIFIED ON THIS EXHIBIT MAY NOT BE INCLUSIVE OF ALL EXISTING UTILITIES.
2. RIGHT-OF-WAY LINES ARE APPROXIMATE, AND OWNERSHIP INFORMATION IS BASED ON CURRENT COUNTY ASSESSOR RECORDS.
3. THE PROPOSED 12" WATERLINE BETWEEN THE CONOCOPHILLIPS NORTH BOUNDARY AND DILLION ROAD PROVIDES THE REQUIRED SECONDARY CONNECTION TO THE CITY OF LOUISVILLE MID-ZONE WATER PRESSURE ZONE. IN CONJUNCTION WITH THIS ADDITIONAL WATERLINE THE EXISTING PRESSURE REDUCING VALVE (PRV) MUST BE RELOCATED TO S. 96TH STREET. THIS IN TURN ADJUSTS THE LOCATION OF THE WATER PRESSURE ZONE SPLIT. THE EXISTING 8" WATERLINE IN S. 96TH STREET WILL REMAIN AS PART OF THE CITY OF LOUISVILLE LOW-ZONE WATER PRESSURE ZONE WHICH CURRENTLY SERVES THE RANCHETTE PROPERTIES ALONG PARADISE LANE.

LEGEND	
✱	EXISTING FIRE HYDRANT (FH)
⋈	EXISTING GATE VALVE (GV)
——W——	EXISTING WATER LINE (WL)
——12"W——	PROPOSED 12" WATER LINE (WL)

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FIRST RESUBMITTAL	02/01/10

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

OFFSITE WATER PLAN

DRAWN: TAH
CHK: MEL
PRJ #: 8.13.013.00003

SHEET NUMBER:
6 OF 11

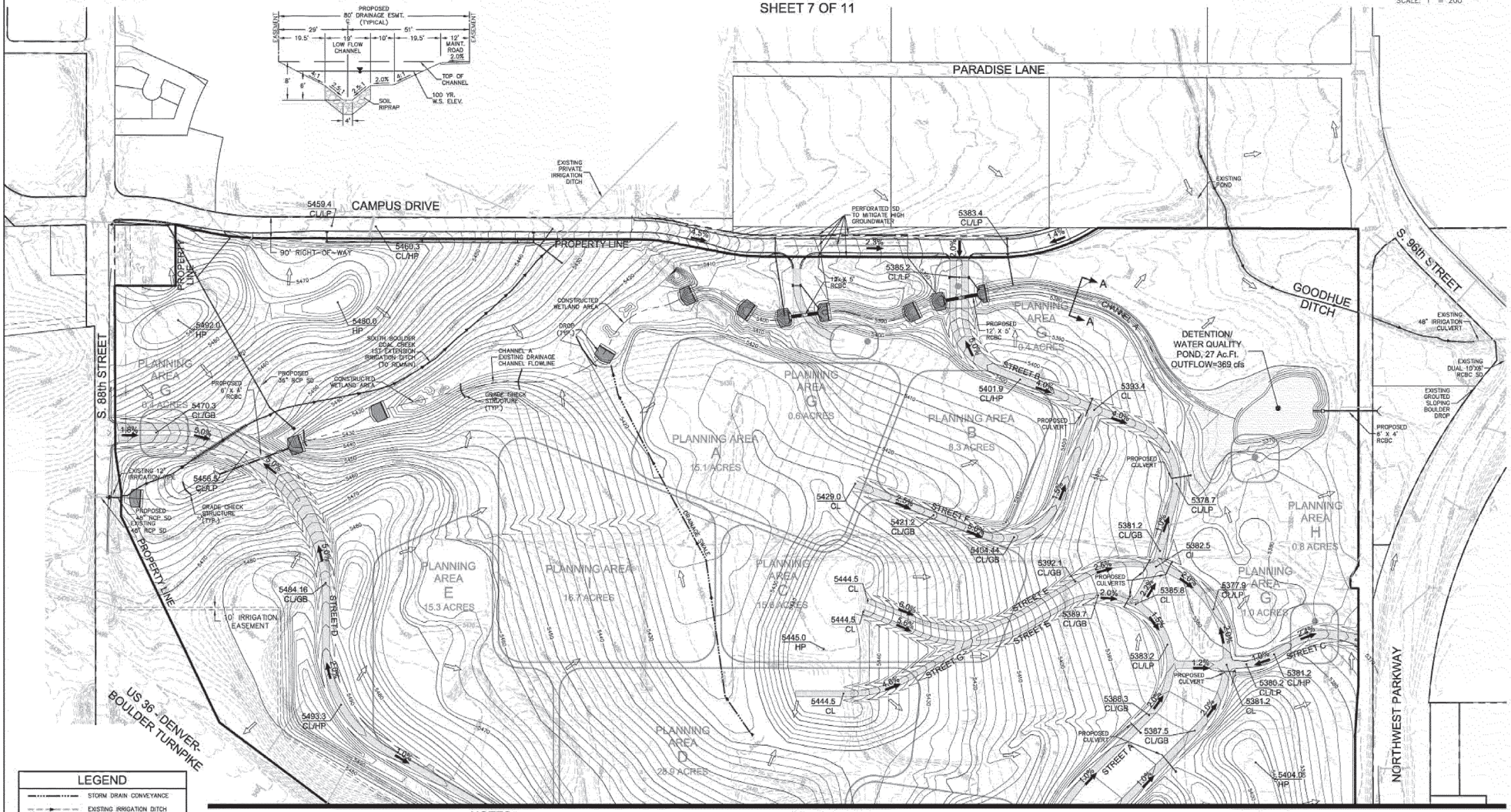
CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

GRADING AND DRAINAGE PLAN

SHEET 7 OF 11



LEGEND

- STORM DRAIN CONVEYANCE
- EXISTING IRRIGATION DITCH
- PROPOSED IRRIGATION DITCH
- PROPOSED IRRIGATION PIPE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- DIRECTION OF FLOW
- 1.0% PROPOSED SLOPE
- 5422.0 CL PROPOSED SPOT ELEVATION

SEE SHEET 3 FOR TYPICAL ROADWAY SECTIONS

SEE SHEET 8

NOTES:

1. THIS PLAN IDENTIFIES POTENTIAL LOCATIONS FOR DETENTION AND WATER QUALITY PONDS.
2. CONTOURS MAY BE SHAPED TO PROVIDE AESTHETIC LANDSCAPING.
3. POND DEPTHS AND CONTOURS ARE SUBJECT TO CHANGE.
4. THE PROPOSED STORM DRAIN PIPING, DRAINAGE CHANNEL AND DETENTION PONDS TO BE CONSTRUCTED ON PRIVATE PROPERTY WILL REQUIRE EASEMENTS DEDICATED TO THE CITY OF LOUISVILLE. EASEMENTS SHOWN FOR THESE PURPOSES ARE CONCEPTUAL AND SUBJECT TO CHANGE.
5. ALL ONSITE STORM DRAIN FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY CONOCOPHILLIPS.

201

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CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

GRADING AND DRAINAGE PLAN

DRAWN	TAH
CHK	MEL
PRJ #	5.13.0138.00

SHEET NUMBER:

7 OF 11

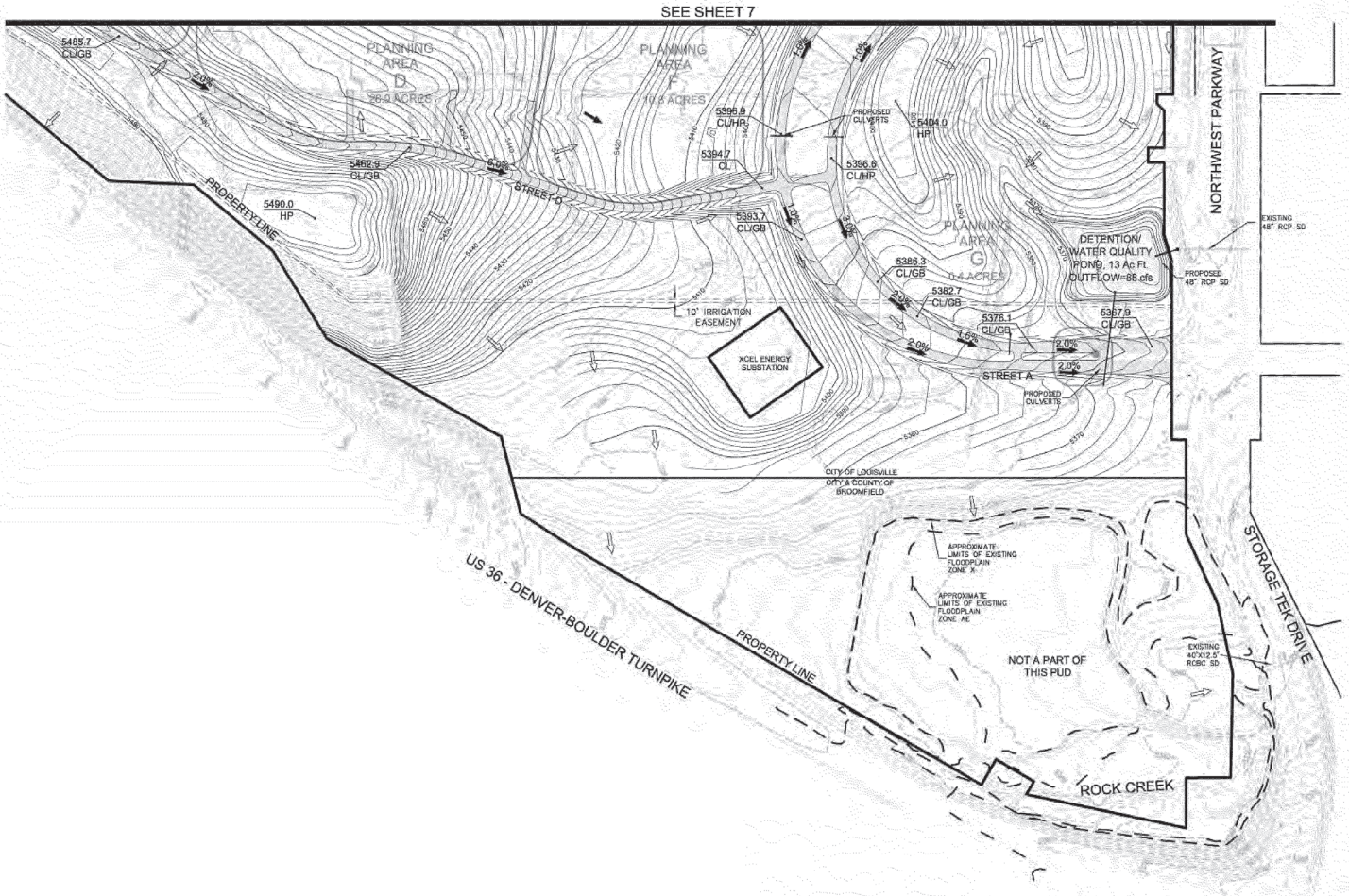
CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

GRADING AND DRAINAGE PLAN

SHEET 8 OF 11



SCALE: 1" = 200'

SEE SHEET 3 FOR TYPICAL ROADWAY SECTIONS

NOTES:

1. THIS PLAN IDENTIFIES POTENTIAL LOCATIONS FOR DETENTION AND WATER QUALITY PONDS.
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LEGEND

- STORM DRAIN CONVEYANCE
- EXISTING IRRIGATION DITCH
- PROPOSED IRRIGATION DITCH
- PROPOSED IRRIGATION PIPE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- DIRECTION OF FLOW
- 1.0% PROPOSED SLOPE
- 5422.0 CL PROPOSED SPOT ELEVATION

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SURVEYOR

ISSUE / REVISION	DATE
PRELIMINARY PUD DEVELOPMENT PLAN SUBMITTAL	11/12/2009
FIRST RESUBMITTAL	02/01/10

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

GRADING AND DRAINAGE PLAN

DRAWN: TAH
CHK: MD
PRJ #: 5-13-015003

SHEET NUMBER:
8 OF 11

CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

LANDSCAPE PLAN

SHEET 9 OF 11

Feature Landscape Zones

Primary Entry Areas
- Monuments to be included
- Extensive private common open space with landscape, grading, and irrigation to demonstrate corporate sustainability mission
- Combination of native and ornamental materials
- Coordination with City regarding regulatory signage and signalization, if any

Secondary Entry Areas
- Include campus wayfinding signage
- Private common open space, landscape and irrigation – less extensive than primary areas
- Combination of native and ornamental landscape materials
- Final locations to be determined with development – adjacency to private common open space and native landscape features

Internal Private Trails
- Within private common open space
- Accommodate campus pedestrian circulation system inside of secure perimeter
- Predominantly restored prairie and enhanced prairie landscapes
- Facilitate internal building connections

External Public Trails
- Within public land
- Connection to local and regional trail networks
- Accommodate pedestrian and bicycle circulation outside of security perimeter

Entry Drive
- Broad, meandering divided roadway
- Bio-filtration to be incorporated to accommodate area stormwater drainage overflow
- Enhanced prairie landscape
- Landscape enhancements at entry areas to enhance campus wayfinding

Restorative Landscape Zones & Drainage Areas

Prairie Garden (High Water Use / High Maintenance)
- Ornamental garden landscape with wildflowers, shrubs, and trees
- Native and noninvasive adapted plant material
- High supplemental water requirements after establishment

Enhanced Prairie (Medium Water Use / Medium Maintenance)
- Prairie landscape enhanced with wildflower, shrub, and tree plantings
- Native and adapted noninvasive plant material
- Moderate supplemental water requirements after establishment

Restored Prairie (Low Water Use / Low Maintenance)
- Restored shortgrass prairie landscape
- Native ornamental grasses and wildflowers
- Low supplemental water requirements after establishment

Riparian
- Naturalized vegetated wetlands and swales
- Native and adapted wetland plant species
- Capture and filter stormwater runoff

Potential Detention Ponds
- Final delineation required
- Potential detention ponds per civil grading and drainage plans
- Restore using native riparian vegetation at fringe areas
- Integrate into private common open space and private trail system

LANDSCAPE PLAN

400 200 0 400 800

SCALE: 1" = 400'

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RESUBMITTAL	2/01/2010
RESUBMITTAL	3/08/2010

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
LOUISVILLE, CO

LANDSCAPE PLAN

DRAWN	TEAM
CHK	TEAM
PRJ #	05.25001.00

SHEET NUMBER:

9 OF 11

CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

LANDSCAPE NARRATIVE AND PLANT SCHEDULE

SHEET 10 OF 11

LANDSCAPE NARRATIVE

Landscape Narrative

This narrative is intended to set forth the general goals and objectives for the successful integration of the proposed ConocoPhillips campus within a regionally distinctive context. This narrative is not intended to provide prescriptive recommendations for the landscape design and implementation, as those decisions will be made within the context of a more established and definitive architectural design for the entire campus which will be submitted for review and approval at a later date. The following is a summary of ConocoPhillips' landscape / environmental goals and objectives, with an accompanying schedule of acceptable plant materials for this site and region.

Landscape Master Plan

The conceptual landscape plan layout for site landscaping (Landscape Plan) has been specifically configured in order to not only accommodate a phased campus development, but also to showcase, enhance and preserve the natural and environmental features of this site. The Landscape Plan will contribute to this mission through sustainable site planning and development involving native landscape preservation, restoration and enhancement.

The Landscape Plan is also structured through the establishment of the referenced landscape typologies to allow for a hierarchy of landscape treatments, which includes accommodating the incorporation of ornamental landscapes in areas where campus employees and visitors approach buildings and congregate in exterior building related spaces. The inclusion of landscape typologies is intended to accommodate this diversity of environments, and allow for a variety of landscape experiences and expressions over the entirety of the site.

Each of these goals and objectives is recognized within a series of landscape typologies that overlay all private common open spaces throughout the site. Following is a summary of the landscape typologies that are being proposed. This summary is intended to provide an organizational framework for the future physical design for the site, including a general outline of the goals and objectives within each zone, respectively.

- **Existing Landscape Features**
  This site sits at an approximate 5335 to 5490 elevation, with views of the Flatirons to the immediate west, and of Longs Peak to the northwest. At this elevation, and with an approximate 15" of annual rainfall, the site technically falls within the Grassiands ecosystem / lifezone classification for the region. As such, and due to the intensive grazing and introduction of annual, non-native species, there are few places on the site that possess the unique flora and fauna characteristics that are representative of this environment/ecosystem. Those areas of the site where existing native characteristics can best be preserved, enhanced or restored, are most typically found in areas around existing ponds and water features, within natural lowland / drainage areas.

  - ***Drainage Sheds*** - Historically, drainage on this site has been accommodated in two main drainage sheds: the northern drainage way leading towards the Goodhue Ditch system, and Rock Creek towards the southeast of the site. Future drainage for the campus will continue to utilize these main drainage regimes for the majority of the overland flow and to convey offsite drainage throughout the site, with the addition of another proposed storm water detention pond located near the main campus entry off of Northwest Parkway. By utilizing these existing flow regimes, it is the goal of ConocoPhillips to protect and preserve as much of the existing plant material associated with these areas as possible, and to augment, where necessary, to ultimately facilitate incorporation of the same into the site private common open space system; to serve as prominently featured landscape elements. Within these zones, natural drainage will be encouraged and complemented with native and riparian landscape materials (see Plant Schedule). Detention may be considered along natural topographic contours in areas where storm water can naturally be temporarily impounded (see Existing Ponds and Water Features below).
  - ***Existing Ponds and Water Features*** - Existing pond / water feature areas have been identified on the Landscape Plan as areas for the preservation of existing plant material. The existing Chaussart Reservoir in the northeast corner of the property will be converted to function as a primary storm water detention pond for the northern drainage regime. All other existing ponds / water features will be drained and incorporated into the private common open space network. For each of these areas, which have slightly different characteristics, riparian and upland landscape materials will be used to enhance and restore an indigenous character. Some ornamental landscape may be introduced along the internal pedestrian circulation system. This will create environmental education opportunities for ConocoPhillips employees and visitors throughout the site by displaying a regionally appropriate landscape environment.
  - ***Existing Slope Areas*** - This zone is primarily represented along the steep southern boundary of the site (adjacent to the US 36 - Denver Boulder Turnpike frontage). Provisions for slope stabilization and erosion control during construction, and long-term solutions to re-vegetate with a combination of native grasses and perennials will be incorporated. It is ConocoPhillips' objective, given the size of this zone and its visual prominance, that a unified and consistent landscape character be established which highlights the future design aesthetic for the site.

- **Landscape Typologies**
  Landscape typologies are those areas that contribute to the operational objectives for the proposed development, including establishing a sense of entry and arrival, promoting a unified visual character, controlling buffers and edges in a consistent and controlled manner and serving the social and recreational outdoor needs of ConocoPhillips employees and visitors. These zones on the site (and represented on the Landscape Plan) include the following specific areas:

  - ***Primary Entry Areas*** - At the eastern and western limits of the internal collector roadway (intersecting S. 88th Street and Northwest Parkway), the native landscape will intersect and integrate with feature areas that will contain future monument signage for the site. These are areas where landscape may be enhanced to include more use of seasonal color and ornamental landscape materials in order to enhance the sense of arrival. Consideration will be given to coordination of these landscape materials with signage and traffic control devices. Also included within these zones will be future consideration for the intersection of pedestrian circulation systems, and the segregation of off-site and on-site improvements for security purposes.
  - ***Secondary Entry Areas*** - Secondary site entries occur as shown on the Landscape Plan at Campus Drive, South 88th Street and the northern entry off of Northwest Parkway. These areas will be similar to primary entries though smaller in scale, and will leverage their adjacency to native landscape zones to create a unique sense of arrival to the campus.
  - ***Entry Drive*** - The entry drive experience is a highly scripted sequence of landscape events that reinforce ConocoPhillips' goal of creating a campus that is "quiet and astonishing". The entry experience consists of entering the site from Northwest Parkway through a secured campus entry. Once through the check point, employees and authorized visitors will travel along a rolling topography of restored shortgrass prairie species with glimpses of the campus buildings coming in and out of view along the way. The overall landscape approach will be subtle and contextually appropriate. The alignment of the entry drive will prominently feature private common open spaces, travel through all three distinctive landscape typologies and will be responsive to the established rolling topography.
  - ***External Public Trails*** - Public land along a portion of the periphery of the campus, outside of the campus security perimeter, will provide for pedestrian trail connections to the regional trail network.
  - ***Internal Private Trails*** - Within the site private common open space there will be a series of connected private trails. These trails will connect buildings and provide for the connection of employees to the landscape.
  - ***Riparian*** - This typology surrounds the natural drainage features of the site. Since the alignment of the northern drainage regime will not substantially be realigned, ConocoPhillips' goal is to protect and preserve as much of the existing native riparian plant material as possible. This zone will require the addition of native riparian plant material to augment and enhance the existing system, and will require minor irrigation and maintenance until full establishment.
  - ***Restored Prairie*** - It is ConocoPhillips' goal to restore/establish the vast majority of the site to a contextually appropriate shortgrass prairie aesthetic. This will require considerable grading and soil preparation along with an intensive establishment strategy. This typology makes up the majority of the site and, once fully established, requires the least maintenance and irrigation of the proposed typologies.
  - ***Enhanced Prairie*** - The enhanced prairie is the transitional zone between the Restored Prairie and the Prairie Garden. This zone uses native plant materials and topography in a more formal and structured arrangement to provide the subtle contrast to the Restored Prairie typology. It has a moderate maintenance and irrigation requirement.
  - ***Prairie Garden*** - This landscape typology is the zone closest to the buildings and includes a mixture of hardscape and more formally arranged softscape elements. These areas in particular will utilize a mixture of colorful native plant material, which will provide seasonal interest. This requires the highest level of maintenance and irrigation, and has therefore been limited in size and location.

PLANT SCHEDULE

Native and Xeriscape Plants

Deciduous Trees	
Botanical Name	Scientific Name
Amur Fir	Abies nordmanniana
Tibetan Fir	Abies fabrei
Nobilis Fir	Abies x nobilis 'Glauca'
Green Prince Fir	Abies x nobilis 'Green Prince'
Korean Fir	Abies koreana
Rocky Mountain Juniper	Juniperus scopulorum 'Wichita'
Red Cedar	Juniperus virginiana
Black Hills Spruce	Picea glauca densata
Serbian Spruce	Picea omorika
Colorado Green Spruce	Picea pungens
Colorado Blue Spruce	Picea pungens 'Glauca'
Engelmann Pine	Pinus engelmannii
Limber Pine	Pinus flexilis
Ponderosa Pine	Pinus ponderosa
Austrian Pine	Pinus nigra
Mugo Pine	Pinus mugo
Southwestern White Pine	Pinus strobiformis
Scotch Pine	Pinus sylvestris
Douglas Fir	Pseudotsuga menziesii 'Fastigiata'

Deciduous Trees	
Botanical Name	Scientific Name
Bigtooth Maple	Acer grandidentatum
Native Boxelder	Acer negundo
Ohio Buckeye	Aesculus glabra
Serviceberry	Amelanchier alnifolia
Allegheny Serviceberry	Amelanchier laevis
Regular Pawpaw	Asimina triloba
American Hornbeam	Carpinus caroliniana
Bitternut Hickory	Carya cordiformis
Western Catalpa	Catalpa speciosa
Western Hackberry	Celtis occidentalis
Turkish Filbert	Corylus colurna
Hackberry	Celtis occidentalis
Ginkgo	Ginkgo biloba
Kentucky Coffeetree 'Espresso'	Gymnocladus dioica 'Espresso'
Peppermint	Mentha piperita
Butternut	Juglans cinerea
Black Walnut	Juglans nigra
Amur Corktree	Phellodendron amurense
Plains Cottonwood	Populus deltoides spp. Wislizeni
Swamp White Oak	Quercus bicolor
Bebb Willow/Gray Oak	Quercus bebbiana
Bur Oak	Quercus macrocarpa
Pin Oak	Quercus palustris
English Oak	Quercus robur
Common Red Oak	Quercus rubra
Shumard Oak	Quercus shumardii
Alpine Flowering Locust	Robinia x ambigua 'Idahoensis'
Black Locust	Robinia pseudoacacia
Basswood	Tilia americana
Western Basswood	Tilia heterophylla
Accolade Pagoda Tree	Styphnolobium japonica
American Linden	Tilia americana
Little Leaf Linden	Tilia cordata
Redmond Linden	Tilia x flavescens 'Redmond'

Deciduous Trees	
Common Name	Scientific Name
Compact Hedge Maple	Acer campestre 'Compacta'
Amur Maple	Acer ginnala
Rocky Mountain Maple	Acer glabrum
Tatarian Maple	Acer glabrum
Red Maple	Acer rubrum
Oakleaf Mahle	Acer saccharum
Silver Maple	Acer saccharinum
Bowhall Red Maple	Acer x freemanii 'Bowhall'
Autumn Blaze Maple	Acer x freemanii 'Jeffersred'
Crimson King Maple	Acer platanoides 'Crimson King'
Norway Maple	Acer platanoides
Sugar Maple	Acer saccharum
Paper Birch	Betula papyrifera
Heritage River Birch	Betula nigra 'Heritage'
Whitespire Birch	Betula papyrifera 'Whitespire'
Whitespire Birch Clump	Betula papyrifera 'Whitespire'
Hackberry	Celtis occidentalis
Common Hackberry	Celtis occidentalis
Turkish Filbert	Corylus colurna
Thornless Cockspur Hawthorn	Crataegus crus-galli inermis
Downy Hawthorn	Crataegus mollis
Washington Hawthorn	Crataegus phaenopyrum
Golden Rain Tree	Koelreuteria paniculata
Amur Maackia	Maackia amurensis
White Mulberry	Morus alba 'Stribling Weeper'
Flowering Crabapple	Malus spp.
Hedge Maple	Acer campestre
Persian Ironwood	Parrotia persica
Hophop	Ostrya virginiana
Wild Plum	Prunus americana
Mazzard Tree	Prunus avium
Sheridan Chokecherry	Prunus virginiana 'Sheridan'
Japanese Tree Lilac	Syringa reticulata

Deciduous Shrubs	
Common Name	Scientific Name
Amur Honeysuckle	Lonicera maackii
Alpine Currant	Ribes alpinum
Golden Currant	Ribes aureum
Wax Currant	Ribes cereum
Gooseberry Currant	Ribes inerme
Missouri Gooseberry	Ribes missouriense
Wood's Rose	Rosa woodsii
Prickly Rose	Rosa acicularis
Nootka Rose	Rosa nutkana
Arkansas Rose	Rosa arkansana
Virginia Rose	Rosa virginiana
Golden Current	Ribes aureum
Thimbleberry	Rubus parviflorus
Red Raspberry	Rubus idaeus
Western Thimbleberry	Rubus parviflorus
Wild Raspberry	Rubus idaeus
Western Snowberry	Symphoricarpos occidentalis
Common Snowberry	Symphoricarpos albus
Coralberry	Symphoricarpos orbiculatus
Mountain Snowberry	Symphoricarpos oreophilus
Common Lilac	Syringa vulgaris
Meyer Lilac	Syringa meyeri
Dwarf Korean Lilac	Syringa meyeri 'Palibin'
Common Purple Lilac	Syringa vulgaris 'Charles Joly'
Common White Lilac	Syringa vulgaris 'Alba'
Dwarf Korean Lilac	Syringa meyeri 'Palibin'
Common Purple Lilac	Syringa vulgaris 'Charles Joly'
Common White Lilac	Syringa vulgaris 'Alba'
Common Lilac	Syringa vulgaris
Meyer Lilac	Syringa meyeri

CONOCOPHILLIPS CAMPUS

PRELIMINARY PUD DEVELOPMENT PLAN

A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29,
TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.

VEHICULAR / PEDESTRIAN CIRCULATION PLAN

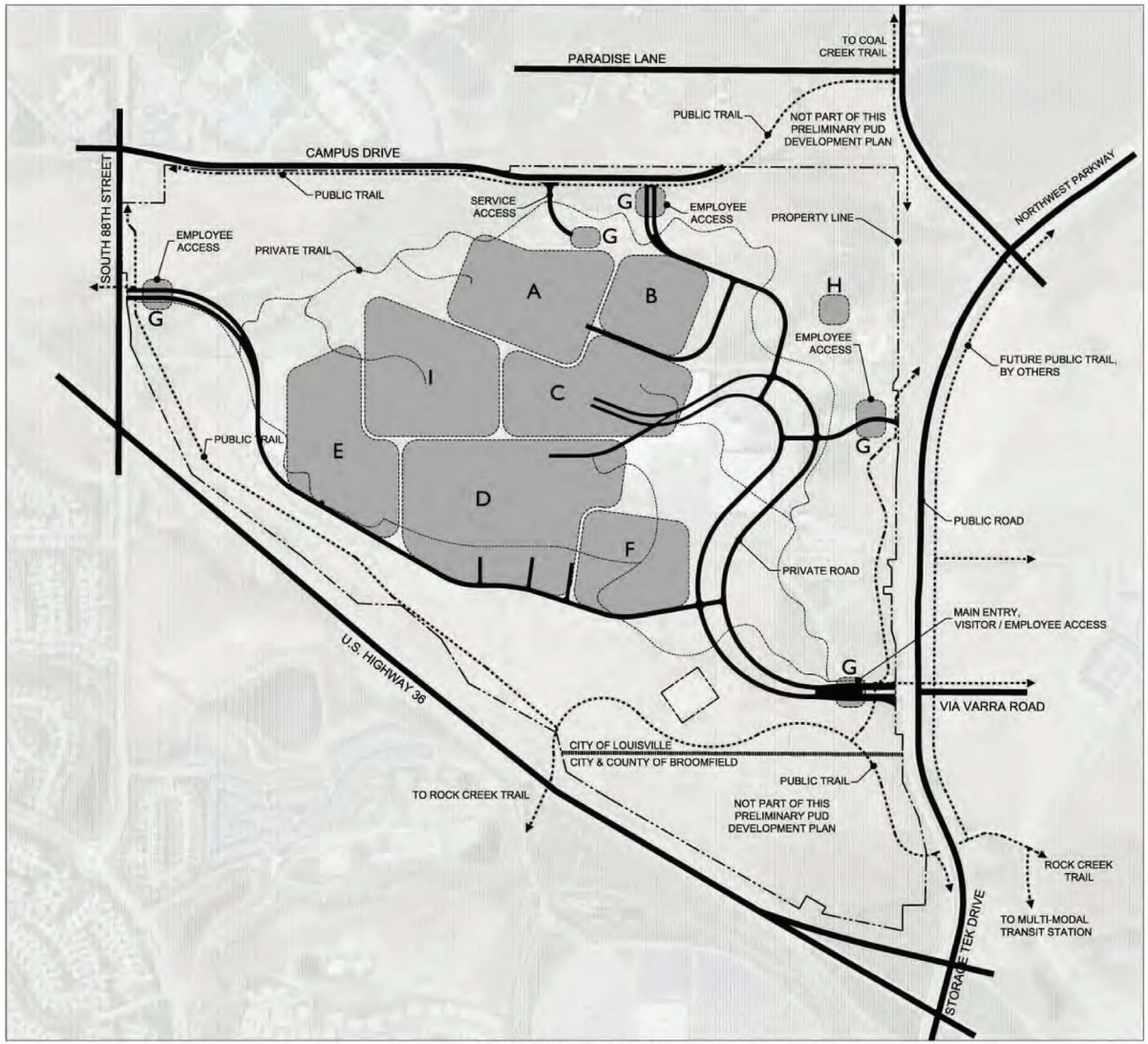
SHEET 11 OF 11

PUBLIC ROADS

PRIVATE ROADS

PUBLIC TRAILS

PRIVATE TRAILS



VEHICULAR / PEDESTRIAN CIRCULATION PLAN

400 200 0 400 800

SCALE: 1" = 400'

206

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RESUBMITTAL	3/09/2010

CONOCOPHILLIPS CAMPUS
2270 SO. 88TH STREET
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VEHICULAR / PEDESTRIAN CIRCULATION PLAN

DRAWN	TEAM
CHK	TEAM
PRJ #	09.026001.00

SHEET NUMBER:

11 OF 11

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Reception No. Charlotte Houston, Boulder County Recorder

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Attachment #7

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ANNEXATION AGREEMENT

THIS AGREEMENT, made and entered into this 22nd day of October, 1981, by and between the CITY OF LOUISVILLE, a municipal corporation, in the County of Boulder, State of Colorado, hereinafter referred to as "CITY", and Storage Technology Corporation, hereinafter referred to as "ANNEXOR".

WITNESSETH: That,

WHEREAS, the ANNEXOR has petitioned CITY for annexation and zoning of the unincorporated territory (" The Property") owned by ANNEXOR, more particularly described in Exhibit "A", attached hereto and by this reference made a part hereof: and,

WHEREAS, the parties mutually agree and recognize that it is necessary for the development of The Property by ANNEXOR, that ANNEXOR obtain certain services from the CITY, including water and sewer services and police protection, and that ANNEXOR dedicate and improve certain rights-of-way and provide other improvements.

NOW,THEREFORE, it is understood and agreed as follows:

1. Basic Intent. The intent of this Agreement is to set forth basic agreements with respect to various designated areas of the annexation as described in Exhibit "A". This Agreement shall be in general in scope and shall not preclude supplemental agreement, including subdivision agreements or other agreements between the parties setting forth requirements and further details for implementation of the general provisions described herein. This Agreement and the terms hereof are made as a result and in anticipation of the annexation of The Property . The annexation of The Property and the furnishing of services by the CITY shall constitute the consideration given on behalf of the CITY to ANNEXOR in exchange for ANNEXOR'S performance of the terms and duties as set forth herein. The sufficiency of such consideration as set forth above is hereby acknowledged by the parties.

2. Zoning. ANNEXOR'S annexation petition requests the passage of zoning by the CITY of The Property as illustrated on Exhibit "B" attached hereto and by this reference made a part hereof.

3. Municipal Services. As a result of the annexation of The Property , CITY agrees to provide The Property with all the usual municipal services in accordance with the existing ordinances and policies of the CITY, which services shall include police protection, water and sewer utilities, and all other services customarily provided by the CITY.

4. Streets. ANNEXOR agrees to dedicate upon request from the CITY all necessary rights-of-way for the full width thereof of all residential, collector, minor and major streets presently lying and in use within the Property and other land owned by STC. All such dedications shall be by tansfer of warranty deed to the CITY after approval of said transfer by the City Attorney. ANNEXOR further agrees upon development of the property to fully improve with curb, gutter, sidewalk, sub-base and surfacing said streets for the full width thereof in full conformity with the street specifications established by the City of Louisville. Also, ANNEXOR agrees to dedicate 88th Street where it is adjacent to the existing STC property. Furthermore, ANNEXOR and the CITY agrees there are other areas of concern relative to major street improvements because of this annexation, including improvements to 88th Street, 96th Street, Dillon Road, and the Superior Interchange. The parties agree that these matters will be discussed more fully prior to development of the annexed parcel. Also, ANNEXOR agrees to aid the CITY in the attempt to locate an interchange at 96th Street and Highway 36.

5. Water and Sewer. ANNEXOR agrees to install upon subdivision and/or development thereof, water lines of a diameter described by the CITY, in accordance with the CITY'S standards and specifications, which plans must be approved by the CITY. ANNEXOR agrees to dedicate, upon request from the CITY all necessary unobstructed rights-of-way for utility easements needed for water and sewer lines to serve the Property or for the transmission through the Property. There shall be no duty or obligation upon the CITY to furnish water or sanitary sewer facilities to the Property until such time as such services for water and sewer can be economically and reasonably installed so as to provide services to a number of inhabitants so as to make the construction and establishment of such services feasible. ANNEXOR agrees and understands that in view of this annexation and other construction on the present site, it will be necessary to increase its existing water tap and meter as follows: 1. Said tap will be immediately increased from a three inch to a four inch tap and fees for such tap paid along with any fees necessary for the accompanying increase in the sewer tap fee. 2. Water and sewer tap and meter requirements for the Property shall be determined at the time building construction begins on this property and, if possible, the Property shall be served by its own separate water and sewer tap and meter.

ANNEXOR also understands and agrees that such an increase will necessitate additional wastewater tap fees.

6. Storm Drainage. Upon subdivision and/or development of The Property, storm drainage improvements shall be installed by ANNEXOR in full conformity with all regulations and ordinances of the CITY. ANNEXOR agrees to dedicate upon request from the CITY all necessary rights-of-way for storm sewers to serve The Property or for transmission through The Property.

7. Other Public Improvements. All public improvements to The Property, including but not limited to, water distribution, sewage collection, gas service, electrical service, sidewalks and grading shall be constructed to CITY standards by the ANNEXOR in conformance with plans approved by the CITY. Said improvements shall be properly connected to and integrated with existing systems of the CITY and existing facilities. Said improvements shall be oversized to the extent necessary to serve as future development as determined by the CITY.

8. Water Rights. ANNEXOR owns no water rights which have historically served The Property.

9. Fees. Annexation fees have been paid by ANNEXOR prior to signing this Agreement, as follows: Annexation - $

Zoning - $

10. Development Proposal. Prior to the issuance of any building permits for construction on The Property, Annexor agrees to subdivide The Property under the procedures of the Louisville Municipal Code.

11. Time of Development. Nothing in this Agreement shall be construed as binding ANNEXOR to any development schedule, it being understood that the timing of any subdivision or development of The Property is within ANNEXOR'S sole discretion.

12. Purpose. The purpose of this Agreement is to set forth some of the major requirements imposed by law on developments within the City, so that both parties are aware at the outset of their respective responsibilities; except for Paragraph 14, below, the parties do not intend by this Agreement to modify any of the provisions of the City's Municipal Code or state law relating to annexation, subdivision or development of The Property.

13. Binding Effect of Agreement. This Agreement, when executed, shall insure to the benefit and be binding upon the heirs, successors and assigns of their respective parties. The original hereof, upon execution, shall be recorded in the County of Boulder, State of Colorado. Both parties covenant and agree that they will cooperate with one another in accomplishing the terms, conditions and provisions of this Agreement.

and will execute such documents necessary to effectuate the same.

14. Public Land Donation. In view of ANNEXOR'S existing recreation facilities on land previously annexed to the City, the City hereby releases ANNEXOR from the dedication (or cash in lieu thereof) requirements of section 16.16.060 of the Louisville Municipal Code with respect to any future subdivision and/or development of the Property by ANNEXOR.

15. Water Share. It is agreed that the one share of water rights in the Marshall Ditch which are currently owned by ANNEXOR will not be transferred to the CITY at this time. However, it is agreed that in the event said share is no longer used by ANNEXOR in the operation of its existing business, said share shall be transferred to the CITY for no additional consideration. ANNEXOR and CITY agree to take any steps necessary to effectuate this provision.

Said share shall also be transferred to the CITY for no additional consideration if ANNEXOR attempts to transfer the share to a party other than the CITY. These restrictions shall be placed upon said share.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals this 28th day of October, 1981.

CITY OF LOUISVILLE

By Lawrence P. Caranci
Lawrence P. Caranci
Mayor

STORAGE TECHNOLOGY CORPORATION

By Charles J. Siefert
Charles J. Siefert
Executive Vice President
Finance and Administration

Attachment #8

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INTERGOVERNMENTAL AGREEMENT
SOUTHEAST BOULDER COUNTY, SOUTH 96TH STREET, DILLON ROAD, AND US 287 AREA COMPREHENSIVE DEVELOPMENT PLAN

This Intergovernmental Agreement by, between and among the City of Broomfield, a Colorado home rule municipal corporation (Broomfield); the City of Lafayette, a Colorado home rule municipal corporation (Lafayette); the City of Louisville, a Colorado statutory city (Louisville); and the County of Boulder, a body politic and corporate of the State of Colorado (Boulder County); (collectively the "Parties") is made to be effective on the 18th day of February, 1999.

WITNESSETH:

WHEREAS, 29-20-101 et seq., C.R.S. as amended, enables the Parties to enter into Intergovernmental Agreements to plan for and regulate land uses, in order to minimize the negative impacts of development on the surrounding areas and protect the environment, and specifically authorizes local governments to cooperate and contract with each other for the purpose of planning and regulating the development of land by means of a "comprehensive development plan"; and

WHEREAS, in order to ensure that the unique and individual character of Broomfield, Lafayette, and Louisville, respectively, are preserved, the Parties believe that a comprehensive development plan which recognizes the annexed areas and development approved by each community, accompanied by binding commitments by the responsible jurisdictions for the preservation of the rural character of surrounding lands as identified within the Plan Area, is in the best interest of the citizens of each of the Parties; and

WHEREAS, the prohibition of rezoning or other discretionary land use approvals by Boulder County and of annexation or development by Broomfield, Lafayette or Louisville of certain lands within the Plan Area, is intended to preclude increased development and urban sprawl which would obliterate the boundaries of Broomfield, Lafayette, and Louisville and would, if permitted in the unincorporated area, require the provision of urban services by Boulder County, in contravention of provisions of the Boulder County Comprehensive Plan; and

WHEREAS, the parcels designated City Preservation do not currently have city utility services; and

WHEREAS, the Denver Regional Council of Governments, the transportation planning agency in which this Plan area is located, has adopted a Metro Vision 2020 plan calling for urban growth boundaries which serve to preserve individual communities through rural development and/or open space buffers separating such communities; and

WHEREAS, the Parties desire to enter into this Intergovernmental Agreement in order to plan for and regulate the use of the lands within the Plan Area through joint adoption of a mutually binding and enforceable comprehensive development plan; and

WHEREAS, the Parties find that designating a portion of the Plan Area to remain as rural development for the purpose of preserving a community buffer serves the economic and civic interest of their citizens and meets the goals of the Boulder County Comprehensive Plan; and

WHEREAS, the Parties anticipate the location of a multi-modal roadway to serve the transportation needs of the citizens, hereinafter referred to as the "Northwest Parkway"; and

WHEREAS, with respect to the rezoning and other land use regulatory actions required pursuant to this Agreement, the Parties find that the proposed Northwest Parkway is intended primarily to serve as a major throughway providing relief from congestion at its interchanges at U.S. 36, U.S. 287, and I-25; that, for the Parkway to serve this purpose, it is essential that further development in the Rock Creek valley be limited, so that traffic-generating uses in the valley do not use up the traffic carrying capacity of the Parkway and surrounding transportation infrastructure, and so that the need for additional or expanded local access points with the Parkway is limited into the future; and

WHEREAS, with respect to the annexation provisions herein, the Parties declare that the rural preservation designations and land use regulations contained in this Agreement affect the future development of each municipality. Consistent with the municipal annexation, utility service, and land use laws of the State of Colorado, this Agreement, including specifically the annexation and utility service portions hereof, is intended to encourage the natural and well-ordered future development of each Party; to promote planned and orderly growth in the affected areas; to distribute fairly and equitably the costs of government services among those persons who benefit therefrom; to extend the government, services, and facilities to the affected areas in a logical fashion; to simplify providing utility services to the affected areas; to simplify the governmental structure of the affected areas; to reduce and avoid, where possible, friction between the Parties; and to promote the economic viability of the Parties; and

WHEREAS, the functions described in this Agreement are lawfully authorized to each of the Parties which perform such functions hereunder, as provided in article 20 of title 29; part 1 of article 28 of title 30; part 1 of article 12 of title 31; and parts 2 and 3 of article 23 of title 31, C.R.S., as amended; and

WHEREAS, 29-1-201, et seq., C.R.S., as amended, authorizes the Parties to cooperate and contract with one another with respect to functions lawfully authorized to each of the Parties and the people of the State of Colorado have encouraged such cooperation and contracting through the adoption of Colorado Constitution, Article XIV, 18(2); and

WHEREAS, the Parties have each held hearings after proper public notice for the consideration of entering into this Agreement and the adoption of a comprehensive development plan for the subject lands, hereinafter referred to as the "Plan Area", as shown on the map portion of the Development Limitations attached hereto as Exhibit A;

NOW THEREFORE, in consideration of the above and the mutual covenants and commitments made herein, the Parties agree as follows:

1. **SOUTHEAST BOULDER COUNTY AREA COMPREHENSIVE DEVELOPMENT PLAN.** This Agreement, including Development Limitations (both text and map portions) attached hereto as Exhibit A, is adopted by the Parties as the Southeast Boulder County, South 96th Street, Dillon Road and U.S. 287 Area Comprehensive Development Plan (the "Plan") governing the Plan Area.

2. **CONTROLLING REGULATIONS.** Restrictions on use and development of lands within the Plan Area, as provided in Exhibit A, shall control and supersede local regulations of the Regulatory Party to the extent they conflict. For purposes of this Plan, the "Regulatory Party" is that Party having regulatory jurisdiction over the subject property at the time, or seeking to acquire jurisdiction through annexation. A Party shall be deemed to be "seeking" annexation as of the date when an annexation petition is filed. No Party shall agree with any landowner or other person or entity interested in any parcel within the Plan Area to allow any use or development which does not comply with the Plan without first obtaining a Plan Amendment as set forth herein.

2.1 The Parties each agree to undertake all steps to adopt procedures, plans, policies, and ordinances or other regulations as may be necessary to implement and enforce the provisions of this Plan. Any Party adopting such procedures, plans, policies, ordinances or regulations shall give each of the other Parties sufficient advance notice of such action as will enable such Parties, if they so desire, to comment upon the planned actions of that Party.

2.2 To the extent this Plan is silent as to a particular land use matter, existing local land use regulations of the Regulatory Party having jurisdiction over the property, as amended from time to time, shall control.

3. **RURAL PRESERVATION AREA.** Broomfield, Lafayette, and Louisville each agree that they will immediately disclose to the other any and all

instances in which they are approached by landowners in the Rural Preservation Area seeking annexation. Further, Broomfield, Lafayette, and Louisville each commit that they are not currently pursuing any annexations within the Rural Preservation Area.

3.1 The Map portion of Exhibit A shows certain lands within the Plan Area which are designated "Rural Preservation Area". These lands are intended to remain within the unincorporated area of Boulder County, subject to Boulder County's land use regulatory jurisdiction as limited in the text portion of Exhibit A. Broomfield, Lafayette, and Louisville each agree that it will not initiate or approve an annexation of any portion of any of the lands shown as "Rural Preservation Area" on the Map portion of Exhibit A without first obtaining approval of a Plan Amendment as provided for herein.

3.2 By authorizing the execution of this Agreement, the City Councils of Broomfield, Lafayette, and Louisville each respectively finds and declares that there is no community of interest between the lands designated "Rural Preservation Area" on the Map portion of this Plan with their respective jurisdictions, either Broomfield, Lafayette, or Louisville; that none of these lands is urban nor is likely to urbanize within the term of this Plan; and that none of these lands is currently integrated with, nor for the term of this Plan will any of them be capable of being integrated with their respective jurisdictions, either Broomfield, Lafayette, or Louisville.

4. TRANSPORTATION SYSTEM. The proposed Northwest Parkway is part of an overall roadway network whose components are part of an interdependent system.

4.1 NORTHWEST PARKWAY. Boulder County currently regulates the site selection of arterial or collector highways, pursuant to §24-65.1-101 et seq., C.R.S. Boulder County agrees that the acquisition of right-of-way for the Northwest Parkway as indicated on Exhibit A approximately 300 feet in width and the construction of the roadway, across the parcels shown on Exhibit A to contain potential right-of-way, and along an alignment reasonably conforming to that shown on Exhibit A shall be exempt from the guidelines and regulations adopted by Boulder County pursuant to §24-65.1-101 et seq., C.R.S. if the right-of-way does not encroach more than 50 feet into the Rock Creek Farm Open Space. Additional encroachment into the Rock Creek Farm Open Space may be allowed only at the discretion of Boulder County. Where necessary for on/off ramps at interchanges and for slope easements at interchanges and overpasses, the width may exceed 300 feet to the extent of such necessity.

While the final design of the roadway is to be determined at a later date, the Parties agree to the following:

4.1.1 The Parties agree that the use of any more than the northerly 50 feet of the Rock Creek Farm Open Space area shall in all circumstances require the express consent of Boulder County. For purposes of

this Agreement, the Rock Creek Farm Open Space consists of the open space properties owned by Boulder County in sections 22, 27 & 28, T1S, R69W, 6th PM. The construction of connector roads will be permitted as a part of the Parkway project. Intersections, interchanges, and overpasses on the Northwest Parkway shall be as indicated on Exhibit A. The foregoing provisions of this paragraph notwithstanding, the right-of-way for the Parkway shall be located sufficiently far south in the NW1/4 of Section 22, T1S, R69W, 6th PM, as shown on Exhibit A, so as to avoid the Kilker homestead building cluster.

4.1.2 The Parties will support an access point at U.S. 287. The parties agree to support a request to the Colorado Department of Transportation for such access. Preferred access will be through the construction of an Urban Interchange as shown on Exhibit A.

4.1.3 The Parties will support the roadway designed as a multi-modal facility within a right-of-way, approximately 300 feet in width, within an alignment that provides buffering between communities.

4.1.4 When determining the final location of the roadway corridor within the Plan Area as shown on Exhibit A, the Parties agree to take into account environmental and economic factors, as well as any other appropriate issues. In making this determination for the roadway corridor location west of U.S. 287 in the vicinity of Dillon Road, the Parties agree to also take into consideration the interests of the homeowners whose homes front on Dillon Road in this area.

4.1.5. As conceptually shown on Exhibit A, a continuous Dillon Road connection will be provided across the U.S. 287 corridor. The exact alignment will be determined at a later date. The Dillon Road alignment will avoid floodplain and riparian areas as much as possible and the location of the Dillon Road crossing of U.S. 287 will be subject to State approval. Furthermore, the conceptual design of the U.S. 287 interchange, at a reasonable cost, shall be subject to review by the city council of Lafayette, prior to the financing of the Parkway.

4.1.6 The Parties agree to cooperate and assist any of the other Parties in their efforts to acquire right-of-way for the Northwest Parkway within their jurisdictions, within the Plan Area. Such cooperation and assistance may include, but shall not require, any Party's use of the power of eminent domain, contribution of funds, or provision of land for such right-of-way.

4.1.7 The Parties will not object to the construction of the Northwest Parkway and the conceptual alignment for the roadway as shown on Exhibit A with a permitted variation of 50 feet from the center line. The Parties consent (1) to the creation of a public entity or entities pursuant to state statutes in effect as of the date of this agreement (including public highway authorities established pursuant to §43-4-501, et seq., C.R.S. and metropolitan districts established pursuant to §32-1-101, et seq., C.R.S.,) to construct the Northwest Parkway, and to that entity's or entities' inclusion of Northwest Parkway right-of-way only within the boundaries of such entity or entities; (2) to the construction of the Northwest Parkway within the Parties' boundaries and within the corridor

shown in Exhibit A; and (3) to the exercise of the power of eminent domain by the entity or entities within the Parties' boundaries to acquire real property on which to construct the Northwest Parkway, which exercise shall (a) be in a manner so as to create no liability to the Parties or (b) be accompanied by an indemnification of the Parties by the entity or entities, to the extent permitted by law, for any loss or damage arising from the exercise of the power of eminent domain.

Notwithstanding anything in this subsection 4.1.7 to the contrary, where a public highway authority, in the exercise of eminent domain for right-of-way purposes, must condemn an additional portion of a parcel as an uneconomic remainder attendant, the Parties consent to such condemnation, and such parcel shall thereafter be used in accordance with the provisions of this Agreement and Plan, except that the Party in whose jurisdiction such parcel is located shall have an option to purchase such parcel for open space purposes at the price paid by the public highway authority, and the consent given to the extraterritorial condemnation by the authority is expressly conditioned upon the grant of such option by the authority to that Party.

4.1.8 Except for the consents set forth in subsection 4.1.7, the Parties expressly reserve and retain all rights, remedies, and authorities available under the Public Highway Authority law, C.R.S. §43-4-501 et seq. and the Special District Act, C.R.S. §32-1-101 et seq. Such rights specifically include, but are not limited to, the right to withhold consent to the authority's exercise of eminent domain outside its boundary but within the boundaries of the Parties, the right to refuse to allow the imposition of highway expansion fees or other impact fees by an authority within that Party's jurisdiction, and the right to withhold consent to the inclusion of any property other than Parkway right-of-way within the boundaries of the authority.

4.1.9 Design drawings for the construction of the Parkway shall be submitted to all Parties for review and comment regarding technical engineering issues such as drainage and grading.

4.2 AREA ROAD IMPROVEMENTS The four roadway improvements listed below are critical to the function of the overall transportation system. In order to assure the construction of these roadway improvements, the Parties agree to pursue funding through at least one or more of the following methods:

I. Special improvement district
II. Transportation Improvement Program funds through the Denver Regional Council of Governments
III. Impact fees
IV. State Transportation funds
V. Northwest Parkway financing proceeds, tolls, or other revenues

4.2.1 South 96th Street. The Parties will support the construction of a four-lane extension of South 96th Street as conceptually shown on Exhibit A. The parties will support an application through the Denver Regional Council

of Governments (DRCOG) process for inclusion of this project on the Transportation Improvement Plan (TIP), with Louisville as the sponsoring agency.

4.2.2 West Midway Boulevard. The Parties will support extension of West Midway Boulevard to connect with Industrial Lane and an extension of Industrial Lane to connect with South 96th Street as shown on Exhibit A. The parties will support an application through the DRCOG process for inclusion of this project on the TIP, with Broomfield as the sponsoring agency.

4.2.3 South Boulder Road. The Parties will support extension of South Boulder Road from S. 120th St. eastward to Lowell Boulevard to provide access to a future Northwest Parkway interchange. The Parties will support an application through the DRCOG process for inclusion of this project on the TIP, with Lafayette as the sponsoring agency.

4.2.4 U.S. 36. The Parties will not oppose the interchange improvements at U.S. 36 and South 96th Street, including construction of directional ramps and transit facilities. Additionally, the Parties will not oppose interchange improvements at U.S. 36 and McCaslin Boulevard, consisting of construction of directional ramps and transit facilities within the right-of-way existing as of the date of this agreement and within 1,000 feet of the existing interchange.

4.3 ALLOCATION OF PARKWAY FINANCING PROCEEDS The parties agree, and the consents set forth in subsection 4.1.7 are expressly conditioned upon the requirements, that a minimum of $22 million will be allocated from the Parkway financing proceeds for right-of-way acquisition, design engineering and the construction of South 96th Street pursuant to 4.2.1., of West Midway Boulevard pursuant to 4.2.2. and of a Dillon Road connection across the U.S. 287 corridor pursuant to 4.1.5. and that a minimum of $10 million will be allocated from Parkway financing proceeds for open space and conservation easement acquisition. An illustrative allocation is as follows - actual totals for the Parkway financing proceeds may vary depending upon financing and Parkway design:

Total bond issue	$255M
Open space and conservation easement allocation	$ 10M*
Roads allocation	$ 22M (see table below)

* To be provided equally to Broomfield and Louisville for perpetual conservation easement or fee title land purchases for five years after the Parkway financing proceeds are made available and after which, the parties will agree on the allocation of remaining funds. If Broomfield and Louisville expend funds for permanent conservation easements or fee title land purchases in advance of Parkway financing proceeds being available, Broomfield and Louisville are entitled to be reimbursed equally when such proceeds are available. To the extent these acquisitions are

totally funded by bond proceeds, title to the properties so acquired shall vest in the Public Highway Authority or other entity which issued the bonds, with an undivided interest in a conservation easement ensuring preservation of such properties as open space granted to or reserved by each of the Parties.

Road Priority for Minimum $22M Listed Above**	
1	Dillon Road
2	South 96th Street
3	West Midway Boulevard

** Any remaining funds after projects are completed will be applied to implementation of the Northwest Parkway.

No Party which is a member of any public highway authority established to create the roadway referred to herein as the Northwest Parkway shall permit its representative(s) on the Board of Directors of said authority to authorize a bond issue to finance Northwest Parkway right-of-way acquisition or construction costs by the authority without inclusion of the $10 million for perpetual conservation easements and fee title land acquisition or without inclusion of the $22 million for road improvements as provided in this section. Further, the consents set forth under subsection 4.1.7 of this Agreement are expressly conditioned upon the requirements that the governing body(ies) of the entity(ies) created to construct the Northwest Parkway will include in and make available from the Northwest Parkway financing proceeds the $10 million for perpetual conservation easement and fee title land acquisitions and the $22 million for road improvements as provided in this section, and that such entity(ies) will exercise its powers and construct the Northwest Parkway in accordance with this Agreement. No consent set forth under subsection 4.1.7 shall benefit such entity(ies) until the governing body(ies) of the entity(ies) has executed a consent stating it agrees to be bound by these requirements, which consent shall be delivered to, run in favor of, and enforceable by the Parties hereto.

Conservation easements and lands purchased in fee shall be held for the purposes set forth in §5.4 of the Plan, to preclude additional development, except as specified in this agreement, on such lands in perpetuity as community buffers and to preclude additional traffic generation on the Parkway.

5. **REFERRALS.** Any application or other proposal for annexation or development on any parcel within that portion of the Plan Area designated Rural Preservation Area as set forth in Exhibit A, shall be immediately referred in writing to all Parties and no action shall be taken thereon by the referring Party until such Parties have had the opportunity to respond concerning the proposal's conformity to this Plan and other land use concerns. All such responses are to be received within 20 days of date of referral.

6. **AMENDMENTS.** This Plan contains the entire agreement

between the Parties. Any proposed amendment of the Plan affecting the jurisdiction over lands or the development regulation of lands must be referred to the Parties by the Regulatory Party, or by any Party seeking to become the Regulatory Party through annexation. Amendment of the Plan shall take place only upon approval by resolution or ordinance adopted by the governing body of each of the Parties, after notice and hearing as may be required by law. The Regulatory Party shall not approve nor permit any development or change of use of any parcel in the Plan Area by any means in a manner inconsistent with this Agreement until and unless the Plan has been amended so that the proposed development or use of such parcel is consistent with the Plan.

7. SEVERABILITY. If any portion of this Plan is held by a court in a final, non-appealable decision to be per se invalid or unenforceable as to any Party, the entire Agreement and the Plan shall be terminated, it being the understanding and intent of the Parties that every portion of the Agreement and Plan is essential to and not severable from the remainder.

8. BENEFICIARIES. The Parties, in their corporate and representative governmental capacities, are the only entities intended to be the beneficiaries of the Plan, and no other person or entity is so intended.

9. ENFORCEMENT. Any one or more of the Parties may enforce this Agreement by any legal or equitable means including specific performance, declaratory and injunctive relief. No other person or entity shall have any right to enforce the provisions of this Agreement.

10. DEFENSE OF CLAIMS/INDEMNIFICATION. If any person allegedly aggrieved by any provision of the Plan and who is not a Party to the Plan should sue any Party concerning such Plan provision, such Party shall, and any other Party may, defend such claim upon receiving timely and appropriate notice of pendency of such claim. Defense costs shall be paid by the Party providing such defense.

Notwithstanding the foregoing, if the claim concerns the designation of property as "Rural Preservation Area," Boulder County shall provide defense in such action. If the claim concerns the designation of property as "City Preservation," the responsible city Party shall provide such defense.

In the event that any person not a Party to the Plan should obtain a final money judgment against any Party who is not the Regulatory Party for the diminution in value of any regulated parcel resulting from regulations in the Plan, or regulations adopted by the Regulatory Party implementing the Plan, the Regulatory Party shall, to the extent permitted by law, indemnify such Party for the amount of said judgment.

11. GOVERNING LAW AND VENUE. This Agreement shall be governed by the laws of the State of Colorado and venue shall lie in the County

of Boulder.

12. TERM AND EFFECTIVE DATE. This Agreement shall become effective upon signature of an authorized representative of the governing bodies of the Parties. Except as provided herein, this Agreement shall remain in effect for a period of thirty (30) years from the effective date, unless terminated prior thereto by agreement of all the Parties or pursuant to the terms of section 7 above.

13. PARTY REPRESENTATIVES. Referrals made under the terms of this Agreement shall be sent to the Parties' representatives as follows:

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ENTITY:	REPRESENTATIVES:
County of Boulder	Director, Land Use Department P.O. Box 471 Boulder, CO 80306
City of Broomfield	City Manager 1 DesCombes Dr. Broomfield, CO 80020
City of Lafayette	City Administrator 1290 S. Public Rd. Lafayette, CO 80026
City of Louisville	City Administrator 749 Main St. Louisville, CO 80027

Name and address changes for representatives shall be made in writing, mailed to the other representatives at the then current address.

THIS AGREEMENT made and entered into to be effective on the date as set forth above.

CITY OF BROOMFIELD

By: William M. Berens
William Berens, Mayor

2/18/99
Date

ATTEST:

Vicki Mayo
City Clerk

CITY OF BROOMFIELD CORPORATE SEAL STATE OF COLORADO

APPROVED AS TO FORM:

Roy S. Howard, City Attorney

CITY OF LAFAYETTE

By: _____
Carolyn McIntosh, Mayor

8/18/99
Date

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
Patricia C. Tisdale, City Attorney

CITY OF LOUISVILLE

By: _____
Thomas Davidson, Mayor

2-18-99
Date

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
Samuel J. Light, City Attorney

COUNTY OF BOULDER
BY: BOARD OF COUNTY COMMISSIONERS

By: Ronald K Stewart
Ronald K. Stewart

2-18-99
Date

ATTEST:

Susan M. Osbecht
Clerk to the Board

APPROVED AS TO FORM:

H. Lawrence Hoyt
H. Lawrence Hoyt, County Attorney

SEAL OF BOULDER COUNTY COLORADO

EXHIBIT A
(text portion)

SOUTHEAST BOULDER COUNTY 96TH STREET, DILLON ROAD AND U.S. 287 AREA IGA COMPREHENSIVE DEVELOPMENT PLAN

1. INTRODUCTION. This Comprehensive Development Plan (hereinafter "CDP") has been jointly developed and adopted by the Parties, and is entered into by Intergovernmental Agreement of said entities.

1.1 These Development Limitations are intended to provide specific land use and development restrictions governing the "Rural Preservation Area" parcels, the "City Preservation Area" parcels and the "City Open Space Area" parcels located within the Plan Area, the boundaries of which are set forth on the attached Map.

2. DEFINITIONS.

2.1 DEVELOPMENT: Construction or establishment of structures, parking areas, and/or surfaced vehicular roadways (except expansion of existing roads and except construction of the "Northwest Parkway" or a successor thereto along the alignment shown on Exhibit A), or establishment of new land uses.

2.2 PLAN AREA: Lands included within the boundaries of the designated Plan Area as set forth on the Map, including right-of-way, setback areas, and parcels subject to the Plan's Development Limitations.

2.3 STRUCTURE: Anything which is built or constructed, including but not limited to an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner, but excluding fences, retaining walls not over 6 feet in height, and buried utility lines.

3. DEVELOPMENT LIMITATIONS ON RURAL PRESERVATION AREA PARCELS.

3.1 For parcels designated Rural Preservation Area on the Map, those existing uses of such parcels which conform to Boulder County's regulations, or which are legally nonconforming, shall be permitted to continue, either as legal or legal nonconforming uses. No density increase beyond the limits currently permissible under the Boulder County Land Use Code shall be approved for any such parcel, nor shall any such parcel be annexed to any municipal Party, unless the same is approved through the Plan amendment

procedure set forth in Section 6 of the Agreement above.

3.2 Pursuant to regulations in the Boulder County Land Use Code as it may exist from time to time, parcels within the Rural Preservation Area may be "sending parcels" for purposes of transferring development rights (TDRs). However, such parcels shall not serve as "receiving parcels" without amendment of this Agreement. TDR units shall not be "sent" from parcels designated in this Agreement as Rural Preservation Area to be located upon a receiving site within the adopted comprehensive plan area of a municipal Party without the consent of the interested Party or Parties.

3.3 Development on parcels for which "vested rights" for further development have been acquired through an estoppel against Boulder County precluding the prohibition of such development established by a final, non-appealable court judgment in a proceeding of which the other Parties have been given timely notice and the opportunity to join or intervene shall be permitted to the extent such development is in conformance with the rights so acquired and occurs within the vested period.

3.4 Establishment of uses and development in conformance with the zoning (including approved PUD plans) and other land use and development regulations applicable to the property on the effective date of this Plan shall be permitted, where such uses or development continue to be permitted under the provisions of the Boulder County Land Use Code at the time at which they are sought to be established. Permission for such development shall be processed through the normal procedures otherwise established by Boulder County.

3.5 Approval of an NUPUD with residential density no greater than 2 units per 35 acres by Boulder County upon such lands is permitted pursuant to the regulations generally applicable therefor at the time of application submittal, and such approval is not for purposes of these Development Limitations an increase in density.

3.6 Any proposed use or development of any portion of the parcels designated Rural Preservation Area shall conform to the provisions of this Agreement, or, if nonconforming, shall require amendment of the Plan in the manner provided in the Agreement. Any proposed rezoning, subdivision, special use or other regulatory process, or amendment or modification of any existing zoning, PUD, special or conditional use, or subdivision plat, or issuance of a building permit, or proposed annexation, whether or not coupled with any such regulatory process, entered into for any lands designated Rural Preservation Area shall conform to the Plan, or with an approved amendment thereof, in order to be approved by the Regulatory Party.

4. SPECIFIC PARCELS PROVISION. References to specific parcels in this agreement will be by the Boulder County Assessor's parcel number. The attached map shows parcel numbers, acres and the current owner.

4.1 Parcels numbered 157521000034 (40.00 acres), 157521000037 (38.53 acres), 157521002001 (39.24 acres), 157521001003

(30.04 acres), 157521001001 (4.29 acres), 157521001002 (2.50 acres) and 157521001004 (2.50 acres) on the attached map, totaling 157.1 acres, are designated City Preservation Area with future use to be limited to agriculture and low density residential development. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcels that will allow additional residential use with a density of no more than 1 unit per 13 acres and will negotiate in good faith to this end.

4.2 A parcel numbered 157521000024 (1.20 acres) on the attached map is designated City Preservation Area with future use to be limited to agriculture and low density residential development. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcel that will allow additional residential use with a density of no more than 1 unit and will negotiate in good faith to this end.

4.3 A parcel numbered 157521000019 Tract "C" (8.45 acres) on the attached map is designated City Preservation Area with future use to be limited to agriculture and low density residential development. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcel that will allow additional residential use with a density of no more than 1 unit and will negotiate in good faith to this end.

4.4 Parcels numbered 157521000020 (18.00 acres), 157521000003 (40.00 acres), 157521000022(73.00 acres), 157521000001 (40.00 acres) on the attached map, totaling 171.00 acres, are designated City Preservation Area with future use to be limited to agriculture and low density residential development. Louisville hereby agrees to acquire a perpetual conservation easement on the above parcels that will allow additional residential use with a density of no more than 1 unit per 5 acres and will negotiate in good faith to this end.

4.5 A parcel numbered 157521000021 (59.00 acres) on the attached map is designated City Preservation Area with future use to be limited to agriculture and low density residential development. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcel that will allow additional residential use with a density of no more than 1 unit per 5 acres and will negotiate in good faith to this end.

4.6 A parcel numbered 157521000016 (1.00 acre) on the attached map is designated City Preservation Area with future use to be limited to agriculture and low density residential development. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcel that will allow residential use with a density of no more than 1 unit and will negotiate in good faith to this end.

4.7 A parcel numbered 157520000032 (33.70 acres) on the attached map is designated City Preservation Area with future use to be limited to agriculture and low density residential development. Louisville hereby agrees to allow residential use with a density of no more than 1 unit per 5 acres, on this parcel.

4.8 Fifty percent of a parcel numbered 157520000001 (23.15

acres) on the attached map is designated City Open Space Area with future use to be limited to open space uses. Louisville hereby agrees to allow only open space uses on this parcel.

4.9 Parcels numbered 157528000004 (13.80 acres), 157528000005 (28.91 acres), and 157528000016 (13.00 acres) on the attached map are designated City Preservation Area with future use to be limited to 10± acres for RTD transit center and park and ride facility and 46± acres for city open space and/or City Preservation Area. By agreement, Broomfield has an option to purchase the remaining acreage not needed for the transit center and park and ride facility and has allowed RTD residential use with a density of no more than one unit per five acres on 46± acres of this parcel if Broomfield does not purchase the 46± acres for open space by November 2002. Broomfield will use its best efforts to purchase all or part of remaining RTD property.

4.10 The parcel numbered 157528000003 (5.00 acres) on the attached map is designated City Preservation Area with future use to be limited to agriculture and low density residential. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcel which will limit the use to 1 residential unit.

4.11 Parcels numbered 157529000019 (2.48 acres) and 157529000010 (38.91 acres) on the attached map are designated City Preservation Area with future use to be limited to private open space. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcels that will allow private open space and will negotiate in good faith to this end.

4.12 A parcel numbered 15752000002 (51.71 acres) on the attached map is designated City Preservation Area with future use to be limited to agriculture, private open space (including a golf course use) and low density residential development. Broomfield hereby agrees to acquire a perpetual conservation easement on the above parcel that will allow additional residential use with a density of no more than 1 unit per 13 acres and will negotiate in good faith to this end.

4.13 A parcel numbered 157520000009 (78.30 acres) on the attached map is currently unincorporated Boulder County and is designated City Preservation Area; if and when annexed to the City of Louisville, future use shall be limited to agriculture and low density residential development. Louisville hereby agrees to allow residential use with a density of no more than 1 unit per 4 acres, on this parcel. Prior to annexation this parcel is designated Rural Preservation.

4.14 Parcels numbered 157515000006 (155.00+-acres), 157515000022 (3.0 acres) and 157515000023 (1.0 acres) on the attached map are designated City Preservation Area with future use to be limited to agriculture and low density residential development. Louisville hereby agrees to acquire perpetual conservation easements on the above parcels that will allow additional residential use with a density of no more than 1 unit per 5 acres and will negotiate in good faith to this end.

4.15 A parcel numbered 157521000018 (36.0 acres) on the attached map includes a portion designated as "A" (6.14 acres) titled Gateway City Open Space Area. Broomfield hereby agrees to acquire and allow only open space uses or entry feature uses on this parcel and will negotiate in good faith to this end.

4.16 Parcels numbered 157520000002, 157520000003, 157520000004, 157520000005, 157520000020, 157520000019 and 157520000007 (a total of approximately 78 acres) on the attached map are currently unincorporated Boulder County and are designated Rural Preservation Area. Future Use shall be limited to agriculture and low density residential development. Boulder County agrees to consider approval of residential use with a density of no more than 1 unit per 4.5 acres on these parcels, provided that a perpetual conservation easement limiting development to no more than 1 unit per 4.5 acres is secured as part of the approval of the new density.

4.17 A parcel numbered 157520000031 (80 acres) on the attached map is currently unincorporated Boulder County. If and when annexed to the City of Louisville, Louisville shall use its best efforts in good faith to require an undeveloped buffer along the northern side of said parcel. The parties agree that only Louisville can annex this property.

4.18 Louisville, Lafayette, and Boulder County agree to initiate a process to amend the existing Lafayette/Louisville Buffer Comprehensive Development Plan Intergovernmental Agreement between the cities of Lafayette and Louisville, to bring the Haight property (Parcel number 157515000012) into conformance with the map portion of Exhibit A.

5. RURAL PRESERVATION AREA.

5.1 Any properties within the Plan Area designated as Rural Preservation Area which are acquired as "open space" shall be acquired in fee or by perpetual conservation easement (as defined in §38-30.5-102, C.R.S.) for open space purposes by any one or more of the Parties, to the extent funds are appropriated and made available for such purpose. The method by which such acquisition will take place, and the terms and conditions of purchase, together with the determination of whether fee title or a perpetual conservation easement will be acquired, shall be at the sole discretion of the acquiring Party(ies).

5.2 The right-of-way necessary for construction of the Northwest Parkway or a successor roadway, as shown on Exhibit A, may be obtained at the same time that any Rural Preservation Area property which is sought to be acquired for open space (through which the proposed Northwest Parkway) alignment runs as shown on Exhibit A is acquired; or any Party may acquire the right-of-way necessary for construction of the Northwest Parkway at any other time. Any Party seeking to obtain the proposed right-of-way shall commit to the acquiring Party to purchase the right-of-way upon the same terms and at the same time as the open space acquisition. For this purpose, at the time any Party(ies) contracts to purchase such Rural Preservation Area parcel for open space purposes, such Party(ies) shall provide to each other Party(ies) an option

for purchase of the right-of-way.

5.3 Upon acquisition of any Rural Preservation parcels shown on Exhibit A, the acquiring Party shall provide to each of the other Parties an undivided interest in a perpetual conservation easement upon said lands, providing for restrictions on development and the use in accordance with the terms of this Plan and the site-specific management plan.

5.4 Open space shall serve one or more of the following functions:

(a) urban shaping between or around municipalities or community service areas and buffer zones between residential and non-residential development;

(b) preservation of critical ecosystems, natural areas, scenic vistas and area fish and wildlife habitat, natural resources and landmarks, and cultural, historical and archaeological areas;

(c) linkages and trails, access to public lakes, streams and other usable open space lands, stream corridors and scenic corridors along highways;

(d) areas of environmental preservation, designated as areas of concern, generally in multiple ownership, where several different preservation methods (including other governmental bodies' participation or private ownership) may need to be utilized;

(e) conservation of natural resources, including but not limited to forest lands, range lands, agricultural land, aquifer recharge areas, and surface water;

(f) preservation of land for outdoor recreation areas limited to passive recreational use, including but not limited to hiking, photography or nature studies, and if specifically designated, bicycling, horseback riding, or fishing;

(g) underground public facilities, including public utility mains and lines; other public facilities may be located thereon where approved by the governing bodies of each of the Parties.

5.5 Once acquired, open space may be used only for the above purposes, and shall be used in accordance with a site-specific management plan approved by the governing body of the acquiring Party(ies) after consultation with the other Parties. Until acquisition, such parcels or portions of parcels shall be subject to the Development Limitations set forth in Section 3 of this Plan.

5.6 Residents of the Cities of Broomfield, Lafayette, and Louisville shall be entitled to use the open space properties acquired by Boulder County pursuant to (and subsequent to the execution of) this Agreement to the same extent and upon the same terms and conditions as all Boulder County residents, irrespective of the county in which such city residents live.

6. CITY PRESERVATION AREA.

6.1 Any properties within the Plan Area designated as City Preservation Area for which perpetual conservation easements are to be

acquired shall be acquired by any one or more of the Parties. The method by which such acquisition will take place, and the terms and conditions of purchase, together with the determination of whether fee title or a perpetual conservation easement will be acquired, shall be at the sole discretion of the acquiring Party(ies). Moreover, no Party shall have any responsibility regarding the acquisition or provision of right-of-way for the Northwest Parkway pursuant to this Agreement until such conservation easement acquisitions have been completed by the other Parties or such regulatory actions have been taken by the other parties to the extent permitted by law to ensure that development on the properties conforms to the use and densities set forth in Section 4 and its subsections above. Any Party is entitled to enforce this provision through an action for specific performance, which shall expressly be understood to include the right to specifically enforce the acquisition of such properties by any Party which is in default of this provision and/or to enforce the provisions of this Agreement upon regulatory actions of ary Party and development applications for any parcel subject to this Agreement. It is also expressly understood that the lack of appropriation shall not be a defense to such an action for specific performance so long as Northwest Parkway proceeds have been received and appropriated in the then current and succeeding fiscal years for open space land acquisition and that, because this provision is of the essence to this Agreement, to the extent any Party has performed any action in pursuance of this Agreement, no other Party shall thereafter renege on its obligations pursuant to this intergovernmental agreement. Nothing herein shall be deemed to affect or hinder anticipated open space acquisitions by Louisville and Boulder County in Section 17, T1S, R69W, 6th P.M.

6.2 The right-of-way necessary for construction of the Northwest Parkway or a successor roadway, as shown on Exhibit A, may be acquired by any Party(ies) at the same time that any City Preservation Area (through which the proposed "Northwest Parkway" alignment runs as shown on Exhibit A) perpetual conservation easement or fee title is sought to be acquired or any Party(ies) may acquire the right-of-way necessary for construction of the Northwest Parkway at any other time. For this purpose, at the time any Party(ies) contracts to purchase such City Preservation Area perpetual conservation easement or fee title, such Party(ies) shall provide to each other Party(ies) notice of such actions and such Party(ies) shall cooperate with other Party(ies) that wish to purchase right-of-way.

6.3 Upon acquisition of any City Preservation Area parcels shown on Exhibit A, the acquiring Party shall provide to each of the other Parties an undivided interest in a perpetual conservation easement upon said lands, providing for restrictions on development and the use in accordance with the terms of this Plan.

6.4 Within any properties within the Plan Area designated as City Preservation Area a "clustering" concept shall be encouraged wherein allowed residential units shall be concentrated on smaller lots within one portion of the property to preserve larger contiguous areas of undeveloped land,

provided maximum gross densities are not exceeded.

6.5 Each Regulatory Party shall adopt such regulations and take such regulatory actions to the extent permitted by law as necessary to ensure that development on the properties conforms to the uses and densities set forth in section 4 and its subsections above. All regulatory actions required pursuant to this Agreement shall be taken by the relevant Party within 90 days of the effective date of this Agreement. No construction of the Parkway west of U.S. 287 and governed by the Plan shall take place until all Parties have taken all regulatory actions required pursuant to this Agreement.

6.6 Should a Party(ies) exercise its power of eminent domain to obtain property interests under this agreement, the Party(ies) shall in its appraisal, performed pursuant to section 38-1-121, C.R.S., or otherwise, value the property at the fair market value based upon the zoning prior to the time of taking the regulatory action.

6.7 The city Parties hereby grant their consent to the purchase or other acquisition, including through the exercise of eminent domain, by Boulder County of any City Preservation parcel or portion thereof for open space purposes.

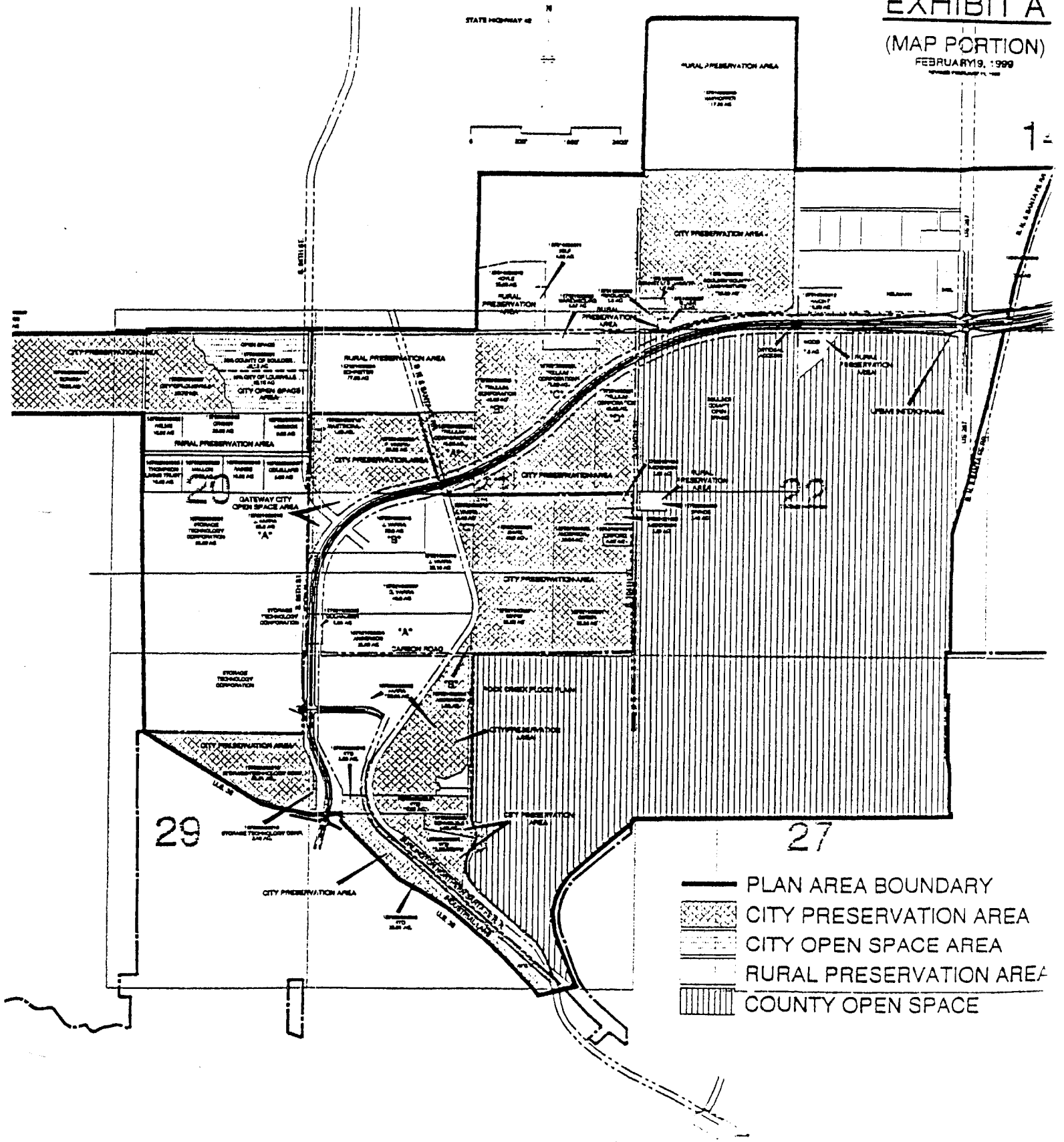
6.8 If the acquisitions provided for in Section 4 of this Plan, or any of them, have not occurred by January 1, 2005 and there are not sufficient Parkway financing proceeds available then to complete the acquisitions, then the Parties shall meet and negotiate in good faith a plan for financing the balance of the acquisitions, which financing plan shall be adopted by the Parties on or before July 1, 2005.

6.9 Each of the cities in which City Preservation parcels are located agrees that it shall, prior to December 31, 1999, obtain an amendment to its "urban growth boundary" in the approved DRCOG Metro Vision 2020 Plan, placing such City Preservation parcels outside that city's urban growth boundary, and agrees that, based thereon, it will not extend urban utility services to said properties during the term of this Agreement and Plan; except that a city may extend such services to a cluster development authorized by subsection 6.4 and existing homes within the City Preservation Area; and except that no city Party shall be deemed in breach of this provision if required to provide any such services pursuant to a final, non-appealable court order or judgment. Any such amendment, however, shall not be required if said amendment would prevent any city Party from providing said parcels with water and sewer service at the density levels provided under Section 4 Specific Parcels Provision.

EXHIBIT A

(MAP PORTION)

FEBRUARY 19, 1999



Parks and Public Landscaping Advisory Board

Minutes

Thursday, May 5, 2022

Louisville City Services

739 104th St

7 PM

1. Roll Call: PPLAB members present Ellen Toon, Laurie Harford, Shannon Mihally, John Webb and Steve Knapp. Dean Johnson, Superintendent of Parks and Staff Liaison, Ember Brignull, Acting Deputy Director of Parks and Open Space, Robb Zuccaro, Planning and Building Safety Director, Jeff Durban, City Manager and Allan Gill, Parks Project Manager. Citizens in Attendance:
    - Jane Uitth, Louisville CO
    - Oscar Mccollom, Louisville CO
    - Joshua Cooperman, Louisville CO
    - Tim Sayler, Redtail Team
    - Sherry Sommr, Louisville CO
    - Cynthia Corne Musslewaide, Louisville CO
    - Don Guerra, Golden CO
    - Jay Hard, Windsor CO
    - Andrew K, Superior CO
    - Bahadeer Parkhet, Louisville CO
    - Tyler Sontrop, Louisville CO
    - Laura Page, Louisville CO
2. Approval of Agenda: Agenda approved
3. Approval of Minutes: Roll call amendment: Laurie Harford was absent in April. Approval of amended minutes.
4. Staff Updates
   Open Space Advisory Board is interested in doing a joint meeting. Proposed Dates:
   July 13, Aug 10, Sep 14
   Proposed topics: pollinator garden, xeric landscaping, dog off-leash area, etc.
   Hiring is going well; new arborist hired. Offers are out for additional positions, some temporary employees have begun work.
   Recovery work is going well; volunteers from additional municipalities volunteered their help with irrigation repair. Looking forward to offers of help for tree work.
   Community Park irrigation project/pollinator garden is set to break ground week of May 9th.
5. Board Updates
    - The first re-built permit will be approved very soon.

- Shelly Alm via email: New playground equipment at Cottonwood Park looks amazing!

6. Public Comments on Items Not on Agenda
    - Cynthia Corn Musselwaide: current Redtail Plans are not on the developer's plans on their website; advises against reviewing final plan if it is not on the website.

7. Redtail Ridge Preliminary and Final Plat Review
    - Robb Zuccaro gave a presentation of the Redtail Ridge Plat and the ConocoPhillips General Development Plan which was approved in 2010.
    - Redtail Ridge Developer proposed some amendments to the plan, which was not upheld in a City-Wide vote in April.
    - Role of PPLAB: to make a formal recommendation on the proposed plan
        i. Steve Knapp asked about the road network; maps of former Storage Tek and proposed roads were reviewed.
        ii. Laurie Harford asked if proposed plan meets the 2010 GDP. Robb confirmed the proposal is within the 2010 GDP
    - Applicant presented the proposed plan
        i. Redtail Ridge 2.0
        ii. Identity and Conceptual Plan
        iii. Community Amenities

    - Discussion and Questions
        i. The City Wide vote in April was to decide upon the amendments to the 2010 GDP. The amendments were not approved in the City Wide vote. The applicant is therefore moving forward with a subdivision plat under the 2010 GDP.
        ii. Ellen asked about timing; if the Board would need additional time or request additional information. Ellen reiterated that PPLAB is an advisory board that can provide a recommendation only. Robb advised that more information may be requested if needed.
        iii. Sheri Sommr: advised against approving plan due to lack of information.
            1. Feels that Campus Drive alignment would bisect open space.
            2. Feels that the buildings are spread out over the same amount of land and does not include enough open space.
            3. Feels that trails should be separated from streets
        iv. Laura Page: advised against approving plan due to City Wide vote
            1. Wants clarity around what PPLAB can advise upon.
            2. Feels that land will not be easy for the community to access; recommends that dedicated park space in plan is instead open space. Proposes to accept cash in lieu of park space and use the money to develop park space elsewhere
            3. Feels that proposed extension of Campus Drive divides proposed open space.
        v. Josh Cooperman: advised against approving plan

1. Plans have not been made available to the public ahead of tonight's meeting; feels that there is inadequate time to come to a decision.
2. Feels that plans run counter to the sentiment of the City Wide vote.
3. Would like to see a lot more open space
4. Prior ConocoPhillips plan had over 200 acres of open space, recommends an amount closer to the 200 acres
5. Proposed open space is cut in half by Campus Drive

vi. Cynthia Corne Musslewaide: advised against approving plan
1. Concerned about 5 story buildings. Placement is Northern Exposure onto Campus Drive
2. Proposed water habitats are too close to the roads and parking lots
3. The "No" campaign was not contacted after the election.
4. Concerned about parking lots in lieu of more innovative, creative parking structures

vii. Anonymous online
1. What is the square footage of parking lots vs. buildings? Robb answered: design standards and guidelines dictate minimum amounts of open area on property, setbacks, etc. There is no proposal for parking at this time

viii. Anonymous online: Is there an industrial use in the 2010 GDP?
1. Robb: same type of development as in the Colorado Tech Center: generally light industrial

ix. Anonymous online: there should not be development North of Disc Drive

x. Tim Stalker online: current proposal is only 500,000 square feet less than amendment which was voted down. Would like to see something that is substantially fewer square feet.

xi. Catherine Smith online: Resident of Ward 3.
1. Would like to see developer reach out community and engage in City's discussion.
2. Concerned about safety in bike lanes. Would like to see buffering of bike lanes from the roads.
3. Resonates with commenters who expressed desire to preserve natural high plains environment. Would like Redtail Ridge to be similar to Davidson Mesa
4. Requests more information around how City is interpreting 2010 GDP to accept industrial development. Requests that Board presents information that was presented to the Board. (Laurie H note: Packet materials are presented as part of PPLAB minutes)

xii. Questions around "Industrial Use" language
1. Research, corporate use, scientific research and manufacturing, warehousing and storage facilities all fall under "light industrial use"
2. Site number to reference: Section 17.12.030

xiii. Follow up from Tim: Feels that the definition of "light industrial use" is a stretch. Would like a survey of why people voted the way that they did, and does not understand what is driving the urgency of the plan.
xiv. Steve Knapp: What is the status of the hospital's plans? Robb: No update.
xv. Sharon Mihally: how was the park size determined vs. the open space?
    1. 2 years ago, applicant came with a few options. Location and size was narrowed in on at the time to accommodate multi-purpose fields. Park location is adjacent to school for better access to residents and school.
xvi. Ellen Toon: How does this Park acreage compare to Community Park?
    1. Robb and Dean: Similar in size
    2. Laurie Harford: Park land would not be developed for years, at which time the new Parks director would be on-board.

Additional Discussion: around what PPLAB may speak to. PPLAB feels that recommendation around Parks and Trails is appropriate; OSAB will have the same opportunity.

- Discussion around reasoning for swinging Campus Drive to the South: interest by Boulder County in swinging road down to create a buffer with Paradise Lane. Everything North of Paradise Lane is unincorporated Boulder County.
- The Northwest corner is very hilly and there will be a lot of earthwork needed to incorporate playing fields
- Discussion around definition of "rural": City has a comprehensive plan which defines 'rural'. Plan does comply with the comprehensive plan definition of 'rural'.
- Review of Campus Drive placement on slides
- High Planes Environmental Center Discussion: would this be in open space only? Applicant: the partnership will encompass the entire development.
- Applicant: Respects everything that has been said and feels that there has been community outreach over the last year. There will be some higher story buildings in the plan; GDP allows for up to 8 stories, though this is not the applicant's intent. There has been extensive study by subject matter experts regarding the road placement and feels that placement is sound. Park/Open Space location is proposed based on community input.
- Technical clarification on building height: GDP anticipates heights higher than 3 stories, though this must be done through a Planned Unit Development (PUD). Set base code is 35 feet.
- History of Open Space acquisition in Louisville: It is common to dedicate more than the minimum the code ordains (12%); however, some developers have dedicated the minimum. Coal Creek Ranch dedicated the most, which includes the golf course. Centennial Valley also dedicated a large amount which includes Davidson Mesa. The two developments averaged 35-40%. Avista Health Park dedicated 15%, Louisville Plaza 14%, St. Louis Parish 12%, and Dakota Ridge 20%.
- Mayor Stoltzman feels that larger developments should dedicate larger amounts of open space.

Ellen moved that PPLAB vote to approve the Plan; Laurie seconded. Motion passed unanimously.

8. Final Scorecard Review and Discussion
    - Overall parks received good marks with comments and areas for improvement. Scorecard submitted to City consultant, who is writing a Parks Management Plan
    - Discussion on implementing scorecards for Medians, Subdivision entries, etc.

9. Discussion on Potential Pollinator Bed(s) at Community Park
    - Area would be in the old 'BMX' area (adjacent to the band shell)
    - ADA accessible: trails with raised beds
    - Demonstration beds
    - Musical interactive element: outdoor xylophone, wind chimes, etc.
    - Educational signs, etc.
    - Garden could have the potential to grow over the years; right now the garden will be within the scope of the irrigation project. Pollinator beds will have pop up sprayers
    - Garden may act as a demonstration and proof of concept, giving ideas for other similar gardens.
    - Discussion around mix of native grasses in area adjacent to Bella Vista drive.

10. Discussion on Median Landscape Renovation Designs
    - Introduction to topic:
    - Landscape architect will be hired to review medians and propose concepts to PPLAB. Need for additional review due to fire damage. Changing sentiment from original review several years ago; desire to remove bluegrass sod.
    - Shelly Alm via email: Thanks, Dean, for the summary/history of the design concepts. It's been awhile since this was started! I'm still in agreement with the Preferred Concept Design for the most part. Low maintenance/low number of plantings along medians with majority of plantings & color near the noses & key intersections. If possible, tying in the colorful planters that make downtown so inviting with similar planters near noses and/or key intersections in appropriate medians. Not sure where things are with any money that could be coming in from outside resources for fire recovery that could cover some of the medians that were affected so budgeted city money might go further for other medians?

11. Review of Recommendation Memo for Bee City USA Designation
    - Shelly Alm via email: Looking forward to this!
    - John presented information around Bee City and honeybee/pollinator festivals throughout Colorado. Proposed a local/Louisville festival during the month of June.

that they use DOLA themselves and his comments are not related to not liking dogs; he loves the park.

Marcus pointed out that municipalities and cities typically adhere to certain best practices when they put in dog off-leash areas. He brought pamphlets from the American Kennel Club and Humane Society and both state that the best practices of municipalities implement a buffer zone. Marcus left the pamphlets with staff. He specifically asked that the DOLA area be moved 50 yards west. He explained that this could be done while still enabling use of the existing trail / footpaths already in and adjacent to DOLA.

Marcus further explained that the DOLA western gate is adjacent to their yard. Since the fire, trash was tipped over and waste bags were spilled. They were not cleaned up until he called to ask for it to be cleaned up (6 weeks later).

Marcus said that Davidson Mesa is 270 acres and DOLA is just 4 acres. There is plenty of room to move it. They paid $34k in property taxes last year; 6 years ago spent $38k for concrete wall; looking at $50k additional wall for more privacy.

David thanked Marcus for his comments and Charles briefly suggested that members of the public could help clean up spilled trash when they see it on open space rather than waiting several weeks before calling staff.

8. **Action Item: Redtail Ridge Preliminary and Final Plat Review. Presented by Rob Zuccaro, Director of Building, Safety, and Planning**

Presentation by Rob Zuccaro

Refer to presentation in the amended packet.

Rob started by explaining that his comments and presentation would mostly focus on process. The Redtail Ridge property was formerly owned and occupied by Storage Tech until 2010 when Conoco Philips purchased the property. Conoco Philips had a planned unit development (PUD) approved, which can't change the underlying zoning standards but can set a lot of design standards. That PUD has since expired. The prior owner also received approval of a general development plan (GDP). The GDP was recorded on the property and doesn't expire; it sets the regulatory standard for zoning for property.

In subsequent years there have been a lot of proposals to amend the GDP. City Council approved proposal last year and a subsequent Citizen's referendum resulted in a public vote on the proposed amendments to the GDP. Rob explained that OSAB's role was to review the subdivision plat document which would create developable lots, establish easements and rights of way, including requirements for developer to build infrastructure, etc. Staff asked OSAB to make a recommendation to Council about how to proceed.

The subdivision plat also includes public land dedication. A minimum of 12% public land dedication is required for commercial developments in Louisville. See presentation for detail on

public land dedication proposal. The current proposal includes 89.9 acres of land for public dedication. The prior PUD had 39 acres within the property and 20 acres separate for conservation easement; it also included 222 acres of private common open space. The Redtail Ridge GDP amendment proposal had 93 acres of public land. Rob displayed the plat document with public land dedication summary, including trail corridors. He displayed the trail plan overview. Rob explained that the property outside of City of Louisville in Broomfield would have a conservation easement protection on it.

Additional detail was described, including:

- Two drainage areas that would also be underpasses for trails under Campus Drives
- The developer would build all trails as part of dedication
- Trail through open space runs along existing drainage way
- There is a Metro district planned for landscaping
- City would take care of hardscape within public right of way

In his presentation Rob shared Louisville Municipal Code sections that staff felt were most relevant to OSAB. He stated staff was asking for a recommendation, which could include a recommendation of approval, conditional recommendation of approval, or a recommendation of denial. Alternatively, OSAB could also ask for additional information on any relevant topic related to their review.

Board Questions

David asked about the 80 exempt acres (related to the 12% land dedication requirement). Staff explained that these related to Storage Teck's private recreation facilities; even though the facilities don't exist anymore the exemptions don't go away.

Charles asked staff to clarify the difference between new plan and what went up for a public vote in April. Staff explained that a GDP is fundamentally different from a subdivision plat, which outlines legal law boundaries, rights of way, etc. A subdivision plat needs to comply with 2010 GDP and it does. The difference is in square footage of development (2.5M sq ft vs. 3M). Allowed uses (commercial and office, some light industrial) are very similar. The 2010 plan envisioned private roads, which the developer is now proposing be public. City Council's approval of amended GDP was 83 acres. Current proposal has open space in generally the same location. What is new is open space areas in the West and East

Helen asked if there is a maximum dedication. Helen also asked about % land dedications in other developments. Staff offered to share numbers, which range from 12% into 30%'s. Coal Creek was highest with a dedicated golf course. Several other GDP's have been approved with less dedication than this plan.

Applicant Presentation

Jay Hardy from Brue Baukol reviewed the presentation included in the May 2022 OSAB meeting packet. Some points covered include:

- They started by outlining natural areas existing already

- Explained that High Plains Environmental Center is a non-profit that was asked to look into how development could work with the land
- Described case study from Loveland, CO – restoration of habitat, including re-establishing wetland; 3k acre master planned community that is certified "Wild"
- Showed renderings of various entrances to the future community
- Explained that the difference between this plan and Conoco Philips was that this developer wanted to open site up to community with open space and trails (versus private undeveloped land)
- In first phase committed to doing all 6+ miles of trails
- Campus Drive would also be done in phase 1, with a focus on keeping pedestrian and bikes removed from vehicles
- Design has gone through a lot of iterations – BVSD, Boulder County, traffic study, etc. dictated how to move people through Campus Drive

Board Questions

Jessamine asked applicant to point out where Disk Drive is located, noting that several members of the public commented (via email) on adding additional open space north of Disk Drive.

Susan asked why Campus Drive was placed in the proposed location. It was explained that an intergovernmental agreement between Louisville and the County requires Campus Drive to have a buffer between it and County properties and Paradise Lane area. Paradise Lane area includes rural residential parcels, mix of existing houses and houses that could be built.

Charles and a public meeting participant pointed out that the proposed drive location goes along a railroad bed.

David asked about cause of reduction in square footage. It was explained that this results from a reduced number of buildings (versus reduced building height).

David asked about habitat considerations. It was explained that the Habitat Management Plan indicates that one prairie dog community would stay in conservation easement and some would be relocated to that area. The developer would follow Colorado's six-step process to do so.

Helen asked for clarification of process – is this the final stage? Rob explained that once an owner has a GDP the next stage is subdivision plat, then once they have property platted and infrastructure is going in, each lot needs a planned unit development (site plan, architecture, layout). This process will require a public hearing before the planning commission before it goes to City Council. City Council will have a hearing to make a determination on proposal. Anticipated timeline: might go to planning commission in June or July.

Rob showed table with different land dedication percentages (see last page of Packet Addendum #1). Helen asked how decisions were made about dedications in past. Rob indicated that it is complex and happened in late 1980's / early 1990's and is difficult to piece together; he has not reviewed minutes or record.

Susan asked about density comparison to understand if we can ask for more public open space; Rob referred back to Chapter 16.16 Subdivision Design Standards.

David asked if it was possible to do site visits. Rob said it is possible but challenging because of quasi-judicial and open government requirements. Site visits would need to be a fact-finding meeting process.

Charles asked about parking square footage. Rob said that will be determined at PUD stage. Rob indicated there is a maximum in design standards to dictate character of the area.

Public Comments

David described public comment process, including timing of comments. David also summarized emails submitted and provided to OSAB in advance of the meeting, which would be included in an amended packet.

- Tom Lepa, 846 St. Andrews Lane: Been in Louisville since 2007. Thank you to the volunteers on Board. Conoco Philips – 222 private open space acres. Asked developer what they envision for private open space development.
- Sherry Sommer, 910 S. Palisade Court: Noted that building square footage has gone down and the plat we are considering is the same as the Niwatny Ridge plat. In the current proposal, structures are not clustered, building is proposed on greenfields, would result in destruction of habitat. 2.56M square footage does not include concrete parking, etc. Noted that this is an important opportunity for OSAB to advocate for more open space dedication; 40% open space. Also noted the property was in OSAB's top 5 priorities. During referendum process Sherry spoke with 100+ people and approximately 90 to 100 wanted more open space.
- Mike Schantz, 623 W. Hickory Court: Was on OSAB for 9 years. Quoted minutes from February 10 2021 OSAB meeting in which OSAB noted that paying market prices for prime commercial property at this location and the cost of reclaiming such land would be an unbearable burden. Believes it would be irresponsible to pretend much of the site is suitable for open space. You can literally see rubble on site. Mike has walked site a number of times. He doesn't think open space would be a responsible use of funds for the City. Mike is a proponent of this plan; he knows the developer has carved out the highest quality space for public land dedication. Thinks they have also done a nice job with the trails. He suggests considering an off leash area in the park dedication portion of property to take pressure off DOLA. Noted that the plan is currently at nearly 2.5x required land dedication.
- Cindy Biddell; 662 W Willow Street: Noted that most of what is north of Disk Drive is undisturbed. Recommended that OSAB does not approve this version; 66.06 acres is not enough for parcel of this size. This is an important buffer property to neighboring Broomfield. Not enough if compared to Louisville's other two largest developments – 46% and 35% in two other projects. Demand for open space has only increased. It is important to follow the lead of voters to recommend that 40-50% of parcel be set aside; open space is a subset of public land dedication. Noted that Mayor Stolzman and Councilmember Brown recommended everything north of Disk Drive be open space.

Said the Board has the right to recommend more open space and there is a need for more open space and consideration of natural features.

- Tim Stalker, 806 W. Dahlia Court: Is a proponent of voting no on the plan. Explained there is a lot of room to find out more information: consider trail connections to existing trails in City – how they will align and integrate with how the City has been trailed so far; connection points will need to occur along 88th street; no connections at 96th across Dillon Road. Noted others' comments that trails on NE section somehow pertain to the drainage system of that area; explore if those trails could become drainage ways during large rain events. Overall development is not equal in scope to Coal Creek Ranch and Centennial Valley. He doesn't like riding on pavement; cyclist (mountain / trail biking). Davidson Mesa traffic indicates great appreciation for open space in the community. Advocate for nothing north of Disk Drive. Burrowing animals are primarily in the northern half. Work with University on how to do remediation of landscape.
- Cathern Smith, 608 West Street: Proponent for open space and an attorney advising state board bodies. Open meetings law prohibits three or more members from getting together privately. Encouraged OSAB to get together to view property without violating open meetings law. Thinks it is essential that members of the Board get the opportunity to see the site. Site seems fragmented and the proposal does not have the same feel as Davidson Mesa. The proposed plan breaks up site with trails surrounded by roads. Said "What do I value?" At Davison Mesa you can get away and into nature, you don't feel like you are in a suburban area, can ground yourself in land. That experience is immensely valuable.
- Laura Page, 920 Rex Street: Philips 66 had full plan that showed buffering around the land; even though it was private, it was land that was preserved and gave contiguous area for wildlife. Focus needs to be on preservation of existing wildlife. Campus Drive is not wildlife friendly. This plan shows the land chopped up, not supportive of environment. Concerned about trail immediately adjacent to the pond; developer's own environmental consultant suggested that it was not supportive of wildlife. Philips 66 – same square footage, so we know the site can be developed in such a way that enables more open space. Boulder County recommended multi-year surveys for burrowing owls
- Joshua Cooperman, 216 Griffith Street: Asked Board not to approve plan as it currently stands. Doesn't reflect large enough change from prior plans that were recently voted down. Would ask Board recommend that Council ask for a much larger open space dedication – something on the order of 40%. Open space is one of Louisville's greatest assets. Science community indicates need to maintain 30-50% of undeveloped land. Preserve all land north of Disk Drive. Redevelop on former Storage Tech footprint. Explore other possible alignments for Campus Drive. Would be nice if the north-south trail had a buffer between it and the Northwest Parkway. Also would be nice if there were trail connections across Northwest Parkway to enable neighbors to the east to access open space.
- Gaylynn Potemkin, 505 Spruce Street: Said we are trying to figure out a way to squeeze in spaces for wildlife to enable development. It would be great to look at whether we can squeeze people in where the animals / wildlife live. Is there a way to get in without obliterating them all?

- Anna Carlson, 929 LaFarge Avenue: Has lived in Louisville her whole life. Enjoys biking and running in open space. Current plan gives up a lot of opportunity; she wants the board to push a little more to protect it. Should think more about density considerations and building heights; need to look into it a bit more before approval. Stated support for more open space and greater wildlife corridors.
- Alexis Kahn, 1416 Fillmore Place (by Zoom meeting): Has lived in Louisville since 1986 and been on both sides of debate. Hearing that the Northern piece is being referred to as open space; it's not open space – it is private land. The land has been vacant for so many years; would be nice to shift to usable open space in that area. Grateful that developer has agreed to give additional land to the City for open space and listened to voters in City. Said the City can't afford to purchase open space. Said it was unfortunate the way the developer has been treated; does what is asked and then gets a Citizen referendum. Council and staff have worked hard to get the proposal to this point. Developer is already being generous; community already spent time and money on this project. We should honor that work and stand by our word; we are not acting in good faith as a City.

Board Discussion

Helen asked who owns parcels north of site. Rob pulled up map. The developer explained it is low density residentially zoned and the developer owns two parcels north of the site in question.

A member of the public encouraged Board to learn more about buffer requirement with Paradise Lane.

Charles mentioned that the Board had discussed trail connection options along Goodhue Ditch. Discussion of alignment of Campus Drive. Asked if there could be a use for the existing developer parcels.

David supported Redtail Ridge, but has been underwhelmed by what was dismissed by voters and what is being presented here tonight. Doesn't seem like the results were modified by much. Difficult to assume we'd get general public support given the outcome of the vote. Personally wants to make sure we push for as much public land dedication as possible and put something out that Planning Commission and Council will approve.

Charles noted that the plan as-is failed in the recent election.

David suggested it would be worthwhile to explore opportunities for preservation.

Charles does feel like we are moving the goal posts, but asked "what are the goal posts?" Currently "closed open space" is not open.

Helen moved to request more time to enable a site visit. She asked for more information through satellite, surveys, environmental impact on the property, the history of the larger land dedications that were done previously. Helen noted that she was not familiar with the subdivision design standards and would like to spend more time to understand our role and the criteria we need to apply. Also would like to spend more time with the feedback from Citizen comments shared via email the afternoon of the meeting. Noted that the City has hired but does not currently have

anyone serving in role of Parks & Open Space Director. Would also like additional information about buffer for Campus Drive.

Developer said they are happy to accommodate a site visit so information can be expedited prior to the next meeting. Rob noted that staff / OSAB would need to coordinate with City attorney and a visit would require public notice.

Jessamine asked staff to provide information about cost implications for dedication of more acreage. David asked about process and Rob suggested OSAB provide a list of questions and request for more information. Staff and the applicant can pull together site visit, information about fiscal impact, buffer zones and requirements for Campus Drive, etc. Staff would need the request for additional information within one week and would aim for a site visit prior to the June OSAB meeting.

Helen amended her motion and moved for more time to enable a site visit and collection of additional information. Charles seconded the motion. The motion was approved unanimously.

9. Discussion Item: Opportunities to Improve the Property Acquisition Ranking Process.

Agenda item moved to next meeting.

10. Update Item: Marshall Fire Updates Related to Open Space.

Staff Update

Ember reviewed key points from the staff memo. Items described include:

- Bid out for fencing: In prior round some contractors said they were not aware, some said they were too busy at the time but are now available. At least 6 companies interested; seems more promising this time around.
- Property line mowing: Adjacent to homes adjacent to open space. Waiting for cost estimate. Broken down to High/Medium/Low priority areas; high plus medium areas are equivalent to 14 miles of mowing. Ten-foot buffers. Some areas where access may not be possible. Ten-foot width is best practice staff has heard regarding wildland-urban interface. Buffer width will depend somewhat on contractor equipment. Will be putting out RFP in next month or so.
- Still working with FEMA to look at fence line documentation. Field consultations required to verify all reported documentation. Currently looking at reimbursement options from FEMA.
- Ember forwarded public works email related to reseeding the pipeline project with open space grass mix; will watch for how establishment occurs; usually takes a couple of tries to have good coverage.
- Susan asked about testing water in Coal Creek post-fire? Last time staff asked there hadn't been any; Ember will follow up.

Public Comments

City of Louisville
PARKS, RECREATION & OPEN SPACE

Open Space Advisory Board Meeting Minutes
Wednesday June 8, 2022, 7:00pm
Louisville Public Library

1. Call to Order

David Blankinship called the meeting to order at 7:05 pm.

2. Roll Call

Board Members Present in Person: Susan McEachern, Peter Gowen
Board Members Present Remotely: David Blankinship, Charles Danforth, Helen Moshak
Board Members Absent: Laura Scott Denton, Jessamine Fitzpatrick, Thomas Neville
Staff Members Present: Ember Brignull, Rob Zuccaro

3. Approval of Agenda

Peter moved to approve the agenda, which was approved unanimously.

4. Approval of Previous Meeting's Minutes
David moved to approve the minutes as written. Susan requested that her concern expressed at the previous meeting about the difficulty of relocating prairie dogs to an established prairie dog town be added. With that change, the minutes were approved unanimously with Peter abstaining.

Since this is a quasi-judicial proceeding, David asked if it was acceptable to proceed with the discussion without the majority of the board in physical attendance. The Redtail Ridge representatives indicated their desire to proceed.

5. Staff updates
See "Information Item 5: Staff Updates" on pages 21-23 of the June 2022 OSAB Meeting packet. Ember reiterated items in the staff update memo. There was no discussion.

Ember reported that Hecla Lake water rights came into priority today. Water is now flowing in, but it will soon be flowing out to meet the farmer's irrigation needs.

Received three bids for fire damaged fence repair in the second round of the bidding process. On June 21, the contract award is going to council for contract award approval. DOLA will be closed while contract work is progressing. Possibly a second closure for the trail surfacing.

David: Regarding the DOLA fence repair, we should make sure we aren't ignoring the concerns raised by homeowner Marcus Bell, who provided much documentation about established norms for the establishment and maintenance of successful off-leash dog

exercise areas and providing a buffer between private homes and dog parks (see pp 13-20 of the June 2022 OSAB Meeting packet). Ember: The project has been bid, FEMA reimbursement requests are underway. This is such an important issue that the City Manager's office agrees that adequate staff and public input would be needed before any changes to location were made to this city asset.

David: Some volunteer events were canceled because of low registration. Has the cause been identified? Ember: There was great participation for Marshall Fire cleanup events. For other events, participation is low, in some cases because of competition from other events.

6. Board updates

No board updates

7. Public Comments on Items Not on the Agenda

John Webb, 119 S. Buchanan Ct: John provided handouts on the process for becoming a bee city, sponsored by the Xerces Society. As Louisville becomes a bee city, it has a responsibility to promote the health and safety of domestic bees and native pollinators, which have been seriously affected by habitat loss and pesticides. He asked the City to create a standing committee, reduce use of pesticides, incorporate native plantings, reduce water-intensive bluegrass plantings, and develop an on-line presence. The annual fee for joining is $200. Benefits: Sustaining and enhancing bees and other pollinators, a shared community cause, a connection with other communities, using IPM (integrated pest management) in conjunction with the City's commitment to limit the use of herbicides, biological diversity, sustainability. A pollinator path could be a parks, public lands, and open space initiative. He passed out printed material and will provide electronic resources. The websites beecityusa.org and xerces.org provide further information. Susan volunteered to serve on the committee. Handouts provided following these minutes.

8. Action Item: Redtail Ridge Preliminary and Final Plat Review

Presented by Rob Zuccaro, Director of Building, Safety, and Planning

Rob summarized the history of the property he presented at the May OSAB meeting (see pp. 5-6 of the May 2022 minutes). He emphasized that because the revised GDP was overturned by the voters, the GDP under consideration was the original 2010 ConocoPhillips GDP, which allows approximately 2.5 million sq. ft. of commercial and office development on the 389-acre property. A final subdivision plat creates lots, tracts, rights of ways, and easements to enable development of the property. The proposal includes dedication of several tracts of land to the City for a park, open spaces, trails, and a public safety facility, totaling 89.9 acres. He noted that:
Part of the development review process for a subdivision plat includes a recommendation from OSAB to the Planning Commission and City Council on relevant aspects of the application. Per LMC Sec. 4.02.040, ongoing duties of OSAB are the following.

-Provide comments to the council and/or planning commission on development proposals for land immediately adjacent to, or materially impacting, open space lands providing the comments during the standard referral timelines established for the city's development processes;

-Provide input on the location of trails and paths on open space lands;

-Provide recommendations as to how open space within the city's boundaries and immediately adjacent thereto can best coexist with surrounding private land;
-Provide recommendations as to how the city can manage park and other land adjacent to open space lands in a manner that best promotes the continued integrity of open space;
-Provide any additional recommendation on open space issues the board finds appropriate.

Rob supplied detailed documents (see pp. 24-54 of the June 2022 agenda) addressing the questions board members raised at the May meeting and in later emails to further inform their decision-making process:

1. Redtail Ridge Preliminary Plat
2. Redtail Ridge Filing 1 Final Plat
3. Redtail Ridge Filing 1 Select Construction Documents
4. OSAB Questions
5. ERO Wildlife Use Assessment
6. HPEC Management Recommendations
7. ERO Initial Raptor Nest Survey
8. ERO 2020 Migratory Bird Nest Surveys
9. Baseline Burrowing Owl Survey
10. ERO Prairie Dog Management Plan
11. NW Parkway IGA
12. Centennial Valley Annexation Agreement
13. March 20, 11979 City Council Meeting Minutes
14. Centennial Valley Amended Annexation Agreement
15. Centennial Valley GDP
16. Coal Creek Ranch GDP
17. Coal Creek Ranch Annexation Agreement
18. March 1 & 9, 1988 City Council Meeting Minutes
19. North End GDP
20. December 19, 2006 City Council Meeting Minutes
21. Takoda Amended GDP
22. August 3, 2010 City Council Meeting Minutes 23.1981 Storage Tech Corp Annexation Agreement
24. ConocoPhillips Campus Zoning Agreement
25. Staff Presentation
26. Applicant Responses and Presentation
27. Public Comments Received Since Last Meeting

Jay Hardy and Geoff Baukal presented for Redtail Ridge.

The application property contains 389 acres within Louisville. The property must have zoning to proceed. A Planned Community Zoned District is unique. A development is required to have a GDP, which is essentially a master plan for the project. In 2010, ConocoPhillips was going to build and had an approved GDP. That document doesn't expire, it runs with the land. An application to amend was overturned by a citizen referendum in April 2022, but the 2010 plan remains in effect. Talks are underway about where specific elements will go. Applicant is asking for the final subdivision plat for phase one and preliminary plat for remaining phases. OSAB could review if there are open space elements. Minimum public land dedication is 12%, which the applicant has exceeded. In addition, the applicant proposes to add 18 acres in a strip along

Highway 36. The applicant is also newly proposing to preserve 47.4 acres north of Campus Drive, which is in unincorporated Boulder County.

The applicant wasn't able to offer a site visit for OSAB since the City attorney felt it raised legal issues, so they showed videos taken from Disk Drive and Tape Drive, as well as photos and site plans demonstrating hardscape trails and soft-scape trails. The existing lake in the NE corner of the property will be expanded.

Fiscal analysis prepared by a consultant estimates City revenues and expenses at development phases are built. A detailed spreadsheet can be found in the agenda package. Best estimates include: $49 million in revenue; $25 million in expenditures; $23 million in net revenue; approximately $1 million net revenue per year; and $3 million for the City to build a 16-acre park.

Helen: where is the density determined? Rob: Density cap: floor area max 2.5 m sf. City will track square footage PUD by PUD, and the developer wouldn't be able to go above that total. Modeling very little sales tax, most revenue by use tax (construction tax, equipment and furniture purchase), property tax is $2.6 million over 20 years projected for open space. Given gross land area (389, 37.4% in BC, 35.6%, 40.9% with Broomfield portion).

Charles: What's the difference? Rob: Same except for 10 acres less of unspecified land requested by City Council for previous GDP.

David: Is OSAB able to vote on the additional 47.4 acres? Rob: Yes, consider it a dedication of public-purpose land.

Helen: Changes in the GDPs in the other developments provided as examples. Can the City amend GDPs? Rob: No. An applicant can request a change. All were initiated by the property owner.

Geoff Baukol: He's lived in Superior for 22 years, his wife grew up in Boulder, his kids go to Monarch. StorageTek owned the property from 1970-2005. It had 4800 employees and 12,400 daily car trips, at its private campus. In 2008, ConocoPhillips, demolished the prior structures over two years. The property has been dormant since 2010. The 2010 GDP remains in effect. The Applicant submitted a revised GDP which was approved by City Council in September 2021, but rejected by city voters in April, 2022.

Jay Hardy grew up in Spanish Hills. The 2022 plat changes they're proposing represent the largest public land dedication in Louisville (without a golf course). They've added another 18 acres along US 36 to create a buffer zone. They have also added 47.4 acres in unincorporated Boulder County that connect to the north. Compared to the original ConocoPhillips GDP, the applicant is offering more open space, better view corridors, more trails. Applicant had the option of submitting another revised GDP, but elected not to do so and proceed under the previously approved 2010 GDP as was its right. This plat contains four times as much open space as required.

Geoff talked about the 2020 OSAB site tour, after which OSAB gave unanimous approval for the proposed revised GDP. He detailed their sustainability commitments and how they would be finalized during the PUD process. The proposal now includes 205 acres of connected open space with the addition of the new north piece.

Additional features include solar-ready covered parking, underpasses, and restored pollinator habitat. Campus Drive extension is a high priority for all government entities.

Susan asked if the Campus Drive extension could go south of the east pond. No, because then the road would connect to the Northwest Parkway instead of 96th Street, which would be difficult.

Helen: Is the hazardous waste site in the new 18 acres? Jay: No, it's been remediated and cleaned.
Helen: would the 18 new acres require new money from the city? Rob: No capital improvements planned at this point. No public access planned at this point.
Helen: Would the trail go through the new 47 acres? Geoff: Yes.
Helen: Would this be a conservation easement or a dedication? Geoff: Undecided, but if approved, however the City wants to proceed. Geoff is committed to this promise.

David: Can 2010 GDP allow above 35 foot building heights?
Rob: GDP can't alter height or setback requirements. Can't allow above our max 35 ft height without PUD process approval.

David: Green energy requirements planned?
Geoff: Yes, a subset will be included. Not as complete as the 2021 GDP though.

David: Why the narrow buffer along the Northwest Parkway? Is there any flexibility to expand that?
Geoff: Always some flexibility, and it's already a pretty substantial setback.

David: Does the 18-acre belt include the rubble from StorageTek? Do they see it as undisturbed land?
Geoff: More of a buffer, not the highest quality of the open space on the property.
David: Underpasses should be designed so no multi-modal conflict and potentially to minimize length (straight across street rather than diagonal). Has an underpass been considered for the spot where the north/south trail crosses Rockcress Drive?
Geoff: Open to redesign and that underpass location at Rockcress Drive makes sense.

Charles: What about houses to the sides of the new 47 acres?
Geoff: Abandoned houses would be demolished.

Helen: Does the applicant agree to change the design of the underpasses to follow the City model established for the Harper Lake/DM underpass per staff recommendations?
Rob: Hadn't shown to applicant yet, so he described to Geoff. Changes fine with applicant.

Public Comment (11 plus 41 emailed comments, 11 from those also speaking in person; mostly urging a greater proportion of open space, especially the entire portion north of Disk Drive.

Channah Horst, 136 Hoover Ave: She is confused about who is putting in the trails. The developer would put in and the city would maintain. Concerned about the carbon sink from developing the land, especially given the empty buildings already in town.

Cynthia Corie, 438 Jefferson Ave: Appreciated the spirit of compromise, especially given the tenor of the election. Felt it was dismissive to say the vote was so close. Please ask for a

phased plan, starting with Northwest Parkway. Strike a compromise, have a community gathering with more discussion. Many of us care more about open space than public access.

Richard Morgan, 644 W. Pine St: Appreciated all the work that went in. Was in favor of the 2021 GDP, reminds OSAB that the amount of open space has exceeded requirements. The land offered is the highest-value space on the property. The land is disturbed, it's not pristine. It's not like Davidson Mesa. He supports new, enhanced proposal.

Sherry Sommer, 910 W. Calisade Ct: Public has spoken out that more land should be saved. All land north of Disk Drive should be saved. That element of the space hasn't been built on. A Goodhue Ditch trail would also bisect habitat.

Tim Stalker, 806 W. Dahlia Ct: Handed out a master drainage plan. Conflict between the development and natural drainage. Underpasses and culverts next to each other only designed for a 10-year flood pattern. Need more detail about the buffer required by Boulder County. Encourages OSAB to get more detail about the north section, cooperation with Boulder County.

M. Christiansen, 543 Adams Ave: Concern about the placement of Campus Drive.

Mike Shantz: 623 W. Hickory Court: Former OSAB member: A fan of encouraging more public land dedication. Went through the history of the debate, advocated that OSAB to approve the current plan.

Justin Solomon 477 Lincoln Ct: The 18 acres added along 36 aren't developable land anyway. He feels those strips of land aren't high-quality. Centennial Valley included 260 open-space acres (public and private).

Cindy Bedell, 662 W. Willow St: Proposed open space isn't enough for a development of this size. Voters asked for more open space in the election. Asks for 40% set aside, all north of Disk Drive. Prairie dogs are a keystone feature. Not clear how the 47 acres in Boulder County add. Could it be developed anyway given the IGA? Consider a grant through GOCO to fund purchase of additional land.

Laura Page, 920 Rex St: OSAB shouldn't make a decision without consulting with Boulder County about the new 47 acres. Per city code, natural features should be maintained. In the ConocoPhillips plan, 222 acres would have been set aside for private open space. She hopes for a compromise that would avoid development north of Disk Drive. Move the 18 acres along Highway 36 to the north section so it adds contiguous open space. She is concerned about the demise of prairie dogs. The 47 acres to the north are already designated as rural preservation.

Josh Cooperman, 216 Griffith St: Advocated for more open space at the last meeting. Appreciates the addition of more by the developer, but thinks even more needed. Wants to see all land north of Disk Drive preserved and realignment of Campus Drive.

Board discussion:

Peter: Our jurisdiction is confined to matters of open space and trails. The dedication of open space exceeds the city code. He's read the code and doesn't see any way the city can require more open space than the applicant has already offered. The trail dedications make sense in consideration of the 2010 GDP.

Charles: Agrees with Peter. We keep moving the goalposts, and we're getting a good deal.

Helen: We and the citizens would like to consider further the possibility of moving Campus Drive further south.

Susan: Can the 47 acres be developed? Geoff: Per the IGA (which expires in 2029) they could build 6 homes and the rest of the land would have to be placed in a conservation easement.

Peter: Not comfortable asking for more open space than the applicant is willing to give. We have no legal right to demand more. They have use by right. He cannot support a request for more land dedication. The PUD process is the time to ask for more open space in exchange for enhanced building height.

Rob: PUD process is the only opportunity to adjust building height. OSAB could be brought in at that time since the development would be contiguous to open space. We could put that condition into our recommendation.

David: summarized possible recommendations in preparation for a final vote, including pursuing legal commitment by developer to dedicate 47.4 acres north of Campus Drive as open space, an additional underpass at Rockcress Drive, OSAB involvement in PUD review, and ensure underpass design meets city standards. Noted that there doesn't currently seem to be clear support for asking for more open space with a tradeoff of clustering and higher building heights, so that can be considered in a future OSAB review of the PUD.

Motion Language: OSAB recommends approval of the revised proposed final plat contingent on:

1. A legal commitment by the developer to rehabilitate and dedicate the 47.4 acres in Boulder County (paradise lane properties) for jointly managed Louisville and Boulder County Open Space.

2. The developers follow the current city standards for underpasses consistent with the McCaslin Underpass and Harper Lake.

3. OSAB participation in the PUD review process.

4. The developers and city continue to work on creating safe trails and the possible addition of a 3rd underpass.

Helen made a motion to approve as submitted and amended with conditions. Peter seconded. Vote: Passed unanimously by Peter, Helen, Charles, David, and Susan.

Memorandum of Decision

Open Space Advisory Board

City of Louisville

June 8, 2022

RE: Brue Baukol Capital Partners

Preliminary and Final Subdivision Plat

389-acre Redtail Ridge (ConocoPhillips Campus) Development

Preface

In view of the significant public interest in this matter, OSAB desires to memorialize the background and rationale for its decision in this matter.

Introduction

1. This matter comes before the Open Space Advisory Board (OSAB) upon applicant Brue Baukol Capital Partners (Applicant) submission of a preliminary and final subdivision plat for the 389-acre Redtail Ridge (ConocoPhillips Campus) development (Property).

2. The property was first developed in 1970 and occupied by StorageTek until 2005 as a private commercial business park with up to 4,800 employees generating up to 12,400 daily trips. ConocoPhillips purchased the Property in 2008 and demolished most of the improvements. It has remained in its present condition since 2010.

3. The application is pursuant to the 2010 ConocoPhillips Campus General Development Plan (GDP). It is a proposed final subdivision plat for the first phase of development creating lots, tracts, rights-of-ways and easements to enable development of the Property.

4. Additional plat filings will be required for future phases of development. A Subdivision Improvement Agreement (SIA) will also be required for installation of public infrastructure such as roads, trails, water lines, sewer lines, and a sewer lift station.

Procedural History

5. On December 11, 2019, OSAB first considered the Applicant's proposed 1st Amendment to the 2010 ConocoPhillips Campus GDP (1st Amendment) The proposed 1st Amendment included an updated access plan; expanded allowed land uses (a 1,500 unit senior living community in Area A, and a mix of office and commercial uses in Areas B, C and D); increased allowed gross FAR to 0.38 (6.4M sq. ft.); updated parking standards; and stated an intent to allow building heights up to 75', and proposed 77.54 acres for open space and 7 acres for parks, where the minimum public land dedication was 40 acres.

6. The Applicant presented two alternative plans for OSAB consideration. OSAB made the following recommendation:

a. Option B is strongly preferable

b. Include lake in NE Corner as part of the public lands dedications

c. OSAB is open to discussion of reducing other public lands areas to accommodate the lake area

d. Provide trail corridors to/from the lake

e. Preserve option to build a trail along the Goodhue Ditch leading towards downtown Louisville

f. Strongly prefer land dedication vs. cash in lieu

7. On February 10, 2021, OSAB considered the Applicant's revised 1st amendment to the GDP (Revised 1st Amendment). The revised concept included a mix of industrial, office and commercial development with a maximum development area of 3,115,000 sq. ft., and maintaining the previous open space, park, and trails plan. This plan was designed to be consistent with the city's comprehensive plan.

8. OSAB February 10, 2021 action on Applicant's Revised 1st Amendment was to approve the staff recommendation with additional conditions: 1) that Applicant and staff make an appropriate effort to preserve natural features, historical and archaeological sites, vegetation including trees, to the greatest extent possible; and 2) OSAB encourages clustering to the extent possible to minimize the development footprint. The staff recommendation was to support the Applicant's proposal with the following conditions: 1) that the Applicant work with staff to determine final trail alignments to ensure good user experience but that are in line with the application as proposed; and 2) that the Applicant work with staff to finalize plan for site restoration and grading. Detailed rationale for the OSAB's deliberations are contained in that meeting's minutes.

9. Applicant's Revised 1st Amendment was considered by the Planning Commission and by City Council, where additional changes were made. City Council approved the revised 1st Amendment on September 21, 2021.

10. City Council's approval of the revised 1st Amendment was challenged successfully by citizen initiative vote on April 22, 2022. By operation of law, the 2010 ConocoPhillips Campus General Development Plan remains in effect and governs OSAB's deliberations on the present preliminary and final subdivision plat.

11. Preliminary and Final Subdivision Plat Proposal

12. The preliminary and final subdivision plat considered by OSAB at its May 11, 2022 meeting proposes approximately 2.559 million square feet of improvements and is comprised of: 1) corporate campuses; 2) ancillary office uses; 3) ancillary institutional uses; 4) industrial & research and development districts; and 5) retail servicing on-site demand. Applicant further claims the proposal: 1) provides approximately 66 acres additional open space providing continuity with adjacent, off-site open space; 2) safeguards an expansive natural habitat corridor; 3) preserves a direct western view to the Flatirons to be enjoyed by all; 4) provides an approximate 16.5-acre park land dedication, one of the largest in the City park opportunities, paralleling the size of Community Park; 5) provides key linkages for the regional trail network; 6) provides bikeway completion with pedestrian underpasses and raised crosswalk; 7) provides

multi-use paths for separated bicycle and pedestrian access; 8) provides buffered on-street bike lanes; and 9) provides integrated, sustainable native landscape design.

13. Applicant by letter dated June 8, 2022 (included in the OSAB June 8, 2022 Board Package at page 404) modified its proposal as follows:

a. Added approximately 18 acres of open space dedication (was previously 66 acres) totaling 84 acres;

b. A new commitment of 47.4 acres of open space/conservation easement for the lands just north of the Louisville/Boulder County property line; and

c. Committed to extend and additional "leg" of the trail from the eastern underpass north along the Goodhue ditch.

OSAB Hearing Process

14. On May 11, 2022, OSAB conducted its first hearing on Applicant's preliminary and final subdivision plat for the 389-acre Redtail Ridge property. Members present included: Chair, David Blankinship, Charles Danforth, Jessamine Fitzpatrick, Susan McEachern, and Helen Moshak. Members absent included: Laura Scott Denton, Peter Gowen, and Thomas Neville.

15. Louisville Planning Director, Rob Zuccaro summarized the proposal, development history and staff analysis. Jay Hardy, Senior Vice President, Brue Baukol Capital Partners presented on behalf of Applicant. Approximately eleven citizens addressed the application at the hearing, in addition to approximately 28 persons who submitted written comments that were incorporated into the board's pre-meeting hearing package. While there was public support for the application, a preponderance of public comments was in opposition to the application. Much of the opposition focused on a desire for the city to require a larger public lands dedication.

16. OSAB decided to continue the matter for further fact finding and discussion. OSAB requested a formal, publicly noticed tour of the Property. That request was denied based on advice from the city's legal counsel.

17. On June 8, 2022, OSAB considered the application a second time. Members present included: Chair, David Blankinship, Charles Danforth, and Helen Moshak appearing remotely; with Peter Gowen and Susan McEachern appearing in person. Members absent included: Laura Scott Denton, Jessamine Fitzpatrick, and Thomas Neville.

18. The Applicant was asked if it objected to the form of the meeting or whether it objected to members participating at this meeting who did not participate at the May 11, 2022 meeting. The Applicant waived any objection.

19. Rob Zuccaro presented on behalf of staff. Geoff Baukol and Jay Hardy presented on behalf of Applicant. Presenters provided additional material and answered OSAB questions. Eleven members of the public offered comments. The OSAB meeting package for this meeting provided extensive additional background documentation and responded to OSAB questions raised at its May 11, 2022 meeting.

OSAB Analysis

20. OSAB's role in this matter is governed by Louisville Municipal Code (LMC) Sec. 4.02.040. As such, its role is to provide comments and make recommendations. Its comments and recommendations are as follows:

21. 4.02.040. D - [P]rovide comments to the council and/or planning commission on development proposals for land immediately adjacent to, or materially impacting, open space lands;

a. The application proposes dedication of approximately 84 acres of additional open space lands and an approximate 16.5-acre park land dedication. Planning staff analysis calculated the minimum required public land dedication as approximately 40 acres (12% of gross acreage). The proposal is well in excess of that required by the LMC.

b. Many of the public comments focused on a preference for significantly greater open space and other public land dedications than proposed in the application. There appears no basis in law for the city to require public land dedications in excess of what Applicant has proposed.

c. OSAB acknowledges the Applicant has increased the total open space dedications compared to what was presented to OSAB at its May 11, 2022 meeting. OSAB does not recommend that either Planning Commission or City Council require Applicant to dedicate more than Applicant is willing to do so.

22. 4.02.040 E. Provide input on the location of trails and paths on open space lands;

a. Considering the constraints of the GDP in place, the location of the trails and paths on open space for the appears appropriate and consistent with previous recommendations of OSAB.

b. OSAB supports the planning staff recommendation regarding the design of the Campus Drive underpasses, including upgrading the chain-link fence to corten steel fencing, LED lighting and addition of a stone veneer headwall treatment with street name and City logo.

c. OSAB recommends that Applicant and Staff consider a third underpass for the trail that intersects the proposed Rockcress Drive, applying the same design standards as recommended for the underpasses along Campus Drive.

23. 4.02.040 H Provide recommendations as to how open space within the city's boundaries and immediately adjacent thereto can best coexist with surrounding private land;

OSAB concludes that the open space dedications designated in the application are in sufficient harmony with surrounding private land of both the Applicant and adjacent private land and consistent with previous OSAB recommendations.

24. 4.02.040 I Provide recommendations as to how the city can manage park and other land adjacent to open space lands in a manner that best promotes the continued integrity of open space;

a. Many public comments focused on Campus Drive not being routed so as not to cut through open space. The December 30, 2021 Marshall Fire made clear the imperative for additional ingress and egress for the Monarch school and Avista campuses. The Applicant's proposal addresses this important public safety need in a responsible manner. It is also consistent with the 1999 Intergovernmental Agreement (IGA) between Boulder County, Louisville, Lafayette and Broomfield commonly referred to as the NW Parkway IGA.

25. 4.02.040 M Provide any additional recommendation on open space issues the board finds appropriate.

a. OSAB supports Applicant's new commitment of 47.4 acres of open space/conservation easement for the lands just north of the Louisville/Boulder County property line and its commitment to extend and additional "leg" of the trail from the eastern underpass north along the Goodhue Ditch. OSAB recommends that the 47.4 acres be formally dedicated as open space, with the understanding that Applicant would be responsible for removing existing structures on the acreage and restoring those sites to their natural condition.

b. OSAB supports Applicant's newly proposed addition of 18 acres of open space along the Property's edge with US 36. While this area was not among OSAB's highest priorities for open space acquisition, it is a welcome enhancement for the public lands dedication.

c. OSAB supports Applicant's efforts with this application to consider protection of portions of the Property outside the city limits (47.4 acres north of the city limit, and the conservation easement in favor of Broomfield to the south of the city limit) and associated trail connections. Such efforts strengthen the open space components of the Application.

d. At its February 10, 2021 meeting OSAB approved a motion supporting the GDP proposal before it, and encouraging building clustering to the extent possible to minimize the development footprint on the land. Although the current application is pursuant to the 2010 GDP and not the GDP under consideration in 2021, OSAB remains interested in the concept of clustering buildings. Since clustering decisions are made at the PUD phase, OSAB is interested in reviewing the associated PUD application for possible recommendations regarding building clustering and minimizing the development's footprint, consistent with its responsibilities under LMC section 4.02.040. D.

26. OSAB expresses its appreciation to both staff and Applicant for their efforts throughout this project's duration for providing OSAB with necessary detailed information, particularly in response to OSAB questions and issues raised at its May 11, 2022 meeting. OSAB further expresses its appreciation to participating members of the public, who thoughtfully and respectfully engaged OSAB throughout this process.

Motion Language: OSAB recommends approval of the revised proposed final plat contingent on:

1. A legal commitment by the developer to rehabilitate and dedicate the 47.4 acres in Boulder County (paradise lane properties) for jointly managed Louisville and Boulder County Open Space.

2. The developers follow the current city standards for underpasses consistent with the McCaslin Underpass and Harper Lake.

3. OSAB participation in the PUD review process.

4. The developers and city continue to work on creating safe trails and the possible addition of a 3rd underpass.

Helen made a motion to approve as submitted and amended with conditions. Peter seconded. Vote: Passed unanimously by Peter, Helen, Charles, David, and Susan.

9. Discussion Item: Review and Revise Public Communication on Temporary Property Line Mowing Efforts and Scope of Work for Wildfire Mitigation Efforts

Ember provided the draft buffer mowing statement, which will appear on the City's Facebook page next week. This policy applies only to the 2022 mowing season, and not all properties will be mowed, either because they are a low mitigation priority or not easily accessible to mowing equipment. Those property owners will receive written notification that they are allowed to mow their own 10-foot buffers. David and Susan made some suggestions to clarify the wording.

A wildfire mitigation plan was last done in 2012. The revised plan will change the focus to both the pros and cons of mitigation efforts and resource management. Ember will send a rough draft to the Tiger Team for review.

Rangers are pitching in on fire-recovery efforts by driving streets in fire-damaged neighborhoods on weekends to check on contractor right-of-way violations.

FEMA has given its initial approval to the City's damage assessment. A big milestone, though there are many more steps before final approval.

11. Brainstorm Ideas for Joint OSAB/PPLAB Meeting Agenda

OSAB/PPLAB agenda items for the September meeting:
-Bee City, Pollinators, and Xeric Gardens
-Wayfinding and Park Signs
-Cottonwood/Church/Lake Park Master Planning
-Nature Play, Warembourg Pond
-BMX/Pump Track (Charles: bike-specific trails and school safety)
-Wildfire Mitigation
-DOLAs

12. Discussion Items for Next Meeting on July 13, 2022

-Opportunities to Improve the Property and Trail Acquisition Process
-2022 goals assessment

13. Adjourn
Meeting adjourned at 10:40.

City of Louisville
COLORADO • SINCE 1878

Planning Commission
Meeting Minutes
August 11, 2022
Council Chambers
6:30 PM

Chair Brauneis calls the meeting to order at 6:30 PM.

Roll Call is taken and the following members are present:

Commission Members Present:	Steve Brauneis, Chair Dietrich Hoefner, Vice Chair Ben Diehl, Secretary Keaton Howe Jeff Moline Tamar Krantz
Commission Members Absent:	Allison Osterman
Staff Members Present:	Rob Zuccaro, Dir. of Planning & Building Safety Lisa Ritchie, Fire Recovery and Planning Manager

APPROVAL OF AGENDA

Moline moves and **Howe** seconds a motion to approve the August 11, 2022 agenda. Motion passes unanimously by a voice vote.

APPROVAL OF MINUTES

Howe moves and **Krantz** seconds a motion to approve the July 14, 2022 minutes. Motion passes unanimously by a voice vote.

PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

None is heard.

NEW BUSINESS – PUBLIC HEARING ITEMS

A. Temporary Use Permit as a Precursor to a Permanent Use – Rocky Mountain Tap & Garden: To consider an application for a 90-day temporary use permit as a precursor to a permanent use for Rocky Mountain Tap and Garden to utilize the lot at 1077 Courtesy Road (Lot 1, DELO Plaza Subdivision) as an outdoor beer garden (outdoor eating and serving area) (Resolution No. 12, Series 2022).

- Applicant: Garret Nicodemus
- Case Planner: Rob Zuccaro, Director of Planning and Building Safety

All notice was met as required and there is no commissioner conflict of interest.

Staff Presentation:
Ritchie begins her presentation showing the vicinity's aerial image. Going over the background, she mentions that the 0.64 vacant acre lot is located in the DELO Plaza development and the DELO Plaza PUD was approved in 2015.

She discusses the proposal and what is and is not allowed. Outdoor dining is an allowed accessory use in the mixed-use zone district. An approval of a PUD or SRU is required prior to development and operation of outdoor dining use. The applicant is requesting approval of a temporary use permit as a precursor to a permanent use. The applicant anticipates approval of a PUD Amendment to authorize the permanent use. This typically requires approval of the PUD, however staff recommends an exception because this is in support of an existing restaurant in operation and they have already begun to install the improvements. The applicant and staff have revised the request to be a 9-month time frame to ensure adequate time to complete the PUD Amendment.

She concludes her presentation by reviewing the criteria and staff's recommendation. In regards to Sections 17.60.010(D) and 17.16.190(A)(5), the use is compatible with surrounding area and community facilities, conforms to the applicable requirements, the applicants are capable of restoring the site to its previous condition, and the site has adequate parking and service areas.

Staff Recommendations:
Staff recommends approval for nine months with the following conditions:
1. Execute the Restoration Agreement prior to City Council public hearing
2. Submittal of a complete PUD Amendment application

Commissioner Questions of Staff:
Kathleen Kelly, City Attorney
Kelly confirms that adequate notice was provided as noted by staff.

Moline says that the applicant mentions parking is available because of vacancies in the building. Will there be adequate parking if the building no longer holds vacancies?
Ritchie mentions that when staff was reviewing the special review use (SRU), the application at that time had an analysis of the parking, which assumed the building would be completely full. Staff feels confident that there is adequate parking for the site because of the review of the previous SRU, but will review again during the PUD Amendment process.
Moline says on the seasonality of the use, is that something that will be discussed more at the PUD stage?
Ritchie says that is a good question for the applicant if they intend to change the use seasonally. From this approval, the applicant would be able to operate through the entirety of those nine months.
Krantz asks if staff can give more information on the relationship between the tenant and owner and if this is agreed upon for the long term.

Ritchie says the owner is Stephen Tebo and the applicant is the operator of the restaurant. With every land use application the owner has to give consent, which he has done.
Krantz asks if the LED string lights comply with the City's lighting requirements.
Ritchie says string lights are typically very low voltage bulbs and our current code is pretty silent on this. Staff will get a more complete analysis with the PUD Amendment.
Howe asks if staff can comment on the hours of operation and if there will be live music.
Ritchie says there is no limitations on hours of operation but if the commission feels the need to add a condition stating what those hours should be, they can do so at time of approval. We do not have a condition on whether or not they can have live music. These are good questions for the applicant though.

Applicant Presentation:
Applicants: Paul Rossi, Paul Lichty

None is heard.

Commissioner Questions of Applicant:
Howe asks what the hours of operation will be and if they will have live music.
Rossi says they will be open Monday – Wednesday: 3-9pm, Thursday/Sunday: 11-9pm, and Friday – Saturday: 11-10pm. We do plan to have live music.
Moline asks if they can speak on how they see this use through the year.
Rossi says he can see it being used through January or February, depending upon the weather.
Brauneis asks if the applicant is working on obtaining a liquor license.
Ritchie says they are working on getting this with the City Clerk's office.
Rossi shows the commissioners where the gates will be on the property and the main entrance for the garden.
Howe says he is concerned about safety when people are walking back and forth.
Rossi says there is parking lot lighting when it is dark. We will be installing solar lighting though.
Diehl asks if there will be normal amplified music when there is no live band.
Rossi says there will not be music outside of a live band.

Public Comment:
Mark Cathcart, 1763 Sweet Clover Lane
Cathcart says it is an interesting use for a parking lot. He recommends having shade.

Closing Statement by Applicant:
Rossi says the PUD Amendment will have shade sails on a 4x4 post and we will ensure that those are safe. We will have large umbrellas on each table as well.

Discussion by Commissioners:
Diehl says he is supportive of this going to nine months instead of 90 days. It is a good use of the parking lot and he looks forward to enjoying it someday. He mentions the idea of creating a condition that live music is not permissible after 9pm.
Krantz is in support of this and would like to hear from the commissioners on possible conditions relating to the live music and crosswalk safety precautions.
Moline is in support. He is in favor of making this parking lot more usable.

Brauneis mentions that this is an out lot and there are two on this property. For that reason, parking in this area is not an issue.
Hoefner is supportive of this and does not see the need for conditions.
Howe thinks this is a creative use and supports the nine month extension. He thinks lighting is necessary for walking visibility and good signage to direct walking paths.
Brauneis asks what governs live music.
Ritchie says it is the city's noise ordinance.
Brauneis says the condition is unnecessary since they still have to adhere to the city's noise ordinance.
Zuccaro mentions that there is no specific time for downtown in regards to the city's noise ordinance. That is usually tied to an SRU. If the commission wants live music until 10pm, a condition should be made with the approval.
Diehl says he is comfortable without a condition since this is a nine month trial.

Howe moves and **Hoefner** seconds the motion to recommend approval of Resolution 12, Series 2022. Motion passes unanimously by a roll call vote.

B. Preliminary and Final Plat – Redtail Ridge: To consider the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10 acre property, located northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive (Resolution 13, Series 2022.)

- Applicant: Sterling Bay
- Case Planner: Rob Zuccaro, Director of Planning and Building Safety

All notice was met as required. Commissioner Dietrich recuses himself from participating in this agenda item. Commissioner Krantz discloses that she participated in the referendum election for the General Development Plan Amendment. Commissioner Moline discloses that he is an employee of Boulder County Parks and Open Space Department.

Staff Presentation:
Zuccaro begins his presentation by discussing the background. He shows an aerial image of the property and reviews the 2010 approval of the ConocoPhillips GDP, preliminary PUD, and Plat. He explains that it establishes lots, blocks and tracts of land for development. It also establishes rights of way, easements, and includes public purpose land dedications. There will also be a Subdivision Improvement Agreement for installation of public infrastructure such as roads, water, and sewer.

The following is the proposed phasing of the project:

- First Phase
    - Campus Drive
    - Sorrel Ave
    - Portion of Rockcress Dr
    - All Trails
    - Water and Sewer Mains
    - Sewer Lift Station
    - Off-Site Road Improvements
    - Drainage
- Future Phases

- Completion of Rockcress Dr
- Sewer Plant Expansion
- Drainage

In regards to the public land dedication, the code requires a minimum of 12%, 80 of the 390 acres are exempt, but the minimum requires that 37.1 acres be dedicated. They are proposing 155.3 acres be dedicated and have Open Space Advisory Board (OSAB) and Parks and Public Landscaping Advisory Board (PPLAB) support. Speaking on the road and trail plan, all streets will include multi-use paths and on-street buffered bike lanes. There will be soft and hard surface trail networks, two Campus Drive underpasses, and a US 36 bikeway to the Rock Creek Trail connection. The ROW landscaping will be maintained by the Metro District while the City will maintain the trails, sidewalks, and roads.

Zuccaro reviews the traffic analysis. This analysis has an updated development area and modeled uses, evaluates the road network capacity, explains that there will be less building area but more traffic due to the change in use, and recommends road improvements to maintain acceptable levels of service.

Brauneis says regarding who pays for what and when, the applicant does not have to deal with the Highway 36 improvements, correct?
Zuccaro says that is correct.
Krantz asks if staff can discuss possible dates for when these improvements will be in play.
Zuccaro says the traffic study for the interchange would need to be updated in the 2027-2028 time frame. The Northwest Expressway would need to be addressed in the 2027-2035 time frame.

He discusses the right-of-way requirements for Northwest Parkway Authority, North Metro Fire Rescue, and Boulder Valley School District. He mentions the various transportation demands for this project and how staff is recommending an updated plan with funding from the Metro District. Some possible transportation programs are as follows: EcoPasses, hire a Transportation Demand Management (TDM) coordinator, a carpool/vanpool program, local shuttles to RTD stations, and bicycle commute amenities. He informs the commissioners the plans for grading, drainage, and utilities, mentioning that the Waste Water Treatment Plant will require an expansion at future development stages.

He concludes his presentation going over the approval criteria for the preliminary and final plat review.

LMC Sec. 16.12.075 Approval Criteria

1. *Whether the plat conforms to all of the requirements of this title*;
    a. Reviewed by Public Works, Parks, Recreation and Open Space, Police, Fire, and Utilities and Referral Agencies. Staff finds the plat conditionally complies with the standards within Title 16, Subdivisions.
2. *Whether approval of the plat will be consistent with the city's comprehensive plan, applicable zoning requirements, and other applicable federal, state and city laws*;

   a. Part of Phillips 66 Rural District, includes policies on density (0.25 FAR), limits height to three stories but promotes clustering of buildings in exchange for height, supports retail, office, industrial, and institutional uses.
   b. The General Development Plan provides setback and parking standards and requires Commercial Development Design Standards and Guidelines (CDDSG) compliance, and was applied at PUD review stage.
3. *Whether the proposed subdivision will promote the purposes set forth in section 16.04.020 of this Code and comply with the standards set forth in chapter 16.16 of this Code and this title*.
   a. Section 16.04.020 includes 19 specific purpose statements
   b. Chapter 16.16 provides subdivision design standards
      i. General design and construction
      ii. Site considerations
      iii. Streets, alleys and easements
      iv. Blocks
      v. Lots
      vi. Public sites and dedications

The PPLAB reviewed this on May 5, 2022 and recommended approval. The OSAB reviewed this on May 11, 2022 and June 8, 2022 and recommended approval with the following conditions:

- Legal commitment to rehabilitate and dedicate Paradise Lane properties
- Follow City standards for underpass design
- OSAB participation in PUD review process
- Consider 3rd underpass at Rockress Drive/NW Parkway

Staff Recommendations:
Staff recommends approval with the following conditions:

- Prior to recording the final plat acquiring all necessary right of way
- Address in the Subdivision Improvement Agreement
  - License agreements for maintenance of drainage on city property
  - Sewer plant expansion trigger/development cap
  - Maintenance of Tract L as private common open space
  - Paradise Lane properties dedication to the city
  - Underpass design
- Update TDM Plan and address Metro District obligations
- Written approval from Xcel on use of easements
- Update plat labeling
- Add note on Tract Summary Table noting Tracts C, D and I are dedicated for open space
- Adjust Tract K dimensions to accommodate the sewer lift station
- Label Tract L on plat as common open space owned by Metro District

Commissioner Questions of Staff:
Howe asks if staff can highlight the major changes from the previous overturned ordinance and this one.

Zuccaro says this plan is much simpler and has fewer conditions. Last year's land use plan had many, very specific uses. He discusses the different uses available from last year's to this current one. This plan does not have a sustainability commitment plan and does not have a commitment for installing a certain amount of solar panels. Last years version allowed approximately 3 million square feet of development. This one allows only 2.5-2.6. Last years had slightly less open space and land dedication than this proposed one.
Howe says you mentioned the possibility for a hospital for the use. Can you share what blocks or where that could be for the land use?
Zuccaro says he will let the applicant clarify the probability of that location.
Diehl asks if this proposal maximizes the FAR.
Zuccaro says because right now it is just a subdivision plat, it is not addressing how much development will actually go on the property.
Diehl says in regards to the 155-acre open space dedication, does that include the 80 acres that were exempt.
Zuccaro says when staff calculated the minimum required, there are 80 acres being exempted. There was an 80-acre section of land that was annexed and it was exempt from the public land dedication. That does not mean it was dedicated as public land. It was never dedicated as public land.
Diehl mentions that the applicant is exceeding, by a large amount, what they are required to dedicate to public land. He asks if staff can say who owns the mineral rights.
Zuccaro says he does not know and would have him refer to the applicant for that answer.
Brauneis mentions the PUD includes the 95 foot height for four stories. The reason for that was that ConocoPhillips wanted to have a research facility on petroleum products that would include 20 foot ceiling laboratories. That is part of the existing GDP. How does that mesh with the proposed plan?
Zuccaro says this GDP does not authorize this height. It can only be authorized through a PUD application. When the applicant develops this over time, they may want to seek more than three stories.
Moline mentions that the slopes along the road are extensive. He is concerned about the grading.
Zuccaro says we do have a maximum slope requirement and it does meet that but it just meets it. He says he will let the applicant speak more on their grading plan though.
Moline says looking at the list and cost of storm water drainage improvements, he did not see the underpasses. Is that because they are also the storm water facilities?
Zuccaro says they will be duel and are captured in that appendix.
Krantz asks whether or not the subdivision plat conforms to the ConocoPhillips GDP. She mentions a section of code that she would like staff to speak more on.
Zuccaro read section 17.72.160 to the commissioners and explains in more detail how staff interpreted this code section.
Krantz mentions that she would like staff and the commissioners to look at the limitations or restrictions of the GDP. She asks staff what limitations they see with this GDP.
Zuccaro says the restrictions are the FAR, the CDDSG, this table limits uses and parking, and building setbacks.
Howe reads the yard-and-bulk requirements as noted in the staff report. He asks for clarification on the building height maximum such as 65 feet and that not having to go to City Council for approval.

Zuccaro says it is saying that an applicant can't get a height waiver through that document and can only get a waiver approved through the PUD process. Future developers may request height waivers through the PUD process.
Howe asks if there has been any discussion on making the taller heights be located more in the middle.
Zuccaro says that is a better question for the applicant.
Howe says in regards to the sewer expansion and lift stations, the lift station is planned to be one mile. That seems like that may be too long. Is that a common length?
Zuccaro says he will refer that question to the applicant's engineers who are present for the meeting.
Diehl asks if the city will have to cover any of the operating costs that come after it is built.
Zuccaro says the applicant is responsible for building everything. When the city does zone changes, staff does a fiscal analysis that analyzes what type of revenue the city can expect such as property and use taxes. Through the collection of property, use, and sales taxes, staff expects the city to collect enough to cover the costs of maintenance on the roads, trails, and parks.
Moline references code section 16.16.010 and asks if staff looked at and analyzed this section of the code.
Zuccaro shows the old Disc Drive on the north side of the property, it has largely been left natural, as drainage and vegetation. Working with the applicant on where the public land dedication should go, staff tried to overlay the park and open space lands where you see that natural vegetation.
Moline says that you see this proposal meeting that criterion.
Zuccaro says that is correct.
Krantz asks what the best map is to see the natural vegetation and topography.
Zuccaro shows a map from his presentation displaying the grading and pond expansion.
Krantz asks what will be left in the state it is today without being re-graded.
Zuccaro shows what will be staying from the presentation map.
Howe says of the proposed 155.3 acres, Tract C is a required buffer space.
Zuccaro says that is a required no build buffer. It is not required for it to be open space though. It could be private open space but it is not required to be public.
Howe says he can imagine Tract L being a berm and it seems to be pretty unusable space.
Zuccaro says that is correct. We do not foresee it having much public purpose. The berm was created for StorageTek.
Howe says in regards to Paradise Lane, that is restricted by an Intergovernmental Agreement (IGA) and can't be built on, correct?
Zuccaro says you can build up to five new homes there.
Diehl asks that at the next meeting, staff bring better clarification on what the net dedication is versus what was already required.
Zuccaro mentions that if you look at other city developments, often times public land dedications are in floodplain or drainage areas, or other areas that are not well suited for development. Those are areas that are better suited for preservation.
Howe asks why we avoid the sustainability plan and LEED building and solar requirements.
Zuccaro says when you are doing a GDP, the purpose is to address those types of subjects and create restrictions or design standards within the GDP. Because this is not

a GDP or GDP Amendment, it's just the plat to implement the 2010 GDP. Staff did not bring any of that forward as part of the discussion.
Diehl asks if that means we cannot bring that forward at this time from the previous Redtail proposal.
Zuccaro says there are design standards within the subdivision plat where the commission could deliberate whether or not these standards are in alignment with the plat. Section 16.12.075 talks about what the commission can add as conditions. From staff's point of view, it is clearer that use, height, area, or bulk requirements are plausible conditions the commission could put on this proposal.
Krantz asks how we interpret the mandate that was given to the voters and the results from that.
Zuccaro says the election was specific to an ordinance that dealt with a GDP proposal. This proposal is for a final plat and uses the 2010 ConocoPhillips GDP. That was a completely separate application.
Kelly says it was a zoning action from City Council, which is considered legislative law. The application that is being deliberated tonight is on a subdivision plat, which is a completely different type of application. It is not a legislative matter. What happened during the election should have no bearing on this application and is not relevant to your decision tonight.
Krantz asks if staff can differentiate between a preliminary and a final plat. Which parts are we reviewing that are preliminary and which parts are final?
Zuccaro says what is being heard tonight is a preliminary and final plat, but they cover the same geographic area. The actual lots and blocks on both the preliminary and final are the same in this case. There are different submittal requirements but the approval criteria for consideration are the same. One example, for a preliminary plat, the applicant must provide a drainage plan but for a final plat, there is no requirement for an updated drainage plan. The applicant has decided to give all of this information together for the preliminary and final.
Krantz brings up a concern of hers that the proposed drainage report says it is not good for the final.
Zuccaro says once a plat is approved, we get construction documents and drainage reports that are reviewed by Public Works. Those final plans are adopted and then approved for construction. The submittal requirements for a preliminary plat include a drainage plan. He shows Section 16.12.050 and reads the code for the preliminary plat submittal requirements. The drainage plan will not be final until it is reviewed by Public Works.
Diehl mentions five topics he would like to discuss at the next meeting. He wants to know more about the financial model, understand in greater detail the intersection of Highway 36 and Campus Drive, get better clarity on the open space, and have a discussion on sustainability and mineral rights.
Moline asks for more information on how open space is credited.
Zuccaro discusses the various ways open space can be credited, one of them being a net public land dedication.
Krantz says in the transportation memo, there was a 12% non-SOV goal and this is not consistent with the traffic and mobility study that mentioned a 25% goal. She asks for clarification from staff or the applicant at the next meeting on the goals for those two plans.
Howe asks for clarification on the traffic shown on Table 2 such as the increase in traffic patterns and intersection distances.

Zuccaro mentions that the City hired a third-party traffic engineer consultant to analyze the stacking distances and see if there are any conflicts between the intersections so staff will re-evaluate that and see if it needs to be refreshed.
Krantz points out that the financial analysis does not include the use of a hospital or medical center. She asks that staff include that use in order to see the data on the possible revenue the City could acquire for having a non-profit use.

Howe moves and **Moline** seconds a motion to continue Resolution 13, Series 2022 to the September 8, 2022 meeting. Motion passes unanimously by voice vote.

COMMISSIONER COMMENTS

None is heard.

STAFF COMMENTS

None is heard.

ITEMS TENTATIVELY SCHEDULED FOR THE MEETING ON SEPTEMBER 08, 2022

- Planned Unit Development Amendment – 525 McCaslin - Murphy Express
- Amendment, Replat, Easement Vacation – 1501 S Boulder Road – North End Block 11

ADJOURN

Howe moves and **Diehl** seconds a motion to adjourn. Motion passes unanimously by a voice vote. Meeting adjourns at 8:45 PM.

Jeffry L. Moline

Secretary Jeffrey Moline

Steve Brauneis

Chair Steve Brauneis

City of Louisville
COLORADO • SINCE 1878

Planning Commission
Meeting Minutes
September 08, 2022
Council Chambers
6:30 PM

Chair Brauneis calls the meeting to order at 6:30 PM.

Roll Call is taken and the following members are present:

Commission Members Present:	Steve Brauneis, Chair Ben Diehl, Secretary Keaton Howe Jeff Moline Tamar Krantz Allison Osterman
Commission Members Absent:	Dietrich Hoefner, Vice Chair
Staff Members Present:	Rob Zuccaro, Dir. of Planning & Building Safety Lisa Ritchie, Fire Recovery and Planning Manager Elizabeth Kay Marchetti, Senior Planner

APPROVAL OF AGENDA

Moline moves and **Diehl** seconds a motion to approve the September 08, 2022 agenda. Motion passes unanimously by a voice vote.

APPROVAL OF MINUTES

Diehl moves and **Howe** seconds a motion to approve the August 11, 2022 minutes with the corrections mentioned by Krantz on page nine and eleven in the packet. Motion passes unanimously by a voice vote. Osterman abstains from voting.

PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

Cathern Smith, 608 West St

Smith discusses concerns about how public comment is received for meetings. There is no way to pool individual's time since it is capped at three minutes. There is no guarantee that they will get to speak in any type of order. The applicant gets unlimited

time before the commission. The current process does not do justice to the community's involvement. She proposes a tier process for more complex items.

RJ Harrington, 457 E Raintree Ct
Harrington says the link for the computer login on the Planning Commission forces one to download a calendar invite. Using that, you can get the Zoom login. He suggests either making it transparent that it is a Zoom login or just having that link go straight to Zoom.

NEW BUSINESS – PUBLIC HEARING ITEMS

A. Preliminary and Final Plat – Redtail Ridge: To consider the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10 acre property, located northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive (Resolution No. 13, Series 2022). ***Continued from August 11, 2022***

- Applicant: Sterling Bay
- Case Planner: Rob Zuccaro, Director of Planning and Building Safety

Osterman mentions that although she was not present for this agenda item at last month's meeting, she has watched the recording and read the packet and is knowledgeable enough to participate in tonight's meeting.

All notice was met as required and there is no commissioner conflict of interest.

Staff Presentation:
Zuccaro mentions that staff provided a memo in the packet that answers questions the commission brought up. There were also two addendums for public comment.

His presentation entails addressing commissioner questions from the last meeting. He begins discussing how the city charter affects this application process. He shows the commission a flow chart of the process. A subdivision plat is a distinct application type that is not subject to a charter restriction. The proposed preliminary and final plat are governed by, and may develop under, the General Development Plan (GDP) approved in 2010.

There was a question about the fiscal analysis with the assumption of the use being a nonprofit hospital campus as part of the development. If it is nonprofit, they do not pay property or use taxes. Using a model of a 435,000 sq ft campus, over a 20-year period, the city would expect a positive economic benefit. He shows specific numbers and a graph through his presentation.

He discusses the development restrictions on the public land dedication parcels. He mentions the Northwest Parkway Intergovernmental Agreement (IGA) restrictions. There will be a buffer between the Paradise Lane properties, although the language does not say how big or deep the buffer must be. Developments on Paradise Lane are limited to 4.5 acres.

Diehl asks why Paradise Lane is included in the dedication.
Zuccaro says staff describes this in many different ways. It is land within the boundaries or within the total land. In 2010, ConocoPhillips included 20 acres of this

land and planned for it to be part of the dedication. The ordinance does suggest that it needs to be within the development.

A question was asked about net public land dedication (PLD). The minimum PLD is 37 acres. The gross PLD is 137.3 acres (89.9 acres within the boundaries and 47.4 acres outside the boundaries). The net PLD is 116.7 acres (69.3 acres within the boundaries and 47.4 acres outside the boundaries).

He provides additional information on traffic analysis. The Single Occupancy Vehicle (SOV) assumption of 12% of the traveling population is a conservative estimate. The following are traffic distribution assumptions proposed from the applicant's traffic engineer and reviewed by City staff: 60% of Highway 36, 15% of Northwest Parkway, 15% of 96th St, and 10% of other. He mentions that the difference between the traffic study from last year and this year is that there is less square footage proposed to be built. Knowing that, one would think that the traffic would decrease, however, the traffic engineers modeled a hospital campus and medical offices. Those uses have higher traffic demands. The average weekday trips would be 20,745 (an increase of 641 trips). The AM peak hour trips would be 1,926 (an increase of three trips). The PM peak hour trips would be 2,176 (an increase of 166 trips). The applicant updated the traffic study to include a queuing analysis. The applicant's traffic engineer found there is adequate vehicle stacking capacity.

Discussing the final grading plan, last month's packet included the storm water drainage and grading plan. He reviews the cut/fill expectations in the phases with road construction and over-lot grading. The PUD stage will also include the final grading plan.

Moline refers to one of the grading images and asks if it is fair to say that the places that are not in the green or red will not be graded?
Zuccaro says this image is just for the first phase. At the PUD stage, there will be a more precise grading plan. The green or red areas should still have grading. This image does not show all the areas needed to be graded.
Krantz says the grading table mentions there will be a 250,000 cubic yard net export of soil. Is that correct?
Zuccaro says based on that cut/fill, that is correct.

He concludes his presentation by mentioning that there has been certification provided for the mineral rights notification and discusses the sustainability commitments. At a subdivision plat stage, it is not typical to look at the sustainability standards. That is very much a part of the GDP process. The 2010 GDP does not have a similar requirement other than a Transportation Demand Management (TDM) plan requirement.

Commissioner Questions of Staff:
Krantz asks what the goals are in the transportation demand management plan and if it can be included with the transportation master plan.
Zuccaro says in staff's view, what is important is what has been committed to in the plan itself. Whatever percentage it ends up being in reality is only as good as the resources being put into it. Things staff have talked about with the applicant are RTD Eco-passes for the entire development. There is no RTD service right now so having

private shuttles and a TDM coordinator that can work with the businesses is a goal. Staff are more focused on creating a structure that can sustain transportation and can adapt to technological transportation advancements. As far as targets and goals for 25%, staff are all hopeful that all of the city's developments continue to decrease single person vehicle occupancy.
Diehl asks in terms of the traffic study, is this a consultant that the applicant paid for?
Zuccaro says the traffic study and analysis is the applicant's consultant. City staff has been working with its own consultant to assist with the staff review of the traffic study.
Diehl asks if staff can describe how the sustainability conversation went with the applicant. Did the importance of it come up?
Zuccaro says it was not discussed to that large an extent. The focus was building to the 2010 GDP and reviewing the plat documents to ensure that they complied with the GDP. He does not recall a specific discussion or a request from staff for a sustainability plan.
Osterman asks about the grading plan and cut/fill. She is trying to understand how much of the land will be left in a natural state.
Zuccaro shows the area that is public land dedication and a trail/street being graded in. That is the largest undisturbed area. He shows a few other smaller areas that are part of the open space land dedication. One thing staff has been working on with the applicant is habitat restoration and the applicant is working with a consultant on that concept.
Osterman says they are open spaces but will still be modified and left in a natural state.
Zuccaro says they would have to be restored where they are graded. After that, the city will require that they restore them to a natural state.
Osterman says given that is the case, has there been an analysis on the environmental impact?
Zuccaro says with the GDP from last year, there was a wildlife inventory and that was not included in this packet but we can present that to the commission if needed. Looking at the subdivision criteria, there are criteria about preserving the natural areas. It does not mean you preserve every undisturbed area of the development.
Howe says when the net public land dedication is being calculated, the northwest and pond area were highlighted. The land adjacent to Highway 36, is that also a part of the 69.3 acres?
Zuccaro says the applicant is proposing an 18-acre area near Highway 36, which would be dedicated public land. Staff is proposing that remain private open land that is not developed upon. The net public land dedication numbers mentioned in the presentation do not include that number.
Howe says when talking about grading, are we talking about preservation of trees and other things? Is it just flattening the land?
Zuccaro says if you are doing grading and there are trees there, you typically remove those trees.
Howe says if you are grading the majority of that site for construction, he imagines it would be difficult to leave certain parts ungraded and natural because it would affect the areas that are graded.
Zuccaro says yes, you would have to be thoughtful of the places undisturbed still working within the drainage plan.
Krantz says a part of the subdivision application should show trees and other natural features. She does not think that was included in the packet and believes that is a requirement for a preliminary plat. She would like to be able to see where those would be on the site.

Applicant Presentation:
Jeff Baukol, Brue Baukol Capital Partners
Baukol begins his presentation by giving an overview of who their company is. We are a company made up of Louisville/Superior locals who grew up here or live minutes away and have had kids who went to Goddard Pre-K and Monarch. We specialize in creating much needed housing opportunities, and developing or redeveloping mixed-use, commercial projects along major transit corridors. Our projects have received industry and national recognition for sustainability, preservation, and design innovation. Our professional reputation depends on building to the highest standards of quality and care.

Our partner is Sterling Bay. They are a vertical partner in the project, providing the management and funding toward development of the entire Redtail Ridge project. They are a vertically integrated, developer/owner operator known for innovative approaches to place making and environmental sustainability. They also have deep expertise in delivering state-of-the-art facilities designed for next-generation research and customized wet lab and industrial space. They have a national portfolio including a development of Google's Midwestern headquarters and life science campuses in California and Chicago, totaling 57 properties owned across 14 states.

He discusses the site history. The following is StorageTek throughout the years:

- 1970 - 2005: An active campus
- 4,800 employees and 12,400 daily car trips
- Private campus: no public use or access
- Created significant economic stimulus for Louisville's economy and greatly benefitted small businesses.
- Many StorageTek employees moved here and helped make Louisville "A Best Place to Live."

The Parks Board had a unanimous approval on May 5, 2022 and on June 8, 2022, the Open Space Advisory Board (OSAB) had a unanimous approval with conditions as mentioned by staff.

We share the same values on sustainability, habitat preservation and restoration, and conservation. We are proposing the single largest public land dedication in Louisville's history that does not include land for golf courses. Over three years of negotiations, we have demonstrated commitment to finally enable open and public access. He shows the commission what is new in the plat and reviews OSAB approved open space configuration. It has been approved twice by OSAB. It is the second largest public land dedication ever made in Louisville (Coal Creek's dedication included 90 acres of developed golf course out of 227 acres total). It keeps the superior placement, quality, acreage of 107+ acres of open space, parks, and trails. It also includes 16.55 acres dedicated to parkland per PPLAB guidance. The donation is valued at more than $54 million.

He then shows an image in his presentation displaying a comparison of the previously approved vs current proposal as well as showing a comparison of the open space donation.

He reviews the connections to the regional trail and open space network, including the 47.4 acres of land adjacent to Paradise Lane in Boulder County and the 240+ acres of connected open space.

Jay Hardy, Brue Baukol Capital Partners

Hardy discusses how they model the best practices for sustainability. This proposal meets or exceeds the standards in Louisville's Sustainability Action Plan. This will be one of the most environmentally sustainable life science campuses in Colorado. It will also be a smart campus with connected energy efficiency and water conservation measures. It has an industry-forward commitment to renewable energy, energy efficiency, water conservation, habitat protection and management, and more. The following is the comprehensive sustainability commitment plan:

- Requirement for 2.165 MW (one watt/buildable SF) solar energy captured on full site
- Requirement that all buildings designed as "solar ready"
- All electric buildings in office and retail buildings
- EV charging stations throughout the project
- LEED certification for all buildings
- Habitat Management Plan, in partnership with the High Plains Environmental Center
- Water-wise design, including use of native and drought resistant plant palettes

He explains to the commission their habitat and wildlife management plan and preservation. We have an active collaboration with High Plains Environmental Center. We promote biodiversity by ensuring a healthy and resilient natural environment, robust plant life, and diverse habitats. We also embrace biophilic design and will incorporate native and water-wise landscaping. This includes the sustainability commitments that have been reviewed and enhanced throughout the collaboration with the City of Louisville's Sustainability Coordinator. Water restrictions and limitations are also included in the Sustainability Commitments.

We will be continuously monitoring the following:

- Wildlife use study
- Burrowing owl surveys
- Raptor surveys
- Prairie dog management plan
- Migratory bird nest assessments
- Tree survey and recommendation
- Pollinator protections

He explains Campus Drive's safety and access. It enhances safety for all users and is a top unfunded priority in Louisville's Transportation Master Plan, which is currently an unfunded priority. It also provides an ease of access and circulation, an improved emergency access to schools, and a Boulder Valley School District (BVSD)-approved design & right-of-way dedications.

Below are Transportation Demand Management Plan (TDM) commitments we are proposing:

TDM commitments Per PCZD

- TDM commitments per commitment letter
- Full TDM report will be a part of the City Council submittal

Additional Commitments

- Improved options and access for people who do not want/need to drive
- Vision Zero
- Trails program outline
- First and last-mile solutions
- Employee Eco-Passes discount and paid for through the Metropolitan District
- Development-funded TDM Coordinator in partnership
- Bicycle access
- Shared and micro-mobility solutions

In his presentation, he mentions the trip generation and traffic study, which was updated in July of this year. This study was completed in 2021 and remains statistically valid. It reduced square footage and the inclusion of a hospital are key factors incorporated into the study's methodology and findings. The average daily trip generation at full buildout is 20,745 trips per day. The hospital and medical traffic account for nearly 35% (7,235 trips daily). The daily trip generation numbers will occur over a 20-year timeframe. The development-funded infrastructure will bring improvements to roads, intersections, and multimodal paths will keep apace of project milestones. This project is designed to reroute car traffic from residential areas and onto major corridors like Highway 36 and Northwest Parkway. He shows a graphic of the key moments in time in the trip generation estimates as well as for a hospital and medical building use.

Their vision of the site is to be a pre-eminent life and biosciences campus with next-generation laboratory and manufacturing facilities. It will be the second largest public land dedication in Louisville history, becoming an industry and statewide model for sustainability and conservation. This will lead to attracting the best companies in the world and become a new home for Avista Hospital.

Under a recent city staff determination, Hospitals are an "allowable use" under the commercial zoning. Avista Hospital is now under contract to purchase 40 acres on the east side of the Redtail campus. There is approximately 435,000 developable square feet of space to be completed in phases. Avista Hospital will have a great impact. The hospital wants new facilities as part of Phase 1. This accelerates the need for safe multi-modal access and development-funded infrastructure investments. The superior placement and access is designed to channel car traffic to major arterials like Highway 36. This is projected to account for nearly 35% (7,200+) of trip generation at full build-out. The hospital's intention is to build a new, state-of-the-art health care facility to continue its award-winning care. Following the Marshall Fire, Avista Hospital has prioritized this location due to its multiple access points. This significantly expands their service capabilities within a 15-minute radius by moving one mile.

He summarizes his presentation by reiterating the following points:

- This proposed plat is submitted in accordance with the governing GDP that was approved in 2010.
- Our vision is to build a pre-eminent life and biosciences campus for the most innovative companies in the world, complete with next-generation laboratories and manufacturing facilities.
- We want new homes and a safer, more efficient location for Avista Hospital.
- This is the second largest public land dedicate ever, being a $55 million donation.
- This will have the best-in-class sustainability and conservation features.
- It has an innovative habitat management plan.
- This will create an extension of Campus Drive, which is a top unfunded priority in Louisville's TMP.

Commissioner Questions of Applicant:
Diehl asks why Paradise Lane is considered a part of the public land dedication. Is it because you own that?
Baukol says that is correct.
Moline asks if he can explain why they find that an appropriate space for public land dedication.
Baukol says it is a good location because it is a space that is connecting to other open space areas. This is an important connector to all the open space to the north.
Howe asks if he is correct that there can be residential on the lots north of Campus Drive.
Baukol says that is right. Once we dedicate the land, there is no building on the land ever.
Osterman says in regards to what is new in this plat, the proposal is 2.55 million square feet. How does that compare to the 2021 GDP and the spread of land that will be used to build out that square footage. There was a lot of public comments about trying to consolidate the development. Was there consideration of approaches to try to consolidate?
Baukol says the current GDP had approval for 2.55 million square feet. The 2021 proposed GDP was 3.1 million square feet. In terms of where the development goes, another consideration of the public land dedication was to keep more a rural feel on the west side and keep traffic and the development on the east side. He mentions that questions have been asked in previous meetings about height for buildings. He does not know what height will look like because they do not know what use will be built on that side. That is a PUD question and will be discussed at that time.
Krantz asks if he can address the difference in the footprint in comparison to the current GDP and the 2021 GDP.
Zuccaro makes a clarification. The 2010 GDP does not address the 200 acres you are addressing. That was on the preliminary PUD that was also reviewed and approved in 2010 but has since expired. That is not a regulatory document anymore. That document is the 2010 GDP, which does not have any requirements of clustering buildings or the common open space.
Krantz asks if there was an additional 29 acres including the area around the pond and the triangle to the left (referencing two comparison maps of the previously approved and the current proposal).
Baukol says what Planning Commission approved last year is the previously approved image.

Moline asks if he can clarify the grading plan and the 250,000 excess of soil.
Hardy says we do not anticipate any trucking offsite for that soil. At the PUD level, we will get more specific on the amount, but that 250,000 will be staying on site.
Moline asks how they would respond about the public comments saying they are over grading the site.
Hardy says when you look at the over lot grading program in the open space areas, the grading taking place has to be done for roads, drainage. We are not cutting and filing just to do it. The central area is the majority of the cut/fill area.
Howe asks if there is a possibility in maintain topography in the northern area of open space without grading.
Tim **Sayler**, an engineer with Harris Kocher Smith, says the main grading done just north of Campus Drive in the buffer area is done for the drainage channel. As it goes up, around the small pond, we are not touching that. On the other side of that, there is grading to ensure the water will be draining to the east. Grading continues to the west from that pond that we are not disturbing.
Howe says if we assumed that Campus Drive was not there, could you leave that area ungraded and still complete your construction.
Sayler says no, because we would not be complying with the current drainage standards.
Krantz asks the difference between the two runoff coefficients.
Sayler says there are different runoff coefficients for parking lots and open space. He does not have the composite runoff coefficient for the entire site and that it is difficult to determine without knowing what will be built on the site. The runoff coefficient today is very low because it is just dirt. Development increases that though.
Krantz asks if that runoff will be going off the site.
Sayler says everything must be detained on site.
Diehl says in terms of the sustainability plan, how does that get memorialized in the process.
Zuccaro says there will be a subdivision improvement agreement (SIA). He says the commission can require a sustainability plan in the subdivision agreement.
Diehl asks if that has been drafted yet.
Zuccaro says it has not but it will be drafted before it goes to City Council.
Howe asks if they can speak more on the habitat management plan.
Hardy says we went through the entire development and went through the items most important. That involved the trees and animals. The details of that plan will come out at City Council through the SIA.
Krantz asks if we are allowed to make conditions on the previous habitat management plan.
Zuccaro says if the commission has reviewed and relied upon that for decision making, the commission should request that document to be put into the official record.
Howe asks if they can think of any way to improve the roadway from Campus Drive to 96th St.
Hardy says we cannot take it all the way up to the north because of the Boulder County setback. The plan was reviewed by city staff, Boulder Valley School District, traffic engineers, and the fire department and was concluded that this was the best route.
Krantz asks how they define life sciences and biotech. What kind of manufacturing does that include?
Hardy says those types of spaces usually end up being predominantly office buildings but within those offices, they will have labs. That is one end of it. The other end would

be the production and manufacturing side that could include pharmaceuticals. He is not sure what products would be used or made, though.

Public Comment:
Moline moves and **Diehl** seconds a motion to add both addendums into the record. Motion passes unanimously by a voice vote.

Jojo Follmar, 1712 Steel St, Apt 7302
Follmar recommends not approving Redtail ridge. Our area has already so many more jobs than houses; it will be devastating for climate with how many more car trips there will be. It will be less affordable housing and there is not enough open space for this development.

Matt Jones, 265 Dahlia Dr
Jones says the developer's previous proposed GDP lost by five points during the election process of Redtail Ridge. Based upon the election finding, the city was not in favor of this development. These proposals are not just based on criteria but also heavily influenced and pushed by the public and public opinion. This plan has more open space but it should be the most public land dedicated space, not the second. Please do what the community wants you to do and deny this proposal.

Jerry McQuie, 972 St Andrews Ln
McQuie comments on the plat. The plat calls for vacating drainage easements from the Boulder Valley School District but he sees no communications in the packets indicating that the school district agreed to it. He does not want to see road improvements on 88th Street in preparation for this proposal because of the delays possible from multiple municipalities involved. He asks the commission to keep the limits that were in the 2010 GDP. Regarding the economic analysis, you did take out the use and sales tax for the hospital but he believes the employee contribution should be taken out as well.

RJ Harrington, 457 E Raintree Ct
Harrington says the last two pages of the packet prove that these developers are not our neighbors. These developers are not recognizing what their neighbors have been saying for years. None of them has a Louisville address. He would like to hear a definition of hope and he hopes that this plat does not get approved.

Cathern Smith, 608 West St
Smith discusses Section 16.12.060. A preliminary plat must be approved before the final plat. She does not think the code says you can review them simultaneously. She focuses on the approval with conditions. She thinks conditions are different from approving with modifications. A modification is saying the plat will be approved if these changes are made. A condition is saying we will approve the plat on the condition that for example a traffic demand management plan is submitted. She does not view this code section saying the commission can approve with conditions. She says she is uncomfortable with grey. She has been attending the other board meetings such as parks and open space. If the city does not tie down the participant in very clear terms, the proposal starts to change. She still does not know if the 47 acres is a conservation easement. She asks the commission to make the applicant commit in writing their

sustainability commitment. She asks that if the applicant provides new information to their proposal, public comment would be open to speak on that new information.

Joshua Cooperman, 216 Griffith St
Cooperman says he is not opposed to this development. He asks that the commission not approve this subdivision plat. The current proposal is not efficiently revised from the election proposal. He thinks it does not fully conform with city code, especially regarding the subdivision plat. He speaks on the comprehensive plan and how this proposal does not fit into the comprehensive plan. He thinks there should be a larger open space dedication and a smaller development footprint. There should be more effort to arrange transportation to this site. Environmental sustainability is his main concern. This proposal lacks sustainability because it is an isolated campus in which everyone must drive to reach it. Affordable housing should be a part of this development.

Cynthia Corne, 438 Jefferson Ave
Corne discusses the 2010 PUD and industrial uses. We need specifics around the industrial uses. She is in favor of having Avista Hospital in this development for Louisville. Sustainable pavement needs to be better. She asks how construction traffic will be managed without creating chaos.

Sherry Sommer, 910 S Palisade Ct
Sommer says the documents submitted by the applicant are the same ones that the public has seen and deliberated over before. The applicant has claimed to listen to our community but those are just words. She is concerned about the grading and drainage plan. The open space proposed is not really usable open space. She does not think this should be approved but should be denied without conditions or modifications.

Joy Brook, 1590 Garfield Ave, Unit E
Brook says the air pollution is getting worse and this development will further deteriorate the atmosphere. She is concerned about traffic the development will cause and how the wildlife will not be cared for. We need legal requirements with this developer, not vague promises. This does not look like a small town feel, which is an important character trait for Louisville. There are many empty buildings in town. That shows that we do not need this development. This proposal should be denied.

Tim Stalker, 806 W Dahlia Ct
Stalker says he wonders how 250,000 cubic yards of soil will be stored on site. The footprint is expressed in acreage and the build out is expressed in square feet. He does not know how in city code, they are allowed to look at 47 acres outside of the plat. The city evaluated the public land dedication and they came up with 69.3 acres within the plat. The city staff looked at tracks A, B, H, and I. They did not look at track C or D. Track C is very contentious. He asks if the drainage plan can be adjusted with more recent mapping. He is concerned about the underpasses and how they are only built for 10 year floods.

Cindy Bedell, 662 W Willow St
Bedell gives an overview of the importance of this land to Louisville. City staff mentioned that there is 69 acres of open space and this number is significantly lower than what the applicant had in their presentation. The lack of open space should be a

component of the criteria and play a factor in the decision-making. She concludes saying that the 47 acres mentioned is outside of Louisville and should not be part of the public land dedication.

Discussion by Commissioners:
Brauneis mentions continuing this agenda item to September 22.
Diehl says he is in favor of that. He would like to see the subdivision agreement and have the sustainability commitments in that document at the next meeting.
Zuccaro says that so far, the commission has requested documentation on the requirement for natural features as well as documentation on the sustainability commitments that could be included in the subdivision agreement.
Krantz asks if staff can also provide the habitat management plan and the biological and cultural resources study. Can we also get a copy of the applicant's presentation from this evening?
Zuccaro says he can provide that.
Moline says it sounds like the transportation demand management plan is getting close or there is a draft. Can you speak more on that?
Zuccaro says there are two documents that are in the record. Staff has suggested a more specific plan be submitted before City Council. He does not think it will be ready at the next meeting.
Krantz asks if staff can add in more detail the economic impacts to staff's analysis. She also requests more analysis on how this complies with the 2010 GDP.
Zuccaro says if you reference back to the August memo, it shows that analysis. He needs a more specific direction in what else the commission would need from staff.
Krantz asks if staff can analyze in more detail specific code sections such as Sections 17.72.030, 17.72.050, 17.72.060, 17.72.160, 17.72.170, and 17.72.010.
Zuccaro says those sections of the code refer to a GDP and the commission is not reviewing a GDP.
Krantz says she understands that but believes the purpose behind a GDP is understanding whether or not a subdivision plat complies with the purpose of a GDP.
Zuccaro mentions that the GDP clearly states what uses are allowed and that staff cannot speculate what is and is not allowed. If the question is how those are interpreted, then staff could provide more information on that.
Howe asks for new developments on these items. Prior to reaching full build out, traffic expansions would be needed for the Northwest Parkway and Highway 36 interchange. If there is any update on those changes or any study that has been done there, that would be great to have at the next meeting. Secondly, the implication for traffic improvements requires acquisition of right of way from Boulder Valley School District for the expansion of Campus Drive. He asks if staff can provide a resolution or evidence of support of this expansion. Staff has not received a letter of support from the Northwest Parkway authority related to the right of way acquisition requirement so if there is any new progress made on that he would like to know.
Zuccaro says staff can provide that information at the next meeting.

Moline moves and **Diehl** seconds a motion to continue Resolution 13, Series 2022 to the September 22, 2022 overflow meeting. Motion passes unanimously by voice vote.

COMMISSIONER COMMENTS

None is heard.

STAFF COMMENTS

None is heard.

ITEMS TENTATIVELY SCHEDULED FOR THE MEETING ON SEPTEMBER 22, 2022

- Planned Unit Development Amendment – 525 McCaslin - Murphy Express
- General Development Plan Amendment, Planned Unit Development Amendment, Replat, Easement Vacation – 1501 S Boulder Road – North
- Coal Creek Ranch Filing 3 PUD Amendment – fences

ADJOURN

Moline moves and **Diehl** seconds a motion to adjourn. Motion passes unanimously by a voice vote. Meeting adjourns at 9:11 PM.

Jeffry L. Moline

Secretary Jeffrey Moline

Steve Brauneis

Chair Steve Brauneis

City of Louisville
COLORADO • SINCE 1878

Planning Commission
Meeting Minutes
September 22, 2022
Council Chambers
6:30 PM

Chair Brauneis calls the meeting to order at 6:30 PM.

Roll Call is taken and the following members are present:

Commission Members Present:	Steve Brauneis, Chair Keaton Howe Jeff Moline Tamar Krantz Allison Osterman
Commission Members Absent:	Dietrich Hoefner, Vice Chair Ben Diehl, Secretary
Staff Members Present:	Rob Zuccaro, Dir. of Planning & Building Safety Lisa Ritchie, Fire Recovery and Planning Manager Elizabeth Kay Marchetti, Senior Planner

APPROVAL OF AGENDA

Howe moves and **Moline** seconds a motion to approve the September 22, 2022 agenda. Motion passes unanimously by a voice vote.

APPROVAL OF MINUTES

Moline moves and **Howe** seconds a motion to approve the September 08, 2022 minutes. Motion passes unanimously by a voice vote.

PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

Cynthia Corne Musslewhite, 438 Jefferson Ave

Corne Musslewhite brings up procedure. She says it is the role of the city manager instead of the planning director to present to the commission. She references code sections 016.08.10, 016.12.10, and 016.12.70 to support this stance. She says the planning department is not representing the public.

NEW BUSINESS – PUBLIC HEARING ITEMS

A. Preliminary and Final Plat – Redtail Ridge: To consider the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10 acre property, located northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive (Resolution No. 13, Series 2022). ***Continued from September 08, 2022 and August 11, 2022, and September 8, 2022***

- Applicant: Sterling Bay
- Case Planner: Rob Zuccaro, Director of Planning and Building Safety

All notice was met as required and there is no commissioner conflict of interest.

Staff Presentation:
Zuccaro notes that there were two addendums to the packet.

As stated in the meeting packet, staff reviews the last meeting's commissioner questions. A summary of the commission's questions and requests for information are in italics and underlined below followed by staff's response.

Request for documentation to meet the Preliminary Plat submittal requirement under Sec. 16.12.050.S. "Location of significant natural features such as trees, woodlands, lakes, hills, streams, wetlands, and floodplains, and historical and archaeological sites."

Below are documents that are in the packet and were provided by the applicant to meet this requirement. The ALTA Survey, Wildlife Use Assessment and Tree Inventory directly address the location of natural features on the property. Other wildlife reports and plans submitted by the application are also included for reference.

- June 19, 2019 ALTA/NPS Land Title Survey (Attachment No. 3)
- April 23, 2021 ERO Redtail Ridge – 2021 Wildlife Use Assessment (Attachment No. 4)
- September 7, 2022 ERO Tree Inventory (Attachment No. 5)
- April 27, 2021 High Plains Environmental Center Redtail Ridge Management Recommendations DRAFT (Attachment No. 6)
- March 23, 2020 ERO Initial Raptor Nest Survey (Attachment No. 7)
- January 19, 2021 ERO Migratory Bird Nest Surveys (Attachment No. 8)
- January 19, 2021 ERO Baseline Burrowing Owl Survey (Attachment No. 9)
- July 16, 2021 Burrowing Owl Survey (Attachment No. 10)
- January 19, 2021 ERO Prairie Dog Management Plan (Attachment No. 11)

In addition, there is a section of the Goodhue Ditch that is categorized as a federal jurisdictional wetland, shown in the image below. The plans include realignment and piping of the ditch in this vicinity. This section of the Ditch is exempt from Army Corps of Engineer 404 Permit requirements. Attachments 12 and 13 include a wetlands delineation memo from ERO Resources Corp and the Army Corps of Engineers determination letter respectively.

Request to run the fiscal model with an 80% constrained buildout assumption and no employee spending for the hospital/medical office development.

To provide a range of potential fiscal outcomes a "high and low" model run can be used. The "low" model run reduces construction and building values to 80%, and total building area constructed to 80% of standard assumptions. The request by the Commission for no employee spending is related to the assumption that the hospital would move its campus and the old campus would remain vacant, thus no increase would be seen to employee spending. Staff notes that this assumption would not be expected, as the existing hospital campus would be expected to redevelop or be repurposed, but has run the model with this assumption upon request.

The fiscal model estimates that costs are covered by revenue in each fund and estimates a positive fiscal impact that averages $884,000 annually, or $17,678,000 over 20 years with the "Low" model input adjustments, compared to an average of $1,300,000 annually, or $26,002,000 over 20 years for the "High" model inputs.

The Comprehensive Plan policy for the Phillips66 Rural District states that the "Land use mix demonstrates neutral fiscal benefits and positive economic benefits." The fiscal model estimates a positive fiscal benefit to the City. Economic benefits are anticipated from the added employment base and workforce to support local businesses.

Request for Additional Analysis on compliance of the Preliminary and Final Plat proposal with the 2010 ConocoPhillips Campus General Development Plan approval and any applicable sections of Chapter 17.72 – Planned Community Zone District.

Per LMC Sec. 17.72.030, the purpose of a GDP is to set forth the following:

A. *The proposed use of all lands within the subject property;*
B. *The type or character of development and the number of dwelling units per gross acre proposed;*
C. *The proposed location of school sites, parks, open spaces, recreation facilities and other public and quasi-public facilities;*
D. *The proposed location of all streets shall be coordinated with the adopted general street plan for the city.*

LMC Sections 17.72.050 and 17.72.160 state that any development of a property must be in compliance with the approved GDP.

The 2010 ConocoPhillips Campus GDP (see Attachment 14) is a single page document approved by the City to address the purpose and required contents for a GDP. Each section of the GDP is discussed below.

The 2010 GDP includes the following table that notes the allowed "Floor Area Ratio" (FAR), which establishes the development cap for the property. The stated FAR of 0.15 results in a development cap of approximately 2.54 million square feet of building area.

The 2010 GDP includes the following general notes. Staff has not identified any conflicts with the notes and the proposed Preliminary and Final Plat proposal, except that the GDP notes that the traffic and circulation patterns shown on the GDP are intended as private drives rather than publically dedicated roads as proposed. However, the note on traffic and circulation also notes that the depiction is conceptual

only and subject to modification. The proposed road locations and circulation patterns included in the Preliminary and Final Plat proposal are consistent with the road locations shown on the GDP map.

Note No. 5 is the only regulatory requirement on public land dedication requirements that is part of the GDP, and states that at least 12% of the land area needs to be dedicated for public purposes, consistent with the municipal code standards.

The 2010 GDP includes a Permitted Use Table that outlines specific allowed uses for the property. In addition, any use listed in LMC Sec. 17.72.090 is allowed, which specifies uses as being consistent with commercially designated GDPs. This table also outlines minimum parking standards by use. Staff finds that the proposed Preliminary and Final Subdivision Plat is logically set up to develop the permitted uses consistent with the 2010 GDP and zoning allowances and does not find any conflicts between the Plat and allowed uses and parking standards.

The 2010 GDP includes the following Yard and Bulk Requirements table outlining required setbacks. The first part of the table includes a note regarding building heights. LMC Sec. 17.72.190 limits the ability of a GDP to establish height standards outside of underlying zoning standards. A development must meet the established height standard, or seek a waiver through the PUD review process. The 2010 GDP note states an intent for building heights between 35’ and 65’ or 95’, but acknowledges this must be approved through PUD.

In addition to the sections of Chapter 17.72 discussed above, the Commission also asked about compliance with the following sections:

- Section 17.72.010 – Purpose. This section outlines the purpose of the Planned Community Zone District (PCZD) generally. The City has already approved an ordinance zoning the property PCZD and approving a GDP. The purpose statement was relevant to those actions in 2010, but staff does not find this section directly relevant to the current Preliminary and Final Subdivision Plat application.
- Section 17.72.060 – Amendment. This section states that an adopted GDP may be amended and provides some administrative authority for amendments. The Commission is not reviewing an amendment to the 2010 GDP, thus, staff does not find this section to be relevant to the current Preliminary and Final Subdivision Plat application.
- Section 17.72.170 – Amendments of Approved Plans. This section states that a GDP amendment is subject to the same procedures, limitations and requirements as the original plan. The Commission is not reviewing an amendment to the 2010 GDP, thus, staff does not find this section to be relevant to the current Preliminary and Final Subdivision Plat application.

As part of the 2010 GDP approval, the City also approved a development agreement that governs the current development and proposal for a Preliminary and Final Subdivision Plat (see Attachment 15 for ConocoPhillips Colorado Campus General Development Plan PCZD Zoning Agreement).

Section 1 of the agreement addresses items such as requirements to subdivide before development, development phasing, and credits for existing utility connections. Section 1.7 specifies that the extension of Campus Drive to 96th Street must be done in the first phase of the development.

Section 2 of the agreement addresses public land dedications and acknowledges that 309 acres of the property is subject to the dedication calculation with 81 acres exempt by a previous annexation agreement. Part of the public land dedication needs to establish and enhance trail connectivity in or through the City.

Section 3 of the agreement addresses development standards. This includes reference to the density and permitted uses noted on the GDP and the requirement for a comprehensive Transportation Demand Management (TDM) Plan at the time of final subdivision plat.

Staff does not find any conflicts between the development agreement and the proposed Preliminary and Final Subdivision Plat. A TDM plan has been provided and is discussed in the next section.

Request for an updated comprehensive Transportation Demand Management (TDM) plan.

The August 11, 2022 Commission packet included a TDM Memo provided for last year's proposed GDP Amendment and a TDM Commitment Letter. Staff recommended a condition that a comprehensive TDM plan be submitted in compliance with the 2010 development agreement. The applicant has provided an updated TDM Plan included as Attachment No 16. The plan outlines strategies to reduce single occupancy vehicle (SOV) trips in the categories of transit access, programming and education, carpooling and vanpooling, and walking and biking.

Request for staff analysis on compliance of the application with the Permitted Uses table on the 2010 GDP and Section 3.3 of the associated development agreement.

Section 3.3 of the development agreements states that use of the property is limited to uses specified on the GDP or other uses established by City Council as being compatible for commercial and office planning areas. The Permitted Use table from the GDP was included previously in this memo. The development agreement also discusses that a permitted use must be approved through a Planned Unit Development proposal. An application for a Preliminary and Final Subdivision Plat does not regulate allowed uses, and instead creates developable lots, tracts, and right-of way to accommodate the potential development of the allowed uses established through the GDP and zoning code. Staff finds that the overall Subdivision Plat lot and block layout, transportation network, and utility layout is sufficient and consistent with the range of allowed uses.

Specific questions have been raised about whether industrial uses could be developed based on the permitted uses listed on the GDP. The term Industrial is not included in the permitted use table. However, the following language is included as part of the allowed uses, which are consistent with some types of light industrial uses and the type

of research and development uses that the applicant has described as envisioned for the campus.

Research/office and corporate uses and facilities for the research, development, manufacturing, fabrication, processing, or assembly of scientific or technical products, or other products.

Any proposed use consistent with this language could be allowed if approved through the PUD process.

Request for detailed information on the Sustainability Commitments

The applicant has provided a list of sustainability commitments that are proposed as an exhibit to the Subdivision Improvement Agreement (see Attachment No. 17). The commitments include installation of photovoltaic solar with all new development, excluding the potential hospital development, building all office and retail buildings as "all-electric," building all buildings to a LEED Certified standard, implementing a habitat management plan, and using water wise landscaping.

Request for information on any new information related to improvements at the NW Parkway/US 36 interchange.

The Traffic Analysis Memo and Traffic and Mobility Study provided with the August 11, 2022 packet note that the Northwest Parkway/US 36 Interchange will reach a Level of Service (LOS) of F in 2040 based on background traffic alone, and with background traffic and traffic from the proposed development, the interchange would have an LOS of F sooner and need capacity expansion in the 2027-2028 timeframe. The interchange is within the jurisdiction of CDOT and the City and County of Broomfield and staff is not aware of any current or future plans for expansion of the interchange at this time. Staff defers to the applicant for any additional information or detail on future plans for the interchange.

Request for updates on right of way acquisition needs for the construction of off-site road expansion requirements.

There are requirements to acquire right of way from Boulder Valley School District (BVSD), NW Parkway, and North Metro Fire Rescue Authority in order to complete required transportation improvements and road capacity expansions for Campus Drive, NW Parkway, and 96th Street. The applicant has provided a resolution of support from BVSD (Attachment No. 18) and a letter of support from North Metro Fire Rescue (Attachment No. 19). NW Parkway has not provided a letter of support and has submitted a letter stating that they are requesting additional information for their board to consider (Attachment No. 20). Staff's recommended conditions of approval include a requirement that all required rights of way be acquired prior to recordation of the final subdivision plat.

Request for information or analysis of economic impact of the proposed development in relation to traffic, housing, and vacant properties.

The project would provide a major employment center for the City and region and is anticipated to increase tax revenue for the City, contributing to the economic stability of the City and region.

There is currently an employment/housing imbalance in all of Boulder County and the region that influences housing access and affordability and vehicle miles traveled due to longer commute distances. Adding a new employment center within a community that does not have a counterbalance of new housing development would contribute to the access and affordability concern and regional traffic congestion.

Adding appropriate transportation infrastructure within a new development to ensure safety, promote multi-modal infrastructure, and ensure levels of service are maintained can influence the success of a project and the resulting economic impact.

Included as Attachment No. 21 is the City's Q1 2022 Commercial Vacancy report.

Request for information on if the Commission can make a recommendation on a Preliminary and Final Subdivision Plat simultaneously.

The applicant requests concurrent review of both a preliminary and final plat application for the property. The typical procedure is to first review a preliminary plat and then subsequently review a final plat application upon approval of the preliminary plat. A preliminary plat approval will expire after 12 months if the final application is not made. In addition, LMC Section 16.12.060 states that "after the subdivider has received approval of the preliminary plat, the final plat may be prepared." However, staff has consulted with the City Attorney and the City Attorney determined that a concurrent application could be requested considering that there is not a clear prohibition on concurrent applications. Staff has reviewed the application against both the preliminary and final plat standards.

Request for information on if the Commission can make a recommendation with conditions.

Yes, the Commission's recommendation can include conditions of approval. Such conditions should be considered necessary to meet submittal requirements or criteria for consideration of Preliminary and Final Subdivision Plats outlined in the Louisville Municipal Code.

Request for information on how the Paradise Lane properties are going to be dedicated?

City planning and open space staff have met with Boulder County open space staff to discuss preference for how the property would be dedicated and managed. Both City and County staff recommend that the Paradise Lane properties be included in the dedications, as the property holds a high value for opens space and agricultural use and would expand and connect other existing and proposed open spaces and agricultural properties. While the specific mechanism of dedication, ownership and maintenance agreements have not been decided, staff is pursuing having the land dedicated to the County for ownership and then the City holding a conservation easement on the

property. This has been the most recent structure for joint City/County purchase of open space properties.

Request for information on when the Paradise Lane properties were acquired by the applicant, at what price, and development potential of the property.

The 47.4-acre Paradise Lane properties were owned by Phillips66 along with part of the current owner's overall property when purchased from Phillips 66 by the applicant. Boulder County Clerk and Recorder records show that the entire Redtail Ridge property, including the Paradise Lane properties, were purchased in 2020 for $34,930,000. Development potential for the properties is addressed through the NW Parkway Intergovernmental Agreement (IGA), which is discussed in more detail in the September 8, 2022 staff report. The IGA allows residential development at one dwelling per 4.5 acres, allowing up to 10 residential lots to develop on the properties.

Commissioner Questions of Staff:
Moline asks how we ensure that commitments made by the applicant are followed through on.
Zuccaro says it would need to be in a development agreement. He suggests making a condition that those would be included in an agreement.
Howe asks if staff can review and comment on the changes to the sewer lift station. Will that affect the city as a whole?
Zuccaro says there would be an agreement to expand the treatment plant to accommodate the development. It would affect the city in that the treatment plant would need additional staff and maintenance. He mentions regarding the sustainability commitments and that the anticipated hospital property is excluded. The applicant is willing to have some modified language to account for that. If the hospital does not locate on the site, some of the commitments could be expanded. The hospital will have to go through a PUD process.
Brauneis says currently, those revised sustainability commitments are very light and short. We would expect to see more detail at the PUD stage.
Zuccaro says from staff's standpoint, when we worked on the GDP last year, having sustainability commitments affects the character and design of the development. The applicant has proposed sustainability efforts in the plat.
Howe says we have the ability in the city to expand our sewer and water treatment facility correct?
Zuccaro agrees.
Krantz speaks on the industrial use on page 25 in the packet. Is this an abbreviated type of industrial use allowed from Section 16.72.090?
Zuccaro says when you have zoning ordinances that are additive to each other, the most restrictive is going to take precedent. That is one way to look at it. If these types of facilities were to be built, they would have to be under those restrictive standards as well. We do not have a proposed use in front us but when the city does, staff would make sure it fits with the city's use standards. He reiterated that there are no uses proposed, only potential or likely uses.
Krantz asks how to evaluate the uses.
Zuccaro says staff's opinion on this is that uses are set through the code and the GDP. Those uses are provided and any of them are allowed. There are no restrictions on ratio of uses.

Osterman speaks on the public land dedication in the northwest corner. That area is to be developed by the city to be a park. In the public comments, there were concerns about the suitability of that land. She asks staff's opinion on that.
Zuccaro says he would not say the city has done an engineering feasibility study. Staff has visited the property and it would take grading and flattening of some areas of the property. There was no concern expressed by the parks department though during their site visit.
Moline says the developer would be responsible for that grading correct?
Zuccaro says that it is not included in the proposal.
Howe asks staff to comment on the plan to provide water and if there is any plan to re-use the water. We are not receiving more water for this development correct?
Zuccaro says the city does charge tap fees for new development. Part of those fees go towards new water rights acquisitions. The city requires water to accommodate new development. The applicant will have to build a main line as well internal lines.
Howe asks if we just passed the preliminary plat, it would come back to the commission in 12 months. What change in the presentation would that have for the final plat?
Zuccaro says the final plat would have to conform to the preliminary plat. You cannot really make major changes to the proposal. It is just about finishing the detailed elements of the plat.

Applicant Presentation:
Jay Hardy, Brue Baukol Capital Partners
Hardy says he does not have a presentation but they did have follow up comments and reports that are in the packet.

Commissioner Questions of Applicant:
1.12.46-1.15.15

Moline asks how they will have the Transportation Demand Management (TDM) and sustainability commitments apply to the people in the development.
Hardy TDM activities will be tied to the Subdivision Improvement Agreement (SIA) so it will be implemented and executed that way. The TDM program, he suspects, would be the same. The one exception is related to the solar generation.
Moline says some of the ERO reports provide recommendations. How would you go about following through on those commitments?
Hardy asks for a specific example.
Moline mentions the prairie dog management plan. He wonders how to hold them to these recommendations.
Hardy says that they have not said that they would not follow or would go against them. If we need another exhibit to the SIA then we could do it that way.
Howe asks for clarification on the water and sewer contributions.
Hardy says within the first phase, the lift station in the southeast corner will be built at the very beginning. 100% of that is paid from the metropolitan district. Once we get to a certain threshold of development, then we will go through the process of getting the treatment plant expanded.
Brauneis asks about their light version and how it is not the full version that was previously proposed. It seems like it is full of loopholes.
Hardy mentions that they had 13 conditions last fall and many of those are either being met through a different path or they are irrelevant.

Brauneis says in regards to the usage and availability of raw water, have you evaluated that?
Jordan Swisher, Brue Baukol Capital Partners
Jordan **Swisher**, from Brue Baukol Capital Partners, says the best opportunity to benefit from the water rights is that the property does have inherit water rights. She describes in more detail the availability of water.
Howe says regarding the intersection of 96th St and Campus Drive, could you walk us through the other traffic options you considered?
Hardy says the initial evaluation would have come right across the north property line against Boulder County land. Both Boulder County and the Boulder Valley School District did not approve of that location. We then adjust the alignment towards the south and brought it up to where it is now and that leaves the 47.4 acres open. It was the only design option that was supported by Boulder County, the city, and met all the other regulations.
Krantz says when you did the traffic analysis, was that done before the plan of hospital or after?
Hardy says last fall, the hospital was not a part of that. Everything you see dated July of this year does include the hospital.
Howe mentions a lot of public comment expresses concerns for four lane roads. Can you address those concerns?
Hardy says that was also looked as a two lane and it does not work coming into the roundabout in both directions.
Osterman asks about the proposed square footage buildout and if during the process, there was a consideration of condensing the proposed square footage. For example, only occupying the former StorageTek area.
Hardy says the uses will be different from StorageTek. They did evaluate height and clustering from the GPD of last fall. Those are irrelevant now since we are not using that GDP.
Krantz says the GDP from last fall included 3 million square feet. Is it possible with the reduced density to allow more private common open space and cluster it more?
Hardy says the 2.6 million square feet that is being represented now in the plans also show an elimination of some of the buildings. This allows the northwest corner to have more open space.
Krantz asks to see a map that shows all the proposed open space. Staff reviews this map with the commission.
Krantz wants to know if it is possible to have the development footprint reduced due to the reduced square footage.
Hardy shows on the map where an addition to the open space quantity was made from the fall GDP. The development footprint did get smaller based on the additional open space he shows on the map.
Krantz asks if they would be willing to expand the open space along Highway 36.
Hardy says he does not know why they could not do that. That area is not going to be buildable anyway.

Public Comment:
Moline moves and **Howe** seconds a motion to add the two addendums into the public comment. Motion passes unanimously by a voice vote.

Laura Page, 920 Rex St

Page says she cannot see grading the entirety of the property is preserving the natural beauty and topography. She does not think this proposal meets our city code. She does not think the vegetation such as trees will be preserved enough.

Jojo Follmar, 1712 Steel St, Apt 7302
Follmar says Monarch will be heavily influenced by this development because students will no longer be looking out to open space but instead will be looking at buildings. She is concerned about traffic on Campus Drive and not having enough vegetation and landscape preserved.

Jesse Truman, 9557 Paradise Ln
Truman supports this project and believes the developers have gone through a lot to get to where they are today. He thinks this plan preserves the open space and land. The landowners on Paradise Lane are in favor of this development. He also believes this development will benefit downtown Louisville.

Sherry Sommer, 910 S Palisade Ct
Sommer says the environment and animal reports in the packet are outdated. She thinks reports are being thrown in last minute into the packet. She thinks the commission should vote depending upon the code. She thinks it is not true that you can have any mix of commercial and industrial use. The tree study does not mention what trees will be preserved. She would like the public works department to verify that everything on the checklist is correct. We also do not have an agreement from a ditch company. She requests that Alan Gill from the parks department have an opportunity to speak in the next meeting because he spoke on how this development will be too expensive for the city.

Cynthia Corne Musslewhite, 438 Jefferson Ave
Corne Musslewhite mentions that Rob Zuccaro said he is the director but not city manager, and she believes the code says that the city manager should be in the position to present this proposal to the commission. This proposal should be weighed against the GDP and the Comprehensive Plan. She reads the vision statement for sustainability from the Comprehensive Plan. She encourages having other departments present and share for the commission.

Mike Schantz, 623 W Hickory Ct
Schantz says he supports this plan. He believes the current plat goes beyond the public land dedication. This plan brings more trails and connections for the public. He is excited about having the hospital use in this area. He mentions more benefits for this development and the public.

Tim Stalker, 806 W Dahlia Ct
Stalker thinks the Comprehensive Plan has not been factored in enough for this proposal. He explains in greater detail why he believes this. He encourages the commission to look at section 16.24.30 and review that checklist when deliberating on this development. He concludes by saying that Tract C should be a modification.

Cathern Smith, 608 West St

Smith speaks on conditions of approval and when required documents are needed to be presented at the time of the proposal versus making a condition in order to receive such documents. She comments on traffic and is very concerned about the increase of traffic from this development.

Closing Statement by Applicant:
Hardy says they believe their proposed plat is in accordance with the 2010 GDP. They are excited about the possible businesses and they are committed to public land dedication.

Moline asks if he has been in contact with the ditch company.
Hardy says they do have the approval from the ditch company and have been in contact with them.

Closing Statement by Staff:
Brauneis says regarding the sustainability plan, if we were to come up with a condition for that, what is the process of upholding that condition.
Zuccaro asks if the condition is just from the original plan or if it includes the four conditions as stated from City Council's resolution. That could be included as a condition from the commission. He reminds the commission what the four conditions were.
Krantz asks about requirements of state and federal laws. She mentions the Army Corps of Engineers exemption letter. Is there a burden from the city for not complying with the clean water act?
Zuccaro says the city's standard is that the applicant has to provide a compliance letter. The applicant provided this letter so they met that city requirement. He cannot speak to the eligibility since he does not work for the Army Corps of Engineers.
Krantz says the letter from the packet from the Army Corps of Engineers is based on the information given from ERO.
Zuccaro says if there was an issue with the exemption, that would not be an issue with the city. They provided the correct document. If there is something not legitimate about that, the city would not be liable for that.
Moline mentions that we would have a condition that the applicant would comply with all local, state and federal laws. This would be captured in that.

Discussion by Commissioners:
Moline discusses open space and how he feels that staff has fully educated the commission on how this application affects open space. He thinks this proposal meets the open space dedication requirement. This is a rural district and is not designated as open space. If we, as a city, want this northern portion as dedicated open space, we would need to revise the comprehensive plan for this parcel. He heavily relies upon the parks and open space staff when they say this proposal has adequate dedicated open space. He would like to see the commission take the ERO recommendations and have those be made part of a conditional of approval.
Osterman says she appreciates that they are meeting and exceeding the 15% requirement. She is having a hard time moving past the section of the code discussing topography and natural environment. She has an issue with the grading and the environmental consequences. It disturbs the natural environment.

Moline says when open spaces are surrounded by urbanized environment, they will be subject to additional storm water flows and grading. He agrees that he would prefer that the dedicated open space would not be graded. On natural features, he looks at this as a site that is split between being a brownfield and a green field. When looking at the wetland and vegetation reports provided, this is an area that is not pristine. Development will disturb vegetation and trees though.
Howe thanks the planning department for the time and effort in presenting this information. He thanks the applicant as well as public comment. He appreciates that this development could give the Avista Hospital a new home. He likes the connectivity of the open space and trails. He read the entire Comprehensive Plan and two of the five priorities involve open space and parks. There is an increase demand of open space so he believes there is an argument to maintain that balance. The northern part of the parcel has some value and natural vegetation to it. He would like to add more to that. He would also like to create a better traffic pattern to preserve more of the open space.
Krantz says we had 184 letters from the public, 162 asking for denial and 19 asking for approval. She thinks it would be preferable to have all the land north of Disk Drive to remain as open space. In this area, we have three health prairie dog towns. That is a topographical feature.
Brauneis says a part of him wishes the city would have bought the property a long time ago. Knowing that this land has been agricultural for a long time and is not considered a high value ecological area, we have the decision to have more development in our backyard or to push development further away from us. Building more open space into this development may cost us something in the long haul that we did not take into account.
Moline says he would be supportive of additional open space. There are two things make him hesitant on that though. The first being that he thinks requiring more open space is not following the code. The Comprehensive Plan shows this parcel as Rural District, not any of it as open space. Secondly, when our open space advisory board and planning staff are saying that they approve the proposal. That makes me more inclined for approval.
Krantz says in regards to moving the development further, she would like to increase the open space and condense the development. She thinks increasing open space is justified within the Comprehensive Plan.
Moline expresses concerns of increasing open space when open space staff do not have the bandwidth to manage more while accomplishing the current upkeep of open spaces already owned by the city.
Howe says he is concerned about traffic. We have a failed plan that will fail in 2027. He references a code section about roadways being provided without congestion. The current layout is not the best option and he believes if we are creative, there can be a better option.
Moline thinks the commission should give a suggestion since the applicant has expressed that to provide different traffic flows, it would be difficult since Boulder County, the school district, and other entities have to be involved and sign off.
Howe does not think this traffic plan provides safety or less congestion, which is against current code.
Brauneis mentions that the appropriate departments and experts have signed off on this traffic plan, saying this is the best option. We know that there will be increased traffic and does not believe that traffic will go away with any development.

Howe thinks the proximity of the 96th St and Campus Drive intersection is too close to E-470.
Moline says when city staff and engineers have looked at the traffic studies and do find it is safe and an appropriate location, to him that is compelling enough.
Krantz mentions that they have said they will fail though in 2027. She does not think the engineers were concluding this was a perfect solution.
Brauneis says then it would need to be re-engineered at that point.
Moline points out that there is a lot of traffic moving throughout the city that does not begin or originate from this location and that will affect this development's traffic.
Brauneis says the traffic study provides a work plan. City Council can then direct work in order to rectify and make it better for the public.
Krantz says she thinks that outlook could be negative in that it is waiting for action to take place once the problem arises versus trying to get ahead of the problem in the first place. She expresses other ways that have not been explored. If we cannot handle the demand of 20,000 cars, then it may be possible that we would need to decrease the density.
Moline says he does not understand when you say that we are not meeting the ability to accommodate 20,000 car trips but the traffic studies are saying that it can be accomplished. His challenge is that way we have traffic materials that show it can work in a safe manner.
Howe reads the traffic study and it says the Northwest Parkway and Highway 36 interchange will reach an LOS rating of F in 2040. With this development, the LOS rating of F will be reached sooner in 2027-2028. There are no future plans from CDOT and the City and County of Broomfield to expand at this time. They are not prepared for this.
Brauneis says to him that is just being aware that there is a problem and they should solve it. It will fail no matter what. The Comprehensive Plan calls for what is being proposed so either way there will be development and traffic will happen.
Howe asks if they are trying to make things better or just plug the hole.
Moline says he struggles with those same issues. He does not see this proposal not following the code.
Krantz mentions code for a subdivision plat and says it must avoid the congestion of streets and highways. She feels that is an avenue they can rely on for how this traffic plan does not meet code.
Moline says in our transportation master plan, connecting Campus Drive is one of the goals of that plan. Here is a development that is proposing to do that.
Howe says a condition for the proposal he would like to discuss is having an approval letter from the Northwest Parkway. That is going to be needed at some point.
Krantz also mentions she would like a condition to reduce the density to be 1.6 million square feet.
Moline says at that point, it would just be better to deny the proposal.
Howe says that there seems to be a lot of open-ended discussion around infrastructure such as water and if it is re-usable. There are grey water lines in the city. He thinks those lines could be extended from the golf course.
Moline says he trusts the city's public works staff and they reviewed all of these documents. They are able to forecast if the city has the water and sewer capacity for this development.

Brauneis says grey water is a technical term. He thinks Howe may mean raw water or ditch water. At that point, it comes down to water rights. There is not any extra water and it is not available for this project.
Howe says there is purified water and then water that you would not drink like grey water. That is water that could be recycled and be re-used. Could we re-use water in order to be more sustainable?
Brauneis says he thinks the water treatment plant does not have the functionality to re-use water at this point in time. They are only required to re-lease it.
Howe says he thinks it is re-used for watering the golf course.
Brauneis says the sewer is planned and the expansion of the treatment plant will be paid by the developer. He discusses sustainability. He thinks solar has been addressed with this proposal. He suggests sustainability regarding the buildings should be added as conditions.
Krantz says she has concerns about the modification requests.
Brauneis says he relies upon the city attorney to provide guidance on whether we are addressing what needs to be addressed by law. We have gotten the green light from the city attorney.
Krantz says she thinks it is the commission's responsibility to vet this against the ConocoPhillips GDP. She thinks it is unusual to be using a 12-year-old GDP. She is concerned about the type and character of the development, the location of open space, and location of roads. The prior GDP had private roads and now we are considering public roads. If we are changing something with the roads, we need to consider having that be a GDP amendment.
Moline asks what the mechanism would be to amend the GDP.
Krantz says the amendment would lay out what the uses would be and the type and character of what the development is. In addition, it would include how the new roads would be integrated with the existing roads. She is unsure if the subdivision plat is meeting those requirements.
Moline says the landowner has an approved GDP. He does not understand why the GDP would need an amendment.
Krantz says the question they need to ask is if this subdivision plat complies with the GDP. If the answer is no, then it would require a GDP amendment or changing the subdivision plat. She thinks we have had a change the roads, uses, and the type and character of the development. Because of this, she thinks it requires a GDP amendment.
Moline says for the Campus Drive aspect, from the applicant's perspective, they had to move it in order to meet the intent of the proposal. Because of that, it needs to be amended?
Krantz says she thinks that is true.
Moline says generally that proposals for a GDP amendment comes from the landowner.
Brauneis says in general, in his interpretation of the code, it does comply.
Krantz brings up the discussion on super blocks.
Moline says he is supportive of staff's recommendation on this because this is a rural district. If we wanted to see similar downtown development for this property, we would need to change the Comprehensive Plan.
Krantz says her question on super blocks and making a modification is there no other alternative. She thinks there is one. The blocks can be less than 1300 square feet long.

Howe says this parcel is a gateway into Louisville. This proposal has been difficult for him to evaluate because of its complexity, expansive nature, and at time ambiguity. He does not think it meets code sections 16.16.010, 16.04.020 B and K. We assume there will be contractual agreements with Northwest Parkway but that does not exist yet. How can we assume that these buildings will be net zero? Will that be an additional condition? There are many good things in this proposal and he does not think they need to go back to square one. He does not want to add problems to the city's current, existing problems.
Moline asks what the mechanism is.
Howe says as a developer myself, in different ways, you see the project and you have it fix your needs. A better way for this development though would be to have needs and the development center around those needs. He is concerned they will have a long list of conditions.
Moline asks if he is thinking about continuing the meeting so that those conditions can be worked out.
Brauneis says we only have a few options. We can deny, approve with conditions, or approve as is. He does not think they have very many options.
Howe asks if they did a preliminary plat approval, then it would have to come back as a final plat.
Brauneis says the way it is proposed right now is a preliminary and final plat. Our vote would have to be denial.
Krantz says with the conditions being long, she would not mind making a motion to deny.
Zuccaro mentions that if there is a motion of denial, staff would come back with a new resolution showing the findings. He asks that the motion would be to direct staff to draft a resolution of denial. If anyone wants to add reasons of denial before the vote, that would be helpful.
Moline thanks all public comment and staff. We want what is best for the city and we are trying to ensure that what is before us, meets our code.
Brauneis agrees with Moline.

Krantz moves and **Howe** seconds a motion to have staff draft a resolution of denial. Motion passes 3-2 by a roll call vote.

Name	Vote
Steve Brauneis	No
Allison Osterman	Yes
Keaton Howe	Yes
Jeff Moline	No
Tamar Krantz	Yes
Motion passed/failed:	Passes

COMMISSIONER COMMENTS

None is heard.

STAFF COMMENTS

None is heard.

ITEMS TENTATIVELY SCHEDULED FOR THE MEETING ON OCTOBER 13, 2022

- Planned Unit Development Amendment – 525 McCaslin - Murphy Express

- General Development Plan Amendment, Planned Unit Development Amendment, Replat, Easement Vacation – 1501 S Boulder Road – North
- Coal Creek Ranch Filing 3 PUD Amendment – fences

ADJOURN

Brauneis moves and **Moline** seconds a motion to adjourn. Motion passes unanimously by a voice vote. Meeting adjourns at 9:51 PM.

Secretary Jeffrey Moline

Chair Steve Brauneis

City of Louisville
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Planning Commission

Meeting Minutes

October 13, 2022
City Hall, Council Chambers
749 Main Street
6:30 PM

Call to Order – Chairperson **Brauneis** called the meeting to order at 6:30pm.

Roll Call was taken and the following members were present:

Commission Members Present:	Steve Brauneis, Chair Dietrich Hoefner, Vice Chair Jeff Moline Tamar Krantz Allison Osterman
Commission Members Absent:	Ben Diehl, Secretary Keaton Howe
Staff Members Present:	Rob Zuccaro, Dir. of Community Development Elizabeth Kay Marchetti, Senior Planner Ellie Hassan, Planner II

Approval of Agenda
The agenda is approved by all members.

Approval of Meeting Minutes
The minutes from the September 22, 2022 meeting are approved as written.

Public Comments
Cynthia Corne Musslewhite, 438 Jefferson Ave
Corne Musslewhite discusses the work plans and asks for the commission to think about the exits into Louisville, especially on US36.

Public Hearing Items

A. Adoption of Resolution 13, Series 2022 recommending denial of the Redtail Ridge Preliminary and Final Plat: Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10-acre property, located

northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive.

Applicant: Sterling Bay
Case Manager: Rob Zuccaro, Director of Community Development

Hoefner excuses himself from discussion since he has a conflict of interest.

Staff Presentation:
Zuccaro reviews for the commission Section 16.12.075, which goes over the action on preliminary and final plats.

Discussion by Commissioners:
Krantz says the proposed subdivision does not comply with ConocoPhillips GDP for the following reasons: The type and character of the development, proposed uses, and road network do not comply with those in the GDP document.
City Attorney Kelly says if you tie your deliberations back to the criteria, which is going to be the most defensible action. She cannot give a legal opinion as to whether or not your decision is correct or not.
Krantz says she looked at the four major components of a GDP. The type and character falls under one of those four components. Another large component of a GDP is the proposed location of the streets. The plat includes a street network that differs significantly from the ConocoPhillips GDP. In review of the type and character of the ConocoPhillips GDP, it is clear to her that it was used for a single user corporate campus. This location would fit more of a commercial and industrial zoning. Regarding the street network of the ConocoPhillips GDP, the roads represent internal private drive. This GDP also has Campus Drive to be routed through Paradise Lane. The application has Campus Drive exiting north of the fire station. She would like these items to be added to the motion of denial.
Moline says he will not be voting for the motion of denial so he is not opposed to changing it.
Osterman says that it seems that Krantz's comments were based on the GDP and she is not sure if that is part of the criteria staff has shown from their presentation.
Zuccaro says it should comply with the provisions of the adopted ConocoPhillips GDP. We have received word that Commissioner Howe will not be able to make it to the meeting. We will only four votes. It is possible of the vote being a tie.
Krantz mentions that it would be more beneficial to separate out the preliminary and final plat so that it is more organized for City Council.
Brauneis points out that staff and the city attorney has said it is okay to have a preliminary and plat be reviewed at once. How does that tie back into our criteria?
Krantz says in the applicant's cover letter, they are asking for a modification for the preliminary plat processing. This is an exception to the requirements of Title 16. Because they are asking for a modification, it should be the modification criteria.
Osterman says she is included to use the findings from the city attorney.

Brauneis asks if Krantz would ever find it appropriate to have a preliminary and a final plat be submitted at the same time.
Krantz says she does think that can be submitted at one time.
Zuccaro asks if Krantz can say what all the modifications were because he is only aware of one modification, which is about the block length requirement.
Krantz reads the second modification request. It mentions the following: A final plat for a portion of the overlay property prior to an approval of the preliminary plat for the property. The applicant understands that the approval of the final plat is dependent upon the preliminary plat.
City Attorney Kelly says that she and staff have reviewed this matter and a modification request was not required regardless of how the applicant stated that in their application letter.
Moline agrees with the city attorney and favors not including this in the resolution.
Krantz agrees with the city attorney as well.
Zuccaro says if there is a tie vote, staff would ask that the application is continued.
Krantz mentions the condition of this application not complying with LMC 16.04.020, section K and he also mentioned it does not comply with section B. she would like to revise that resolution to only include section K but B as well.
Brauneis says because these are planned streets, how does it not find proper arrangement of streets in relation to the existing plan?
Krantz says she was concerned about the location of Campus Drive and it being only a 740-foot difference between the two intersections.
Brauneis says that every traffic engineer that has looked at it has said that it is the best location.
Osterman says she does not feel strongly about adding section B.
Krantz says she is finding dropping that section from denial.
Osterman says in the draft resolution, the three main parts of title 16 conform in her opinion to the discussion that was had. An item she would like to be added to the resolution is in regards to Section 16.16.020. This relates to drainage areas. It says when possible, drainage should be left in a natural state. It seems like the application does not comply with that section of the code.
Krantz agrees.
Moline says when we want to see a roadway in this area, there is going to be encroachment in the drainage way. He does not agree with it but he is fine with it being included on the resolution.
Brauneis agrees with Moline.
Krantz says it is the applicant's responsibility to demonstrate that they have a good reason for altering the drainage course.
Osterman says it seems that where the natural channels currently exist, none of them would be maintained. She also mentions that since the commission can make a recommendation of the amount of public land dedication and the type of the land, is it possible to make this recommendation through this denial?
Zuccaro says if you find that the the public land dedication does not comply with the standard, you can make that as a finding that it does not comply with the

requirement. As far as recommendations, it really is just why you are approving or denying it.
Osterman says her suggestion is to add language that notes that the commission did not find the public land dedication in compliance given that it did not dedicate enough public land north of Disk Drive.
City attorney Kelly asks for Osterman to reference a criterion for this suggestion.
Osterman says this would be based in 16.16.010 section D and E.
Brauneis says that the applicant has submitted over the requirement for public land dedication.
Krantz says that under section D, the proposal does not have enough clustering and open space to meet this development.
Osterman says it is not in compliance given that there is a need for additional open space because it is not preserving the vegetation, specifically in the undeveloped area north of Disk Drive.
Osterman says some members of the commission feel that there should be a larger public land dedication. She says that if they are able to add in reference to section E. There is a need for additional open space for vegetation around Disk Drive in order to preserve.
Moline mentions that he will not be supporting the resolution because he does not agree with the paragraph A portion. He does believe that the proposal does this. Denying it leaves us where we are now which is an empty land that is not benefitting Louisville. Since the land is privately owned, with this denial, we are incapable of ensuring the wildlife and prairie dogs are maintained and taken care of as the public desires.
Krantz does not think this complies with the GDP and she does not think going through a subdivision plat is the way to do it.
Osterman says this has been a tough application for her to review and she has felt torn but she is recommending denial. She would like to see this parcel of land developed.
Brauneis says if he though a vote to deny would guarantee us a better project, then he would vote for denial. He lists items of how this proposal does meet code and the criteria. He does not support this proposal without additional conditions such as how it relates to the green building certification and the discussion regarding the application paying for some of the road extension around Highway 36. A part of this process though is to not design it. He is concerned that denial risks losing any of these benefits.
Zuccaro says because this is sounding like a tie, a resolution cannot end on a tie and would have to be continued.

Brauneis moves and **Krantz** seconds a motion to Resolution 13, Series 2022 recommending denial of the Redtail Ridge Preliminary and Final Plat: Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10-acre property, located northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive. The denial with the following amendments:

- Noncompliance with ConocoPhillips GDP

- Noncompliance with LMC 16.16.020 section B related to the drainage not being left to a natural state.
- Noncompliance with LMC 16.16.010 section E related to the need for additional open space in different locations based on the vegetation of the land

Name	Vote
Steve Brauneis	No
Jeff Moline	No
Tamar Krantz	Yes
Allison Osterman	Yes
Motion passed/failed:	Does not carry

Motion ties 2-2 with a roll call vote.

Brauneis moves and **Krantz** seconds a motion to continue this agenda item to the November 10, 2022 meeting. Motion passes unanimously by a roll call vote.

Public Hearing Items – New Business

A. Planned Unit Development – Murphy Express – Consideration of a Planned Unit Development to allow construction of a new 2,824 square-foot automotive service station and convenience store with eight pump fueling stations and canopy.
   Applicant: Michael Maik, Galloway US
   Case Planner: Ellie Hassan, Planner

All notice was met as required and there is no commissioner conflict of interest.

Staff Presentation:

Hassan begins her presentation by saying the property is located on the west side of McCaslin Blvd between Cherry St to the north and Dillon Rd to the south. The site is about 1.5 acres and is zoned Planned Community Commercial. The property is within the Centennial Valley Parcel L Filing No.1 subdivision, which was originally platted in 1996 and replatted in 1997. Parcel L is part of the Centennial Valley General Development Plan, which was first established in 1983. In 1997, the City approved the Bank of Boulder/Rite-Aid PUD, which included structures on both 525 and 515 McCaslin Blvd. An approximately 13,650 square-foot retail building was constructed on the 525 McCaslin portion of the PUD for the Rite-Aid.

The applicants are proposing to demolish the existing structure to construct a new 2,824 square-foot automotive service station and convenience store building with 8 pump fueling stations under a 4,842 square-foot canopy structure. The primary site access is from the private street on the south side of the lot, which connects to McCaslin Blvd to the east. There is an access easement along a shared property line to the north, which provides access through a private street on the west side of the property.

The convenience store building is proposed near the center of the lot with parking to the east and south. The parking areas provide 16 spaces, which exceed the required 13 spaces in the CDDSG. Three bicycle parking spaces are also proposed on the north side of the building along with Ice and Propane storage kiosks. The canopy and fuel pumps are east of the convenience store and separated from the building by parking spaces and a 35ft two-way drive aisle. Underground fuel storage is proposed at the rear of the building, along with a trash enclosure and air and vacuum station.

A new attached sidewalk is being proposed on the south along the private street. The sidewalk connects to McCaslin Blvd and the existing Parcel L sidewalk network. Pedestrian amenities are provided on the southern side of the property with benches remaining from the existing site. Stormwater detention is located on the east side of the property along an existing variable width drainage easement.

The retail building is oriented to the east and faces McCaslin Blvd. The building materials will be primarily brick veneer with aluminum composite material (ACM) metal on the upper portions with textured sheet metal caps. The east elevation has expanses of storefront windows and emphasizes the entrance through the use of red ACM panels surrounded by brick columns on either side.

The west elevation has a matching form and provides variation on the façade. The north and south facades provide interest through the material usage and massing from the areas where materials transition. A physical material board is provided for reference and can be distributed around if needed.

Ten mature trees are being removed to construct the proposed improvements, as indicated in red. Two of the trees proposed for removal are along the McCaslin Blvd frontage. Retaining the majority of the trees along McCaslin Blvd was prioritized in order to minimize the visual impact of the drive aisles and parking areas. The remainder of the trees to be removed are more internal to the site.

The number of existing and proposed trees in the landscape plan exceeds the CDDSG requirements for perimeter and parking lot landscaping, which offsets the loss of mature trees on the site. Plantings are also proposed along the west and north sides of the retail building.

Upon review by staff, it was observed that the site requires new EV charging spaces in Section 17.20.170 of the Municipal Code. The site is considered “retail” and therefore falls under the Tier 3 requirements in the table. For 16 total parking spaces, one space needs to be EV installed, 2 need to be EV Capable, and 2 need to be EV ready. A new amended resolution includes this as a condition and has been provided to the commission and included on the planning commission webpage.

Staff's analysis finds that the automotive service station use is permitted in Parcel L1 of the Centennial Valley GDP. The latest applicable GDP from August 2015 differs to Section 17.7.2.090 of the Municipal Code for allowed uses. Automotive service stations are listed as an allowed use, subject to the prescribed performance and design standards in Section 17.72.130.

Staff also finds that the application is compliant with the PUD criteria in Section 17.28.120 of the Municipal Code, and the previously mentioned Automotive Service Station Development Standards in Sec. 17.72.130. The project is compliant with the requirements in the CDDSG as well.

Staff Recommendation:
Staff is recommending approval of Resolution No. 14, Series 2022 to construct a new 2,824 square-foot automotive service station and convenience store with eight pump fueling stations and canopy at 525 S McCaslin Blvd. Staff is adding the condition that prior to the City Council public hearing, the applicant shall amend the PUD to include the required EV installed, EV capable, and EV ready parking space designation pursuant to Section 17.20.170 of the Louisville Municipal Code.

Commissioner Questions of Staff:
Hoefner says the PUD amendment in front of us, how do we view that in light of that this is an allowed use?
Zuccaro says the PUD does not define the use. That is defined by the zoning code or the GDP. The commission would have to find that this is not an allowed use but in staff's analysis, we find that it is.
Krantz asks if staff can show what the allowed uses are in the GDP. She also asks for an analysis on the McCaslin Small Area Plan and how this fits into that.
Hassan shows the allowed uses based on the GDP.
Zuccaro says if you look at the map for L1, it says commercial/retail. Under Section 17.72.12, it lists different uses that fall under a commercial use. He reads that section of code and how it mentions a service station.
Krantz asks what parcel H is zoned.
Hassan says that is also commercial/retail.

Applicant Presentation:
Jeff Weeder, Galloway US

Weeder begins his presentation giving the context of the location. There is no additional public infrastructure needed at this location as well as it is located less than 2,000 feet from US36. No changes to existing vehicle access is being proposed. We will also have the mature landscaping remain along McCaslin.

He gives the commission an overview of the site design. Included on the site design, there will be vehicle access from internal drives and the existing gather space on the south side of the site will be preserved. The pedestrian access will

be extended at the southern frontage. He then shows photos of the landscape buffering along McCaslin looking from southwest and northwest.

He concludes discussing how their proposal is compliant with the city standards.

- Automobile service station is a permitted use in Planned Community Commercial Zone District (PCZD).
- Automobile service station is a permitted use in this governing General Development Plan (GDP).
- Proposed development complies with applicable sections of Louisville Municipal Code approval criteria.
- Proposed development complies with applicable sections of PUD approval criteria.

Commissioner Questions of Applicant:
Moline asks what their thought is on the proposed EV charging stations. He also asks if they have considered utilizing the existing building.
Weeder says he understands the need for charging stations and that it is implemented in the building permit process. It does not generate any revenue to have them but they understand that it is part of the code. It is a great existing building but it is oversized for our use.
Krantz asks about the circulation of traffic. She is concerned about traffic backing up in the left turn lane going from US 36 and turning west into the parking lot. Have you done a traffic analysis? How are directing traffic back onto the highway?
Weeder says the main access to their site does not allow a left turn out, only a left turn in. He goes in to greater detail of the specific directions that can be taken in order to get back onto the highway.
Krantz asks if the signage will be clear on what way to leave the facility.
Weeder says they currently do not have wayfinding signage in their proposal but they could provide that if needed.
Brauneis asks if Murphy has expressed having a fee based electric charging station.
Stephen **Oliver**, Director of Development, says their sister company in the northeast has experience with charging stations but with a Murphy, there is not any experience yet.
Brauneis asks if that is because of the format size.
Oliver says it is partly that as well as demand. Most likely we will assign the stations to a third party, they will do the install, and be responsible for it.
Krantz asks for the proposed hours of operation.
Oliver says they always ask for 24 and once it is opened, it may be reduced.
Krantz asks if they have coordinated with the fire department on emergency spills.
Oliver says the fire department was a part of the application review.
Krantz asks if their storage tanks are ones that get inspected yearly.

Oliver says they are double wall tanks, fiberglass, and a 25,000 and 26,000-gallon tank. We do annual pressure tests, even if they are not required for a double wall.
Krantz asks where the tank vent is located.
Weeder shows her that location from a presentation slide.

Public Comment:
Krantz moves and **Osterman** seconds a motion to add addendum one into the record.

Krantz moves and **Osterman** seconds a motion to add the material board into the record.

Sherry Sommer, 910 S Palisade Ct
Sommer expresses concerns on how this proposal will bring more sustainability to Louisville. She discusses the building being solar ready and more sustainable lighting options. She would like two trees saved off McCaslin and asks what kind of vegetation they will be using.

Cathern Smith, 608 West St
Smith discusses climate change and asks what we can do as a city to reduce the momentum that is behind the climate change. She concludes with talking about traffic and her concern of McCaslin.

Joshua Cooperman, 216 Griffith St
Cooperman mentions his outrage on how this proposal affects climate change. There should be no further development on fossil fuel infrastructure. This proposal is not re-using an existing building. This has no longer term economic ability. He then reviews how this proposal does not meet municipal code. He concludes with discussing the action he will take against the proposal if it is recommended for approval to City Council.

Tiffany Boyd, 550 Grant Ave
Boyd says it seems that the applicant is apprehensive of installing an electric charging station. She discusses the process of retrofitting and being proactive with the climate crisis. She would like gas stations to be banned in Louisville.

Jojo Follmar, 1712 Steel St, Apt 1302
Follmar says Louisville does not need this gas station. Electric vehicles are becoming more prominent, especially in Boulder County. She hopes there will be conditions to make the proposal more sustainable.

Closing Statement by Applicant:
Weeder says the specifications on new plant life being proposed meet the city code. It is in the approved plant list item. The existing trees on McCaslin, there are utilities that have to be re-routed for the detention pond. On the south side, to

make traffic safe, we opened up that access point and created a reason for a loss of that tree.
Krantz asks how many gas stations Louisville can support since the city already has five of them.
Oliver says they do an economic analysis and we do not project or ever look at other competitors.
Krantz asks if they have a statistic of how many gas stations can be supported within a single community.
Oliver says no because the business model is different from others. In a community of 20,000, there should be between 6-8. You also have US36, which gives significant traffic within Louisville.
Krantz asks if they comment on the climate change comments and their strategy for the future.
Oliver says their strategy for the future is that they believe climate change is real but it is more of a personal belief then science. He believes it to be real. He personally has an electronic vehicle on order. The longer people hold onto their gasoline vehicles, the longer gasoline will be in demand. In regards to additional charging stations, he says the infrastructure will happen and he is a firm believer that the free market will take care of it. He does not think it is something that needs to be regulated. He is unsure if they will put solar on the roof.

Closing Statement by Staff:
None is heard.

Discussion by Commissioners:
Hoefner says this is a permitted use in this zoning and there is not much we can do to change that. This application does not comply with our EV requirements though. His preference is that the application comes back to the commission with the EV requirements instead of having a resolution with this being a condition.
Krantz says she thinks that is a great idea because she has concerns about the compliance issues. We do have a vision in our comprehensive plan for a healthy, sustainable economy. It would be great if the applicant could flesh out ideas of how they could achieve that.
Osterman says she would be in support of the applicant coming back and having the minimum EV requirements being met in their revised proposal. Looking at the criteria in chapter 17, it does seem like the applicant is meeting that criteria. My question is related to criteria 17.28.120a about the appropriate relationship to the surrounding area. Directly across the street from McCaslin there is another gas station.
Moline says this development seems to comply with our municipal code. He would be willing to go along with Commissioner Hoefner's comments. He does not think adding the EV would be complicated to the proposal and is in favor of just adding that as a condition since it does not affect the proposal too drastically.
Brauneis says whether we have one or two gas stations on one side of the street, it is not going to affect CO2 emissions. People will buy gas. The fact that there is a gas station on the other side of the street amplifies that this fits the

appropriate setting. On an economic level, the only thing he sees is having more competition for an existing gas station, especially the one closer to this proposal. He thinks pushing this to next month is a waste of tax dollars and staff time. Having the condition on the resolution is as far as we will be able to get this pushed.
Krantz mentions that gas stations and convenience stores are difficult properties to be re-used for new uses down the road. She is concerned about having a use like this and how it affects the community as well as the sustainability efforts from the public.
Hoefner says our time and attention are better sent on big picture items. Recommending approval that does not pass the bar for EV does not sit well with him.
Brauneis says in front of us, we have the hard copy of the resolution that includes the condition. He then reads what the condition says. He thinks it is locked tight and it is what they have to do.
Hoefner says we have to follow the code and he does not think this meets the mark. That is why he wants them to come back with the revised proposal mentioning the EV.
Brauneis says in regards to where people charge their EVs, it is greatly more cost efficient to do it from our own homes. The demand for publicly accessible EV charging stations is going to be different then the uptake of EV vehicles. Hoefner points out that we did spend time working on that EV section of the code.
Brauneis says it does and that is why it is a condition. If we pushed this off to next month's meeting, we would see a site plan that have five spots. One would show active charging, two would be EV capable, and two would be EV ready spots. Why would we need to see that ourselves?
Hoefner says that could be said for any application though. As a commission, we are meant to do investigation.
Moline says if it is worth asking staff what the enactment of this condition would look like before going to City Council.
Zuccaro says that he thinks there was an issue with the number of spaces. Typically, on a PUD, we want to see where they are located. That is what we would want on an amendment.
Brauneis says that is what they would have to do to meet the condition.
Zuccaro says this is not in addition to the minimum parking requirements. This is not five additional spaces.
Osterman says with the amendment of the EV requirement, she is feeling comfortable approving this proposal.
Krantz says at this time, she would consider adding a condition on the hours of operation as well as conditions regarding sustainability.
Zuccaro mentions that if they restrict the hours, they need to site where in the PUD code they can do that.
Brauneis asks staff if we have code that allows us to restrict hours of operation.

Zuccaro says it is not something we typically to reduce hours through the PUD since it is a use by right. You would have to find the reason through our PUD review criteria.
Brauneis asks why we would reduce the hours since there is not residential near there.
Krantz says we received a letter that said they lived a quarter of a mile from there. Their concern was more related to emissions though. With our small town character, it seems like having a business open 24 hours does not fit that character.
Moline says we look at the McCaslin interchange as one of the busier sections of town. For example, bus service is going to run almost 24 hours these days. This is a part of town that is busier and he could see why the applicant would want to be open for 24 hours. He thinks the McCaslin Small Area Plan would support the hours of operation.
Brauneis says given the location and the fact the applicant said if they do not get good enough business, they may reduce their hours. Because of this, he is not concerned with the proposed hours.
Hoefner says he would not approve the resolution and would deny the application and ask them to come back.
Zuccaro says they could ask the applicant if they are willing to have a continuance.
Moline says he could be ready to support this.
Brauneis agrees and is willing to support.
Krantz mentions that she would like this to be closed at 11pm. She is concerned about having alcohol sales past 11pm when that does not exist in Louisville.
Brauneis says alcohol is not part of our review and the other gas station is allowed to do it.
Krantz asks how late the other gas station stays open.
Zuccaro says Google says they are open 24 hours.
Brauneis says that does not mean that alcohol is sold for 24 hours.
Krantz mentions that she would like to add a condition for four charging stations.

Brauneis moves and **Moline** seconds a motion to approve Resolution 14, Series 2022 with the condition that prior to the City Council public hearing, the applicant shall amend the PUD to include the required EV installed, EV capable, and EV ready parking space designation pursuant to Section 17.20.170 of the Louisville Municipal Code. Motion passes 3-2 with a roll call vote.

Name	Vote
Steve Brauneis	Yes
Dietrich Hoefner	No
Jeff Moline	Yes
Tamar Krantz	No
Allison Osterman	Yes
Motion passed/failed:	Passes

Discussion – New Business

A. Review of recommended inclusions in the 2023 City Council Work Plan

Planning Commission Comments
Brauneis says he wants to push the election of officers to the next meeting since only five commissioners are present.

Discussion Items for Next Meeting

A. General Development Plan Amendment, Planned Unit Development Amendment, Replat, Easement Vacation – 1501 S Boulder Road – North End Block 11
B. Coal Creek Ranch Filing 3 PUD Amendment - fences

Adjourn
The meeting was adjourned at 9:32pm.

Secretary Jeffrey Moline

Chair Steve Brauneis

City of Louisville
COLORADO • SINCE 1878

Planning Commission

Meeting Minutes

November 10, 2022
City Hall, Council Chambers
749 Main Street
6:30 PM

Call to Order – Chairperson **Brauneis** called the meeting to order at 6:30 PM.

Roll Call was taken and the following members were present:

Commission Members Present:	Steve Brauneis, Chair Dietrich Hoefner, Vice Chair Keaton Howe Jeff Moline Allison Osterman
Commission Members Absent:	Ben Diehl, Secretary Tamar Krantz
Staff Members Present:	Rob Zuccaro, Dir. of Community Development Elizabeth Kay Marchetti, Senior Planner Ellie Hassan, Planner II

Approval of Agenda
The agenda is approved by all members.

New Business – Discussion

A. Review of Recommended Inclusions in the 2023 City Council Work Plan

Discussion by Commissioners:
Moline says he is excited to see the comprehensive plan update in the works and is very comfortable having the dark sky lighting on there as well.
Howe says priority two helps the commission evaluate proposals and is in favor of it.
Zuccaro mentions that staff is working on a commercial energy efficient building code.
Hoefner says he is excited about this update.
Osterman says she supports the proposed work plan and does not have any additional comments.

Brauneis is excited about dark sky lighting and seeing that in the work plan.

Election of Planning Commission Secretary
Howe nominates Commissioner Moline for the position. **Hoefner** seconds that nomination. Motion passes by a roll call vote.

Public Comments on Items Not on the Agenda
None is heard.

Public Hearing Items

A. Adoption of Resolution 13, Series 2022 recommending denial of the Redtail Ridge Preliminary and Final Plat: Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10-acre property, located northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive. *Continued from October 13, 2022*
   Applicant: Sterling Bay
   Case Planner: Rob Zuccaro, Dir. of Community Development

Hoefner recuses himself from discussion since he has a conflict of interest.

Discussion by Commissioners:
Howe mentions that he was not present at the last meeting but watched the entire recording. He thought it was a good discussion and the motion of denial is in alignment with his vote.

Howe moves and **Osterman** seconds a motion to approve the denial of Resolution 13, Series 2022 as drafted by staff. Motion ties 2-2 with a roll call vote.

Name	Vote
Steve Brauneis	No
Jeff Moline	No
Keaton Howe	Yes
Allison Osterman	Yes
Motion passed/failed:	Ties

Brauneis says that because the vote came to a tie of 2-2, if it were different circumstances where all of us were here, we would have to continue our discussion until somebody wavered. In this case, because we know that there is one person who is not here, we can save the discussion, and when we have a future full commission, we can have the vote again.
Zuccaro says they can continue this to December 8th and the commission will hopefully have five members. If that does not happen, you may want to schedule a special meeting so that this can be concluded. The commission does have to continue to a date certain.
Brauneis says lets focus on December 8th date.

Moline moves and **Howe** seconds a motion to continue this agenda item to the December 08, 2022 meeting. Motion passes unanimously by a roll call vote.

Public Hearing Items – New Business

A. General Development Plan (GDP) Amendment, Planned Unit Development (PUD) Amendment, and a Replat With Easement Vacations –1501 S Boulder Rd – A request for a GDP Amendment, a PUD Amendment, and a replat with easement vacations for a mixed-use development of 38 residential units across 13 multi-family buildings and 40,562 square-feet of commercial area across four buildings at Block 11, North End – Replat of North End Parcel 1, Outlot H and Outlot K Replat.
   Applicant: Michael Markel, Owner
   Case Planner: Ellie Hassan, Planner II

All notice was met as required and there is no commissioner conflict of interest.

Staff Presentation:

Hassan begins her presentation by sharing that the property is 4.57 acres and is zoned for Planned Community commercial and residential. The site is bordered by Hecla Way to the north, Blue Star Lane to the east, South Boulder Rd to the south, and a commercial property to the west. It is located within the 73.8-acre North End development, which was originally approved in December 2006 through a Subdivision Plat, General Development Plan, and Planned Unit Development. The property was part of Planning Area 1 in the GDP. It was replatted in 2012 to create Block 11.

In 2017, the City approved a third GDP Amendment, final plat, and final PUD for Block 11. The third GDP Amendment authorized 38 residential units in Planning Area 1 and 40,000 square feet of commercial. The final plat for Block 11 established utility and drainage easements on the property but did not create separate lots. The Planned Unit Development proposed a mixed-use neighborhood consistent with the densities proposed in the third GDP amendment.

The Applicant is requesting a fourth GDP Amendment to accommodate changes to permitted housing types. The maximum number of residential dwelling units and commercial square footage will not change. The tables shown are for the changes to the Land Use Area summary, which allocates all residential acreage to multifamily residential and eliminates single family and townhome/duplex housing types. The map of land uses in Planning Area 1 has been revised to reflect multifamily residential only as well. The use is shown as a honeycomb pattern on the map.

The applicant is requesting a replat to subdivide Block 11 into three lots. The replat accommodates two multifamily lots and a single commercial development lot. New access and utility easements are proposed that coincide with alleyways

proposed on the PUD Amendment. The existing easements were platted as part of the 2017 subdivision plat. The applicant proposes the vacation of easements that are no longer needed from the original plat, as shown in red. This will be further evaluated at the City Council hearing.

The PUD Amendment proposes construction of 17 buildings, including 4 commercial retail/office buildings on the southern half of the site towards South Boulder Road and 13 residential multi-family buildings containing 38 dwelling units on the northern half of the site.

The site layout is similar to the 2017 PUD Amendment and includes a north-south private drive that connects South Boulder Road and Hecla Way. An east-west access drive into the site off Blue Star Lane is located in a similar location to the existing 2017 PUD. The PUD Amendment proposes alleyways for access to the residential buildings. Areas on the site are connected through a network of drive aisles and internal walkways. The walkways connect to the adjacent streets and trail to the west. Walkways are 5ft in width and 6.5ft in width in areas adjacent to parking spaces. Existing drainage infrastructure is maintained in the southern 35ft drainage easement.

A total of 92 spaces are provided for the 38 residential units. Parking is provided through two-stall garages in each unit, along with two driveway spaces for buildings 11 and 12. A total of 148 parking spaces are provided for the office and retail uses on the site. Some spaces are used for snow storage seasonally; however, the required 142 spaces will still be available.16 bicycle spaces are proposed where 15 are required, as shown in red. Bicycle spaces are proposed adjacent to commercial buildings in convenient locations off the sidewalks. The site provides the required number of EV spaces per Section 17.20.170 of the Municipal Code. EV charging spaces are separated out per use, as seen in the PUD parking plan tables on Sheet 5.

As mentioned, there are four commercial buildings on site. Building 1 is a two-story structure with retail on the first floor and office on the second floor. Each floor is 5,471 square feet or 10,942 square feet total. The location of the building is shown in red on the key map in the top left.

The building has varying forms to add architectural interest and depth to the building. Most materials on the forms are contiguous between the first and second stories. The forms consist of stucco, cementitious lap siding, and board and batten siding. Small amounts of metal siding are used on the east and west elevations on the first story.

Building 2 is two-stories and also contains retail on the ground floor and offices on the second floor. The building has 7,295 square feet per floor or 14,590 square feet total. Building 2 consists of mostly flat roofs with butterfly roofs on the east and west sides of the building. It has the same materials as building 1,

excluding the metal siding accent areas. The building has similar varied forms, which are broken up by a combination of the entry fascias and a transitioning of stucco to other materials between many first and second story areas.

Building 3 is an 8,539 square-foot three-story structure with 3,472 square feet retail on the ground floor with 4,164 square feet of office on the second and 633 square feet of office on the third floor. The height of the building is 40ft 5in and exceeds the 40ft maximum per the GDP, requiring a waiver. Building 3 contains varied forms, with a mix of flat roofs and shed roofs. A majority of the building is a two-story mass, with a smaller central three-story element with a balcony facing out towards the residential properties to the north. The first story has brick siding on the first floor with a portion extending onto the second and third story. The brick is broken up by board and batten between the first and second story. Fiber cement panels are included in the second and third story facades.

Building 4 is a 4,365 square-foot one-story retail structure with an outdoor patio area to the southwest of the building. The building's form is more simplistic than other commercial buildings on site and is broken up by material changes and fascia elements over the windows. The roof is mostly flat with a shed roof on the southern portion. Materials consist of brick siding, cladding, and Cementitious lap siding.

There are 13 residential buildings proposed on the northern half of the site. There are 38 units total across duplexes, triplexes, and 4-plexes. The units are proposed in either modern or farmhouse architectural styles, as shown in the elevations on this slide. The residential buildings use materials including board and batten, horizontal siding, fiber cement panels, brick, and stucco. The materials match those used on the commercial buildings and in other North End developments.

Because the scope is a mix of commercial and residential uses, staff determined the CDDSG requirements would only be applicable to the commercial portion of the site on Lot 3, which is highlighted on the map. Perimeter landscaping was required along South Boulder Road, and the lot is required to meet building site landscaping and parking lot landscaping requirements.

The South Boulder Road frontage proposes 17 trees where 16 are required. Per the tree survey, 5 existing dead trees along South Boulder Road are proposed for removal and 4 existing trees are proposed to remain. A total of 148 commercial parking spaces are provided, which requires 19 parking lot landscape trees. A total of 20 trees are provided in parking islands and areas adjacent to parking spaces.

The CDDSG also requires that 25% of the area around a building perimeter is landscaped with a 6ft wide planting area. All four commercial buildings have at least 25% of the perimeter bordered by a 6ft or wider planting area. Landscaping

around the residential portions of the site include new tree and shrub plantings between the driveways and between alleyway and sidewalk spaces at the entrances to units. While not subject to CDDSG requirements, elements such as a planting area around the building perimeter are incorporated. The development proposes a courtyard as a pedestrian amenity. The courtyard is located between commercial buildings 2 and 3 in the center of the site and is accessible to the rest of the site. The paving consists of pavers in plank and herringbone patterns. The colors of the pavers match the adjacent building colors. The courtyard also proposes landscaping, trash receptacles, and stone seat walls, which are shown in dark grey.

The PUD Amendment maintains the same general phasing concept as the last amendment, but changes the number of units and commercial area in each phase. The phases allow for residential and commercial buildings to be constructed concurrently, with the provision that residential building permits in each phase are not issued until the foundation inspection for the commercial buildings in each phase is approved. This application is subject to the inclusionary housing ordinance adopted last summer. The applicants are pursuing the fee in lieu option. City Council approval is required in order to pursue this option and it will be further evaluated at their public hearing.

Traffic studies for the overall north end development in 2006 and 2011 assumed for 362 residential units and 6,500 of commercial. Over time north end developed with a maximum of 350 units and 40,000 SF of commercial area, which is less than the amount in the reports. Public Works finds that the traffic assumptions are adequate to accommodate this development.

The applicant requests zoning waivers from the maximum height established in the GDP, which is listed as 40ft for both multifamily and commercial uses. A table of height waivers is listed on the slide. Building 3 proposes a 5-inch increase to the 40ft height limit. The height increase allows for a shed roof form that is compatible with other roof forms on the site. The third story element adds variation and architectural interest to the site while providing additional office space vertically rather than increasing the building footprint.

Three residential buildings also require height waivers. The elevations on this slide show the height of the building relative to adjacent structures. The waivers allow for modern, higher ceiling residential structures that provide a garage and living area at the main level with two stories of living area above, creating efficient and improved designs. The density, height, and design are compatible with the existing North End Block 12 multifamily units adjacent to the property as well. For these reasons, staff supports requested height waivers.

Staff finds the application meets the purpose and applicability statements in Chapter 17.72 of the Louisville Municipal Code. The GDP Amendment encourages coordinated community design by allowing a mixed-use buffer zone

between a major arterial of South Boulder Road and the residential uses in the North End neighborhood. Staff finds the final plat for North End, Block 11 conforms in all respects to the requirements of Title 16 of the Louisville Municipal Code. The plat is complies with the Comprehensive plan by supporting an urban pattern that is more compact and walkable through the creation of alleyways and smaller lots. The plat is compliant with the GDP since it meets minimum lot sizes permitted in the North End GDP.

Staff finds the PUD is compatible with the GDP, with the included height waivers for four of the buildings. The commercial portion of the PUD is compliant with the CDDSG and meets parking and landscaping requirements. The PUD is compatible with Section 17.28 of the Municipal Code as well. The development is compliant with the Comprehensive Plan's framework for urban corridor properties. The site is also compatible with the South Boulder Small Area Plan policies, as discussed in the next slides.

The South Boulder Road Small Area Plan has policies related to building height. The Building Height Plan anticipates development along South Boulder Road to be primarily one and two stories for the south half of the property, and two to three stories for the north half of the property.
Residential buildings on the north half of the property are proposed at three stories. The Small Area Plan states conditions for a third story, including design, public improvements, and limited impacts on view sheds or shadows on surrounding properties. The three-story design allows the site to have more compact, modern designs. The height and massing is compatible in scale with the neighboring North End Block 12 residential buildings as well. The buildings have a minimum 35ft north-south separation between each structure, which mitigates impacts of shadows. Staff therefore supports the 3-story building heights.

Commercial buildings in the first half of the site are one to two stories in height, with a small, approximately 630 square foot three-story portion proposed in the center of building 3. The building height is similar in height to the roof forms of building 2, which is a two-story structure. Staff therefore finds that the impact of the third story element could be analyzed similarly to the conditions required to add a second story in the Small Area Plan. The design is compatible with the existing North End architecture with the materials and forms used, such as the shed roofs and variation on the building façade depth. The building and has a setback of 100ft from South Boulder Road and 58ft from the nearest residential building, which mitigates impacts from shadows and view sheds. The element helps add architectural interest to the building and is compatible architecturally with the rest of the buildings in the development through the shed roof and fiber cement panels. In addition, the commercial buildings vary from 1-3 stories tall, which provides building height variation on the southern area of the site. Because of this, staff finds that the third story element is compatible with the small area plan.

Staff Recommendation:
Staff recommends approval of Resolution No. 16, Series 2022, requesting a General Development Plan Amendment, a Planned Unit Development Amendment, and a Final Plat with easement vacations for a mixed-use development consisting of 38 residential units and 40,562 square feet of commercial area at Block 11 of North End.

Commissioner Questions of Staff:
Hoefner asks what the key differences are from the last version that was approved.
Hassan says this includes attached units versus the previous included detached units but there are different bedroom sizes.
Brauneis asks if she can describe the difference with dropping the townhouse designation and moving it to what it is now.
Hassan says the original plan came with townhomes and these were individually platted units. Now, these are all under one solid platting.
Hoefner says regarding traffic, the public seems to be more concerned with speeding versus the traffic pattern. Has staff looked into that?
Zuccaro says the concern is with the existing roadway and that would be something outside of the scope of this proposal.
Hoefner says he thought there was an extension between Sweet Clover Ln into Hecla Way.
Zuccaro says staff did not ask about this with the applicant but we could ask the applicant to look into it such as a speed bump.
Howe asks if there is any kind of requirements with our city forester for proposals like this.
Hassan says this proposal was reviewed by our parks and rec department.
Howe asks that if the fee in lieu was not approved by city council and required them to do affordable housing, with this come back to the commission with a new PUD?
Zuccaro says no, the affordable housing is administered outside of the PUD process.
Howe asks if staff can talk about the lighting along South Boulder Rd and the pedestrian path that runs north and south.
Hassan says there are pole lights and individual lights for each residential unit has mounted lighting. There are also pole lights for the residential alleyway and parking spaces. There are only entryway lights along South Boulder Rd.
Moline says one public comment we got pertained the intersection of South Boulder and Blue Star. Future improvements to that intersection would fall to the city's responsibility and not be related to this proposal.
Zuccaro says this roadwork was built with this density in mind. We would not recommend that capacity is needed because the land uses and density are not changing. If this were to be built out and these roadworks were not operating appropriately, it would be the city's responsibility to make the improvements.
Howe asks if there are any net zero requirements for these buildings.

Zuccaro says we do not have net zero requirements for commercial.

Applicant Presentation:
Melissa Sherburne, 262 Belford St, Frisco, CO 80443, Markel Homes

Sherburne begins her presentation by introducing the Markel Homes team as well as gives a background on Markel Homes. She gives an overview of what communities Markel serves in the Boulder County area.

Sam Coutts, Ripley Design
Coutts shows in an aerial image where this proposal is located and reviews the GDP Amendment's previous plan versus the current proposal. The previous site plan and current proposal have 38 dwelling units and 40,000+ sq ft of commercial. She shows farmhouse architecture as well as modern architecture for the duplexes, triplexes, and 4-plexes.

As mentioned in staff's presentation, he explains the building height for Building 3, 13, 14, and 17. Each of these buildings will be 40' from the proposed average grade. A neighboring, existing building has a height of 37' 11 ¼" and this proposed building would be at 36' 6", having an 89' 0" distance between the two.

He ends his presentation discussing city policy. The following items are in relation to the comprehensive plan's urban pattern:

- Streets / Parcels
    - Smaller blocks and parcels, alley loaded properties, and multi-purpose development as envisioned by the urban pattern area of the comprehensive plan.
- Building Design and Orientation
    - Sidewalks and plazas to enhance pedestrian experience.
- Civic & Public Infrastructure
    - Mix of residential and office/retail to provide services to the community and encourage walkability.

For South Boulder Rd's small area plan, this proposal meets its design principles by having places to go and places to stay, it is easy to get to and easy to get around, it is knitting the community together, and it is a development that contributes.

Commissioner Questions of Applicant:
Moline asks if they can walk him through the landscape maintenance and the responsibility of the development team with maintenance.
Coutts says this will be under and maintained by an HOA.
Moline asks how the property has currently been managed.
Jason **Markel**, with Markel Homes, says North End is under an HOA. Block 11 will have its own HOA and will be under the guidelines of the master HOA of North End. The sub association will be responsible for maintaining and planting.

Moline asks who is responsible for maintained on block 11.
Markel says we use maintenance companies and we manage it.
Brauneis asks if he can speak to the multi-family versus townhomes.
Markel says the HOA is the reasoning behind that. Once we wanted to get the detached single family out of that zone, we have an HOA that can be uniform across the block.
Brauneis asks what your current understanding of net zero and multi-family.
Markel says we do a decent amount of net zero for single family but when you switch to multi-family, it is different because of party walls. Party walls are harder to obtain net zero.
Hoefner talks about commercial vacancies. What is your optimism of filling 40,000 sq ft of commercial space?
Markel says we are planning to adhere to the phasing requirements. He has hope because of the phasing process, they will be able to get those vacancies filled.
Howe asks if he can comment on affordable housing and why they are choosing the fee in lieu option.
Markel says when we come forward with multi-family, some units are market value and some are affordable. It presents a major challenged to get the building financed. It is better for all the residents to have the entire building affordable.
Brauneis asks what the fee in lieu cost would be.
Markel says he is not sure and would have to check with staff. It is a square footage calculation.
Howe asks if they can comment on the water runoff and where the water retention would be.
Markel says they already have the water detention accounted for this block.
Brauneis asks if he can speak to the LEED buildings that Markel homes has done. Can you tell us the locations of those?
Markel says we get Blue, Sage, Silver Creek, North End, all mostly single-family homes.

Public Comment:
Mark Cathcart, 1763 Sweet Clover
Cathcart does not want this application held up. He has concerns about the traffic. He mentions traffic from Plaza Rd to South Boulder Rd and gives reasons of how traffic could affect the city. He thinks it could be problematic selling those three lots separately.

Tim Merkel, 1849 Sweet Clover Ln
Merkel says 50% of the North End's master HOA budget goes to landscaping. He passes a document to the commissioners showing what their landscaping standards are and requests that the applicant adopt these standards for the tree lawn.

Brian Topping, 1550 White Violet Way

Topping says he would like to see this developed as soon as possible. He comments further on the proposal and what it could do for the area.

Jojo Follmar, 1712 Steel St, Apt 7302
Follmar says she is in favor of more affordable housing and is disappointed with the fee in lieu. She appreciates the sustainability goal and would like to push that further if possible.

Sherry Sommer, 910 S Palisade Ct
Sommer says she does not think this should be rushed but bought out. The issues with dust is no reason to rush an application. She advocates not to have the change for townhomes. She would like to see more green space. She does not like the fee in lieu and does not agree with the height waiver.

Kevin King, 1505 Hecla Way, #302
King says the community did not get the most updated version of the plan that was shown in the presentations. He comments on the speed when driving through Hecla Way. He is concerned that the heights of these buildings could cause problems for the upper units.

Marie Boric, 1505 Hecla Way, #202
Boric comments on the speed on Hecla Way. She wants this application pushed through as fast as possible. She proposes benches for this area.

Moline moves and **Howe** seconds a motion to add the material submitted by Tim Merkel into the public record. Motion passes unanimously by voice vote.

Closing Statement by Applicant:
Coutts addresses tree lawns and thinks that is completely doable and Markel is comfortable adopting Tim Merkel's tree lawn standards. He mentions because of these approved documents, we cannot just pour a foundation and change it from commercial to a residential use. In regards to open space, open space just means more that it is not a building. It does not have to mean more green space. This follows the comprehensive plan for an urban environment.
Moline asks if he can talk more about the urban orientation.
Coutts shows the previous site plan image and share the comparison image for the current proposal.
Moline asks if the front units on Hecla will be front-loaded.
Coutts says no those would be alley loaded.
Michael **Markel**, with Markel Homes, thanks staff for their time and attention as well as his team. He describes his vision for this property and his pride on what kind of development he wants to build in Louisville. They want to building commercial and try to get the right owners in those spaces that is right for Louisville. We are the only builder who build energy start condominiums along the Front Range. We want to make sure that the buildings we build will be

occupied. He discusses market level costs for these units and the costs for building.
Howe asks if he can comment on the concurrency of the development of the three lots.
Markel says they try to figure out how they can divide so it is in bite size chunks. In talking with development lenders, they like to see spaces separated and phased out. There will have to be some kind of separation for the HOA because that is what they want to see.
Brauneis asks which buildings would be energy star certified.
Markel says our residential multi-family will be energy star certified.

Closing Statement by Staff:
Hassan says they checked the development applications webpage and the latest version of the North End PUD was not on their. The only changes that was not on there were changes to the building height elevations.
Zuccaro says the plan set that is online has the exact same site plan and elevations. We worked with the applicant on height elevation waivers, which is what is not shown on the website but it is in the packet.

Discussion by Commissioners:
Howe says this is a great proposal and seems like there is a lot of support from the community. He is in support of this. It would be nice to have a little more green in the parkway.
Moline says he is in support of this. He likes the approach of having phases and the residential being mixed with the commercial. He would be in favor of having a condition in regards to the tree lawn along Hecla and Blue Star. He is in support of the urban orientation that we wanted to see in our comp plan.
Hoefner says he sees the height waiver as not being substantial. He is encouraged to see duplexes and triplexes in this proposal. On traffic, he agrees that the majority of them are outside of this application. He is finding himself in support.
Osterman is leaning towards being in favor given the support of the community. In terms of the changes in the housing types, that seems appropriate for the area. She thinks the request for the height waiver is reasonable. Regarding the inclusionary housing, she is disappointed the developer is going the fee in lieu option but they can do that because of the code.
Brauneis is in favor of this proposal. He is disappointed that there is not on site affordable housing but that is how our code is written. He suggests going to city council with the traffic comments.
Howe says it would be nice to have lighting consistent with South Boulder Rd.
Brauneis says it seems that will already be in place.

Hoefner moves and **Howe** seconds a motion to approve Resolution No. 16, Series 2022 with the condition that before the applicant goes before city council, they would incorporate the tree lawn plan that was submitted into the packet this evening. Motion passes unanimously by a roll call vote.

Hoefner moves and **Moline** seconds a motion to continue Resolution No. 15, Series 2022 to the December 08, 2022 meeting. Motion passes unanimously by a voice vote.

Planning Commission Comments
Brauneis mentions that he really enjoyed the various trees planted throughout the city.
Howe comments on the intersection of South Boulder Rd and Via Appia. It is much friendlier to pedestrians.

Staff Comments
None is heard.

Discussion Items for Next Meeting
A. Coal Creek Ranch Filing 3 PUD Amendment - Fences

Adjourn
The meeting adjourned at 9:13 PM.

City of Louisville
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Planning Commission

Meeting Minutes

December 08, 2022
City Hall, Council Chambers
749 Main Street
6:30 PM

Call to Order – Chairperson **Brauneis** called the meeting to order at 6:30 PM.

Roll Call was taken and the following members were present:

Commission Members Present:	Steve Brauneis, Chair Jeff Moline, Secretary Keaton Howe Allison Osterman Tamar Krantz
Commission Members Absent:	Dietrich Hoefner, Vice Chair
Staff Members Present:	Rob Zuccaro, Dir. of Community Development Elizabeth Kay Marchetti, Senior Planner Ellie Hassan, Planner II

Approval of Agenda
The agenda is approved by all members.

Approval of Minutes
The minutes from the September 22, 2022 and October 13, 2022, meetings are approved by all members. Commissioner Howe abstains from voting on the October meeting minutes.

Public Comments on Items not on the Agenda
None is heard.

Regular Business – Discussion
Adoption of Resolution 13, Series 2022 recommending denial of the **Redtail Ridge Preliminary and Final Plat**: Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat for a 389.10 acre property, located northwest of US 36 and Northwest Parkway and Southeast of S 88th Street and Campus Drive.
Continued from October 13, 2022 and November 10, 2022.

Applicant: Sterling Bay
Case Manager: Rob Zuccaro, Director of Planning & Building Safety

Hoefner recuses himself from discussion since he has a conflict of interest.

Discussion by Commissioners:
Moline says he is going to continue to not support the motion as he has previously commented in past meetings.
Brauneis says with the exception of Old Town, people have been opposed to nearly every commercial and residential subdivision that now comprises the Louisville we know and love. Though many of us would love to be on the design team for any given project, that is not the role of Planning Commission for this process. The current proposal includes 155 acres of public land, and the potential for connectivity with the Ardmore Open Space. That connectivity is important and one we could lose. The Campus Drive extension would be built in phase one, providing safety we desperately need for the Monarch High School. He wishes they were discussing conditions to include a sustainability action plan, funding mechanisms for future traffic improvements, and reduced grading on site. Instead, we are just telling the developer that we simply want more from them and giving them a list of ideas that many are which are economically impossible. We have more vacant retail space then any time in recent history. Our message of denial comes at a time when we are also hoping that developers will help us redevelop areas like the McCaslin corridor. While this project has its issues, he does think it has a lot to offer Louisville and that further delay does not ensure a better outcome for the City. Because of these reasons, he is voting against the motion.
Krantz says she hopes they come back with an application that is more compliant with the GDP.

Krantz moves and **Howe** seconds a motion to adopt Resolution 13, Series 2022 recommending denial of the Redtail Ridge preliminary and final plat. Motion passes 3-2 by a roll call vote.

Name	Vote
Steve Brauneis	No
Jeff Moline	No
Keaton Howe	Yes
Allison Osterman	Yes
Tamar Krantz	Yes
Motion passed/failed:	Pass

New Business – Public Hearing Items

A. **Planned Unit Development Amendment – 1411 S Arthur Ave –** Consideration of a Planned Unit Development Amendment to allow for the construction of an 84,164 sq ft office/flex-industrial building with waivers,

including the removal of underground parking spaces, building size decrease, and redesigned parking, landscaping, and drainage. *Continued from November 10, 2022.*

Applicant: Andy Johnson, DAJ Design
Case Planner: Elizabeth Kay Marchetti, Senior Planner

All notice was met as required and there is no commissioner conflict of interest. Commission Howe mentions that he can remain impartial to this proposal.

Staff Presentation:
Kay Marchetti begins her presentation by showing an aerial photo of the site. The site is approximately 5.76 acres and is zoned PCZD. Arthur Avenue bounds the site on the south while existing commercial buildings bound the site on the southwest and east sides. The land to the north is in unincorporated Boulder County and is used for single-family detached homes. The northwest corner is adjacent to the 96th Street right of way. Across Arthur Avenue to the south are large footprint, 2-story buildings used by commercial and light industrial businesses. The site was originally subdivided via the Colorado Technological Center filing number one plat in 1979. It is now subject to the 2019 Business Center at CTC Replat I. The 2019 GDP Amendment G rezoned the land to PCZD and allowed specific commercial uses so the Commercial Development Design Standards and Guidelines apply.

The two-story building is located in the north and western portions of the lot, which generally slopes upward from south to north. The proposed office/flex-industrial use is allowed and fits well in the CTC context. The layout of the building creates a visual break at the northwest end to open up the site to views west. The second floor, glass enclosed walkway spans the ground level plaza and connects the northern portion of the structure to the southern portion. The roof is flat and generally has a southern orientation so that future solar rooftop panels could easily be accommodated. The proposed use in this location aligns with city policy and the GDP that governs the site.

The proposed layout complies with these regulations by providing two automobile/bicycle and two pedestrian access points to the site from Arthur Ave. The proposed walks connect to the existing sidewalk on Arthur Ave and offer convenient pathways to and from the building while effectively separating auto and pedestrian traffic. The pathways provide easy access to the outdoor gathering and lawn game spaces in the northwest portion of the development. The parking lot design accommodates two-way vehicular traffic and provides convenient access to all portions of the building. The drive aisle along the north provides separate parking and loading for the flex-industrial spaces and helps keep truck traffic separate from pedestrians and cyclist. The 40 bicycle parking spaces, highlighted in yellow, provide indoor storage for employees and outdoor racks for visitors in convenient locations near main entrances. The emergency vehicle turnaround, highlighted in orange, doubles as an access point to the

Bennett's property to the north and is in the same location as in the previously approved PUD. Lastly, the proposal meets the requirements regarding spaces for electric vehicle charging.

The proposed building's footprint at 52,735 sq ft is larger than the previous-approved version of 38,495 sq ft. However, the gross square footage of the building has decreased from 102,393 sq ft to only 84,164 sq ft. The same color palette and materials are proposed as in the previously approved version with the use of painted metal panels, concrete, and glass in grays, browns, and black accents. The structure's bulk is reduced through horizontal and vertical variations in the façade and the roofline. The two-story structure is compatible with the other two-story structures in the area. The architecture effectively orients much of the office space and all of the outdoor gathering spaces toward the west. The expanded outdoor plaza allows views to the west from the parking lot and sidewalk along Arthur Ave. The building is set far to the north and west sides of the lot leaving much of the site as landscaping and parking area. From the perspective of Arthur Ave, it provides a sense of openness and distance between the building and the neighboring structures. Along with the previously approved waivers, all of these architectural design choices result in a compliant proposal.

The proposal complies with the review criteria as the high water use zone, which is the tree lawn on Arthur Avenue, is taking up the least amount of land and the low and very low water using areas make up the largest amount of the site. The plant grouping, quantities, and proposed materials effectively reduces the demand for irrigation.

The plan complies with these standards by proposing dense, formal landscaping around the building while somewhat less formal landscaping is proposed around the lot perimeters. The plan calls for more trees in several areas of the site than are required to make up for the lack of trees along the northern border. The landscaping along the southern perimeter with tall shrubs and trees will effectively screen much of the parking lot. There is no know soil subsidence or flood plain in or on the site and 134 trees and 805 shrubs are planned, where today there is mostly only grass. The landscape will create significant shade and reduce demand for heating and cooling.

She then discusses the two new, requested waivers. The first waiver requests that there not be a 30-foot wide planting buffer along the entire length of the north lot line. This image depicts the entire easement area along the northern boundary, in orange. The building footprint is in blue and the narrow, dashed, red line is the building setbacks. This is an aerial photo from Google maps and depicts the existing conditions with the north lot line of the site and the approximate length and width of the 30-foot deep easement. Also shown are the approximate distances to the two single family detached homes to the north. Please note that the ground continues to slope up towards these two homes so that the closest home is approximately eight feet higher than the subject site.

The applicant proposes that the northern portion of the site, with some of the least steep slopes on the whole site is better suited to create a long-flat area to accommodate flex/industrial users without requiring significant cutting or filling of that area of the site. The 30-foot buffer area is proposed for a drive aisle to meet the flex-industrial loading and parking needs. The bottom image is a color rendering of the landscape plan and shows that, where feasible, some larger shrubs are planned at the north property line that don't interfere with views to the west. The proposed condition is nearly the same as was approved with the previous version of the PUD. Given the long distance and slope between the proposed building and the nearest two residences, and the fact that the location is best suited for a long, flat design that results in less land disturbance, staff recommends approval of the waiver.

In regards to the second proposed waiver, this image shown in the presentation is from page two and shows the proposed layout of the western entry to the site along with the four parking stalls proposed to be approximately 70 feet away from the entry as shown by the orange arrow. For an explanation of the larger context, you can see the Drainage Basin four to the northeast and drainage basin two to the southwest. There are four drainage basins that stretch across the front of the site, parallel to Arthur Avenue. The drainage plan for the site was designed to take advantage of the natural slope and reduce the amount of cutting and filling that one or two large drainage basins would require. By planning multiple, smaller drainage basins that work in concert with the proposed slopes of the parking area and drive aisles, the same goals for storm water management are achieved with less earth moving. There is also approximately 281 feet between this entry and the one to the east, which supports the goals of minimizing conflict between entry points and safe internal circulation for vehicles, pedestrians, and cyclists. Given that only four of the 205 proposed parking spaces are affected and the negative impact to the drainage plan should the entry be moved, staff recommends approval of this waiver as the benefits of the larger site design outweigh any possible safety risks posed by these four parking spaces.

Per Section 17.20.080 of the LMC, applicants may request of city council a parking reduction and the applicant is requesting a change to the parking ratio from four spaces per 1,000 square feet to 2.9 parking spaces per 1,000 square feet. The applicant offers that the new normal of office environments is that many employees are now on site only two or three days per week. Furthermore, flex-industrial users typically have a smaller work force than office users; the demand for parking is expected to be significantly reduced. The code requires 282 spaces and 205 are proposed. Given the rationale offered by the applicant, staff is recommending approval of this request.

Staff analyzed the application and its two waivers as they relate to the PUD criteria in Section 17.28.120 of the Louisville Municipal Code and with the CDDSG and thinks that the application is in compliance.

Staff Recommendation:
Staff recommends approval of Resolution 15, Series 2022 regarding a PUD amendment to allow an office/flex-industrial building at 1411 S Arthur Avenue.

Commissioner Questions of Staff:
Krantz asks if the reduction of parking spaces would be a waiver request on the PUD.
Kay Marchetti says waivers cannot be granted for parking.
Zuccaro mentions that it is a different set of criteria.
Krantz says she does not understand a part B of the staff analysis. She reads what part B says.
Kay Marchetti explains what was meant in the staff analysis.
Osterman says part of the use will be office and the other will be flex/industrial. Do we have a breakdown of the sq ft of each use?
Kay Marchetti says that is on the cover page of the PUD.
Howe says how much of this proposed sq ft change is for the buildings versus the underground parking lot.
Kay Marchetti says a parking area would not be counted towards habitable sq ft.
Brauneis says there is concern with the neighboring properties and having an adequate buffer of trees. Why would we not want to provide that buffer?
Kay Marchetti says if we are talking about views, the neighbors are not impeded at all if they are looking at the north. Because these neighbors are at a higher grade, they will always be looking into that development. There are no trees that could be tall enough.
Howe says if we build a 40-foot building, it will not impede these neighbors view to the west.
Kay Marchetti says that is correct. Their view south will look different though.

Applicant Presentation:
Andy Johnson, DAJ Design, 922 Main St, Unit A, Louisville, CO 80027
Johnson begins his presentation by discussing the design concept of the building. He reviews the original proposal and what has been amended. The following compares the original and the amended.

- Building Area- Original: 102,393 sq ft; Amended: 84,164 sq ft gross, 70,610 sq ft net
- Building Footprint – Original: 38,495 sq ft; Amended: 52,735 sq ft
- Landscape Area – Original: 138,666 sq ft; Amended: 94,653 sq ft
- Open Space – Original: 100,171 sq ft; Amended: 119,226 sq ft
- Handscaped Area – Original: 112,341 sq ft; Amended: 103,619 sq ft
- Parking Proposed – Original: 195; Amended: 205
- Water Easement – Remains the same with a 30’ easement north of property line

He mentions the uses, which the building would have a combination of flex industrial, office, and an amenity space. A breakdown of parking spaces is shown. There are a total of 205 spaces. There will be 15 EV ready, 21 EV install, and 31 EV capable. As for ADA parking, there will be two standard and four van. There will be 12,753 sq ft of public land dedication, which makes up 5% of the property. He then reviews where the emergency access is located on the property and how drainage is distributed throughout the property.

In regards to the 2021 IECC, their goal is to prepare and design for 100% electrification. He reviews how this proposal is sustainable. He concludes his portion of the presentation showing where the landscape will be on the property. There will be more distributed trees and they are offering more than what is required.

Jeff Welber, Alliance Investments, 2585 S Gilpin St, Denver, CO 80210
Welber explains the reasoning behind the use choices.

Commissioner Questions of Applicant:
Howe says there are eight separate industrial flex sites. Can they be retrofitted into larger sites if needed?
Welber says they could.
Howe says they have .5 megawatts for solar capacity. If you did have vacancies, would you ever consider collaborating with the city and selling that energy?
Welber says that could be a possibility.
Krantz says when driving down 96th St, can you see that glass walkway?
Johnson says from the north, you can see that.
Brauneis confirms that there is no commitment in regards to solar.
Johnson says we have to consider who will actually be occupying these spaces since these will be core and shell spaces. The idea is that with the development of the project, we set the goals up with the tenant finishes.
Brauneis asks if they are planning to connect to natural gas.
Johnson agrees.
Howe comments that the road passing the west side, the right turn out would be as safe as they think since it could be more of a blind corner. He asks them to keep this in mind.
Johnson says previously in 2012 or 201, there was a study conducted for that access point looking at all of those considerations. An intersection was ruled out.
Krantz asks if they showed where the EV parking spaces are.
Johnson says our EV spaces will be distributed during the permit process.
Krantz says we received a public comment concerned about the lack of buffer to the north.
Johnson says we have had conversations with this landowner in the past. At the upper right corner of the site to the right access point, there is actually a brand new barn there. It effectively blocks at least forty feet of space and it is quite tall. Without any plantings, he thinks that area is very well taken care of.

Krantz mentions that this homeowner says they only have well water, which is not sufficient enough to create their own screening. With this development, would they now have access to use your water?
Johnson explains why it would be difficult to use this development's water.
Howe asks who maintains the emergency access.
Johnson says the owner of the property will maintain it.

Public Comment:
Moline moves and **Krantz** seconds a motion to add the two emails for public comment into the record. Motion passes by a voice vote.

Joshua Cooperman, 216 Griffith St
Cooperman comments about the waiver of the buffer along the north part of the property. He agrees with the architecture and sustainability goals of this proposal. He does not support the waiver. He is concerned about land conservation.

Jojo Follmar, 1712 Steel St, Apt 1302
Follmar agrees with Cooperman about the waiver and is excited about the sustainability efforts.

Sherry Sommer, 910 S Palisade Ct
Sommer is pleased with the applicant asking for less parking spaces. She is said to see if the underground parking being changed to service parking. She agrees with the previous comments regarding the buffer.

Closing Statement by Applicant:
Brauneis asks whose property the water conservation easement is on.
Johnson says the easement is directly on the Cavalier's property.
Brauneis says the open space is there but nobody can do anything on it except for them.
Johnson says that is correct. He mentions in his closing statement that this design has been in the process for four years. He thanks staff for the work they have done.

Closing Statement by Staff:
None is heard.

Discussion by Commissioners:
Moline says he is excited to see this again. He is impressed by the architecture of this proposal and is happy it will be seen in a more prominent area. He agrees with staff's analysis with the proposal and waivers. He is comfortable approving this as it was proposed. He agrees that the northern area is a challenge.
Howe says originally he was skeptical about the success of this work model. He likes the unique design of this, the EV parking, and finds the parking is appropriate for the type of uses this will have. He agrees with the sustainability

goals. He is split over the land dedication. He would be excited to see this constructed and developed.
Osterman says she is excited about this application and it makes sense to incorporate the flex industrial use. She is impressed with the sustainability efforts. She was questioning the waivers and whether or not they are justified, but after hearing from staff and the applicant, there is a rationale for those waivers.
Krantz says she is more concerned about the 30-foot waiver. She would like the applicant to come back and re-design so that there is no waiver. She also suggests that the commission ask the applicant to say where the EV parking spaces will be.
Brauneis says he wishes it was a pure office space but he appreciates the uses have changed in order to have the development work for them. He discusses the past purpose of the tech center in the 1970s. He is okay with the parking waiver. He is in favor of it at this time.
Howe mentions he does not think a condition is needed regarding designated EV parking spaces because the applicant can add those locations for their City Council presentation.
Brauneis says in regards to EV, that is not required to know beforehand.
Zuccaro says the ordinance does not require the spaces to be known at the time of PUD but at the time of the building permit.
Krantz says she agrees with the EV parking spaces. She would still like to discuss the 30-foot buffer waiver.
Brauneis says in his opinion, the applicant has described the complexity of that space and he thinks the buffer was originally for these two difference uses. The current residential spaces are so far away. The 30-foot buffer exists but they just cannot plant on it.
Krantz says she does not consider a drive aisle to be a buffer.

Moline moves and **Howe** seconds a motion to approve Resolution 15, Series 2022. Motion passes 4-1 by a roll call vote.

Name	Vote
Steve Brauneis	Yes
Jeff Moline	Yes
Keaton Howe	Yes
Allison Osterman	Yes
Tamar Krantz	No
Motion passed/failed:	Pass

New Business – Public Hearing Items

B. **Final Plat and Planned Unit Development – 578 + 632 S Pierce –** Consideration of a Final Plat and Planned Unit Development to allow construction of a 31,220 square foot flex-industrial building and a final subdivision plat to consolidate Lots 2 and 3, Block 3 of the CTC Filing 1 Subdivision and create one lot.

Applicant: Mark Ford, The Ford Studio
Case Planner: Ellie Hassan, Planner II

All notice was met as required and there is no commissioner conflict of interest.

Staff Presentation:
Hassan begins her presentation by saying that the properties are located along the east side of South Pierce Avenue in the CTC industrial park. 578 S Pierce is the northern property and 632 S Pierce Ave is the southern property. The cumulative site area is 2.53 Acres and is zoned industrial. The Original plat was approved in 1979 as the CTC First Filing. A Planned Unit Development and Special Review Use for an 8,700 square-foot pet care facility at 578 S Pierce Avenue was approved in 2020, but was never developed.

The site currently consists of two lots. The applicants are looking to consolidate Lots 2 and 3 into one lot with a new address along S Pierce Avenue. A 15-foot wide maintenance and access easement is proposed, which grants access to the existing 22.5-foot drainage easement on the east side of the property.

The application proposes a 31,220 sf, two-story flex industrial building that faces South Pierce Avenue. It can be divided for up to 7 tenants, with each tenant space containing a second-story mezzanine and the end units on the north and south will contain a second-story west-facing balcony. The building is roughly centered on the lot with parking areas distributed around the building with a loading dock and truck access area in the rear of the site. A trash enclosure is also located on the rear of the site across from the building.

99 parking spaces and 10 bicycle parking spaces are proposed, which meets the minimum ratio for flex buildings. On the front of the building, there is a proposed pedestrian amenity area, with a future sculpture in the center. A stormwater detention pond is proposed on the northeast corner of the site.

The building will be constructed primarily with metal panels and stucco, with larger glazing areas and accents of composite wood on the inner walls of the balcony areas.

Entryways for each tenant are accented by anodized aluminum storefronts with fascia canopies. The north and south tenant spaces have a metal panel cantilever on the second story massing, creating interest in contrast to the stucco on the first story. The side and rear elevations contain glazing primarily on the second story. Stucco is also more predominant on the side and rear elevations, as shown on the lower image. Colors of the building materials are mostly neutral shades of grey with wood accents in the balcony cantilever. This creates a color pallet compatible with the surrounding area.

Staff’s analysis finds that the application is compliant with the final plat criteria, as well as the PUD criteria in Section 17.28.120. The project is also compliant with the IDDSG and the CTC special district framework in the Comprehensive plan.

The applicant requests two landscape waivers from the IDDSG. The first is a waiver from Section 5.2.A, which requires perimeter landscaping to have a ratio of one tree per 30 linear feet of property line. Applicants request a waiver to allow 2 trees on the north perimeter, and 7 trees on the south perimeter where 10 and 9 trees are required respectively.

The north perimeter also contains the detention pond, as well as existing asphalt from the shared access easement, which prohibit installation of the required trees on the north property line. The applicants instead propose 27 trees on the eastern perimeter landscaping, where only 14 trees are required. This brings the total perimeter tree count on the north, south, and east perimeter up to 36 total trees where 33 are required. On the southern property line, there are existing utility lines shown in blue, which limit tree planting locations. The applicants propose 16 mountain mahogany shrubs in the gaps of the southern landscape perimeter area in lieu of the tree plantings. Staff supports the waiver request because the northern landscaping is provided elsewhere on the site and provides significant screening. The southern portion of the site provides large shrubs, which also helps with the screening and buffering that trees would provide.

A second waiver is requested for section 5.4.D of the IDDSG, which requires a 10ft wide planting area adjacent to 50% of the building frontage. A perimeter area of between 3.2 and 8 feet in width is proposed along about 60% of the building frontage. Although narrower than required, the landscape area exceeds the perimeter length requirement and staff supports this waiver.

Applicants are also requesting a waiver from another portion of section 5.4.D, which requires the building perimeter planting area to have 1 tree per 30 linear feet. Per the applicant's waiver request letter, the geotechnical report for the project recommends limited planting against the building due to expansive soils. Trees on the south and west sides of the building would also be subject to reflective heat from the building, causing heat stress. In lieu of planting the 15 trees along the building perimeter, four trees are proposed in landscape areas near the front of the building.

The planting area also contains 107 shrubs in rock mulch, which exceeds the minimum requirement of 1 shrub per 25 square-feet of mulch. The proposed shrubs are appropriate for the hotter south and west sides of the building and creates a strong visual impact through groupings of the same shrub species. The relocated trees and proposed shrubs provide a visual buffer to the building, and staff therefore support this waiver request.

Staff Recommendation:
Staff recommends approval of Resolution No. 17, Series 2022 recommending approval of a Final Plat and PUD Amendment for Lots 2 and 3, Block 3, CTC Filing 1.

Commissioner Questions of Staff:
Krantz asks if staff can show where the EV parking spaces will be.
Hassan says they do comply with the minimum requirements of EV parking. She shows where the approximate locations would be.
Brauneis asks if we have any van accessible requirements for ADA parking.
Hassan says she is not aware of any.

Applicant Presentation:
Vahe Christianian, 918 White Hawk Ranch Dr, Boulder, CO, 80303
Christianian thanks staff for their support. This project has been a year in the making. His hope is to occupy 6,000-7,000 sq ft of the space and then rent out the rest of the space. His goal is to have this be a higher tech, green, and more efficient building. He discusses the landscaping plan and how many trees will be planted.

Commissioner Questions of Applicant:
Krantz says they are not planning trees on the perimeter but he is compensating by planting more additional trees elsewhere. What is the net difference?
Hassan says they are eleven trees different for the perimeter.
Krantz asks if the long line of trees are the same species.
Christianian says he thinks it is more attractive to have them be the same. It gives them more of a modern look.
Howe asks if he can go into more detail about the sustainability of the building Mark **Ford**, The Ford Studio, says they will be implementing solar PV. They are also providing EV stations throughout the parking. They are exceeding the 2021 IECC requirements.
Brauneis asks how much they are exceeding the IECC.
Ford says he does not have those documents showing how much but he thinks they are about 10% more efficient.

Public Comment:
Brauneis moves and **Howe** seconds a motion to add the email for public comment into the record. Motion passes by a voice vote.

Joshua Cooperman, 216 Griffith St
Cooperman says he would like us to conserve as much land as possible in the CTC area. He is concerned about the waiver and expresses his concerns.

Closing Statement by Applicant:
None is heard.

Closing Statement by Staff:
None is heard.

Discussion by Commissioners:

Krantz says she finds herself in favor of this application. Given our recent discussion on our commitment to sustainability, she does not want to see any reduction in the green space. Through some conditions, we could have the applicant plant the ten trees.
Moline says he is supportive of this. We are not discussing that there is a deficit of overall open space.
Zuccaro clarifies this topic. The applicant does comply with the open space coverage requirements. They do not meet the tree perimeter requirement. They are exceeding their requirement of number of trees and landscape coverage.
Moline mentions that it is important that a proposal like this is beneficial to pedestrians such as creating more sidewalks. He thinks this plan does that. He is supportive of this proposal.
Osterman says she does not have any concerns with the application and is inclined to support it.
Howe says he likes the design and building materials. He appreciates the applicant's effort to how many trees will be planted. Overall, this project will add value to this vacant land.
Brauneis talks about the ten-foot line around the building was designed for a suburban look and feel. At this point, he is comfortable waiving that 10-foot requirement. He is in favor of the application.
Moline discusses the benefit of having landscaping up against the building in order to help break it up between other buildings. It is not necessarily for the habitat.
Howe thinks it is great that the developer is going above and beyond in regards to energy.
Krantz asks about the tree count again in regards to what is on the PUD.
Hassan explains the tree count for this proposal.
Moline says he does not think the tree count needs to be added as a condition. He is comfortable with the applicant's proposed landscaping plan.
Osterman agrees with Commissioner Moline.
Krantz agrees that she cannot see where they could add more trees in their current landscaping plan. She suggests types of plants that could be added that would not require more watering.
Zuccaro says it is a six-tree deficit. He mentions that the applicant is exceeding the minimum landscape coverage.
Brauneis asks if staff can speak to quantity versus quality.
Zuccaro says typically the purpose of the trees are for shade as well as visual buffering.
Krantz says she understands the purpose of the landscaping plan and is in support of them.

Howe moves and **Moline** seconds a motion to add the building material board into the record. Motion passes unanimously by a voice vote.

Howe moves and **Moline** seconds a motion to approve Resolution 17, Series 2022. Motion passes unanimously by a roll call vote.

Planning Commission Comments
Krantz says she wonders how we receive the email comments and wonders if these emails can be automatically forwarded to the commissioners.
Brauneis says he does not want to receive every email be forwarded to his without them coming in bulk. In addition, if you do that, we would have to have a cutoff of when we can receive emails.
Krantz says when she gets emails from City Council, they send back an immediate response saying that the email will be included in the public record.
Brauneis asks if they are reading emails in real time.
Zuccaro says it is a mix. City Council members have Louisville emails so it is getting those emails. Staff does not forward those in real time. The commissioners would have to use their personal emails. Staff can also forward emails to City Council if it goes directly to staff.
Moline asks if there is a concern that an email would be sent to one commissioner but not to all.
Zuccaro says that could become an issue. City Council knows that if an email goes directly to one person, they forward that email to city staff. He mentions that he can see the concern for the commissioners to have enough time to look at the emails when some applications receive a lot of public comment. he gives options of ways to read all the emails such as coming to the meeting early or taking a recess in order to read them then.
Howe says staff could create a pool of emails and then commissioners could patch into that as well.
Brauneis says he is concerned that would be more staff time. He is more open to taking a recess during the meeting in order to read the emails that were received last minute.

Staff Comments
None is heard.

Discussion Items for Next Meeting
A. Coal Creek Ranch Filing 3 PUD Amendment – Fences

Adjourn
The meeting adjourned at 9:34 PM.

RESOLUTION NO. 13
SERIES 2022

A RESOLUTION RECOMMENDING DENIAL OF THE REDTAIL RIDGE FILING NO. 1 PRELIMINARY AND FINAL SUBDIVISION PLAT

WHEREAS, the City of Louisville is a home rule municipal corporation organized under and pursuant to Article XX of the Colorado Constitution and the Home Rule Charter; and

WHEREAS, by virtue of such authority, and as further authorized by state statutes, including but not limited to C.R.S. § 31-23-201, *et seq.*, and C.R.S. § 29-20-101, *et seq.*, the City has broad authority to make and adopt a comprehensive plan for the physical development of the municipality and regulate the subdivision of land; and

WHEREAS, the City's duly-adopted subdivision regulations are set forth in Title 16 of the Louisville Municipal Code; and

WHEREAS, on April 6, 2010, by Ordinance 1569, Series 2010 (Reception No. 03284515), the City rezoned the property known as the ConocoPhillips Campus property to Planned Community Zone District – Commercial (PCZD-C), approved the ConocoPhillips Campus General Development Plan (Reception No. 3088779) (the "GDP"), and on April 20, 2010 executed the Planned Community Zone District Zoning Agreement for such GDP (Reception No. 03284516; and

WHEREAS, the applicant, Sterling Bay, has submitted to the City an application for approval of the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat to develop the ConocoPhillips Campus property as a commercial development consistent with the ConocoPhillips Campus General Development Plan (the "Application"); and

WHEREAS, the Planning Commission has considered the Application at a duly noticed public hearing held on August 11, 2022, September 8, 2022, and September 22, 2022 where evidence and testimony where entered into the record; and

WHEREAS, after consideration of the evidence and testimony presented at the public hearing and based on the following findings, the Planning Commission directed City staff to draft a resolution recommending the City Council deny the Application.

NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING COMMISSION OF THE CITY OF LOUISVILLE, COLORADO:

Section 1. The foregoing recitals are incorporated into this Resolution by this reference.

Section 2. Based on the testimony of the witnesses and the documents and other evidence made a part of the record of the hearing before the Planning

Commission, the Planning Commission finds that the proposed subdivision does not promote the following purposes set forth in Section 16.04.020 of the Louisville Municipal Code ("LMC"), or comply with the following standards set forth in LMC Chapter 16.16 and this title:

A. The Planning Commission finds that the application from Sterling Bay (the "Applicant") for approval of the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat (the "Application") does not comply with LMC Sec. 16.16.010.D. and E., which states that natural features and vegetation must be preserved to the extent possible and a need for additional open space may be based on vegetation and the type and density of the propose development. The Applicant has not demonstrated that the proposed subdivision adequately preserves natural features, wildlife habitat and vegetation of the property. Previously undeveloped areas on the northern portion of the property include natural vegetation that could be further preserved as public or private open space with clustering of the development lots to the south.

B. The Planning Commission finds that the Application does not comply with LMC Sec. 16.04.020.K, which states the purpose of a subdivision is to avoid traffic congestion, based on the following:

    1. According to the traffic study submitted with the Application, the US 36 and Northwest Parkway interchange reaches a Level of Service F and would need modified by the year 2027-2028 to provide additional vehicular capacity to accommodate the proposed subdivision. The Application does not include proposals for mitigation, road capacity work, or contribution to future road capacity work for the interchange, nor are future improvements planned at this time.

    2. The Application does not include a commitment from Northwest Parkway Authority for the acquisition of right of way needed to construct road capacity improvements included in the traffic study as needed to mitigate traffic congestion.

C. The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.040 concerning block length, as some blocks proposed in the Application exceed the maximum length of 1,320 feet. Although the Applicant requested a modification pursuant to LMC Chapter 16.24 to allow longer block lengths, the Commission does not find that there are unique physical or topographical circumstances or conditions to justify the modification. Maintaining prescribed block lengths is necessary to ensure an adequate and convenient transportation system to serve the proposed subdivision.

D. The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.020.B., which states that drainage areas should be left in a natural state to the greatest extent possible. The Applicant has not demonstrated that grading of drainage areas within public opens spaces has been limited to the greatest extent possible.

E. The Planning Commission finds that the Application does not comply with the 2010 ConocPhillips Campus General Development Plan (GDP). The type and character of the development proposed with the Application is not consistent with the GDP and the street network does not comply with the street network shown on the GDP because it is proposed as publically dedicated roads rather than private roads.

Section 3. Based on the foregoing findings and the evidence and testimony presented at the hearing, the Planning Commission hereby concludes that the Application should be denied in accordance with LMC Sec. 16.12.075.

PASSED AND ADOPTED this 10th day of November, 2022

By: _____
Steve Brauneis, Chair
Planning Commission

Attest: _____
, Secretary
Planning Commission

From: Christopher Leh
To: Sherry Sommer
Cc: Jeff Durbin; Rob Zuccaro; Meredyth Muth
Subject: Re: Redtail Ridge
Date: Friday, December 1, 2023 2:26:40 PM
Attachments: image.png

Sherry—I am replying to the email I received from you at 4:22 am yesterday morning (November 30) regarding my original email to you on November 29, which is the day after our Tuesday Council meeting. Your responsive comments are interlineated in purple and my comments in reply are interlineated after yours in bold black.

During the November 28 Council meeting, you spoke about the issue of delaying the December 5 hearing on the Redtail Ridge application. I want to make it clear that I had not and have not yet reviewed the email I received from you at 2:47 pm on Tuesday or the materials provided by City Staff concerning the December 5 meeting. I do not have any view as to whether the RTR application is complete or not. Likewise, I do not have any opinion as to whether the December 5 meeting should be delayed.

As sometimes happens in the exchange of emails, either your or my email system stripped away the screenshots of texts included in my November 29 email to you, so I reinserted them below.

Chris Leh
Mayor
City of Louisville (CO)
(c) 303.668.3916
Leh@louisvilleco.gov

On Nov 30, 2023, at 4:22 AM, sherry sommer <hellosherry2@yahoo.com> wrote:

> Hi Chris,
>
> Thank you for sending this log. See corrections below
>
> I do not see the staff memo or when it will be available to the public. That information will conclude our communication on this matter.
>
> Sherry Sommer
>
> Sherry,
>
> I am emailing you concerning recent communications between us relating to Redtail Ridge. As a Councilmember, and for the sake of all stakeholders, I wanted to ensure legally compliant and transparent public processes as to that property. As Mayor, I continue to want that. I am sure that you appreciate those obligations. To that end, I want to capture and organize our communications while they are fresh in mind and to avoid misunderstandings in the future.
>
> **(1) Your Noontime Text Yesterday**
>
> Just after noon yesterday, I received from you a text requesting to talk. It did not specify what you wanted to discuss. I would have responded but was tied up in meetings and preparations for the swearing it.
>
> **I called at 12:04 without leaving a message.**

CML: After checking my phone, I confirm that there was a missed call from you at 12:04 pm on Tuesday, December 28. You did not leave a message. You appear not to have called back but sent an email that I received at 2:47pm (see below).

> (2) Your mid-afternoon Email Re "Incomplete Redtail Ridge preliminary application/Council agenda December 5."
>
> At 2:47 pm, I received an email from you that you sent Council and City Staff. The subject line was "Incomplete Redtail Ridge preliminary application/Council agenda December 5." After reading the subject line only, concluded that it likely would contain information concerning land use application that Council would be considering in a quasi-judicial proceeding on December 5.
>
> In the exercise of caution, I did not read further to avoid consideration outside that hearing. Although I am forwarding the text of the email below, I still have not read it and will not unless it appears in the meeting packet that will be made available to all of us later this week.
>
> **(3) Text Exchange Between Us Yesterday**
>
> After receiving your email at 2:47pm, but before the City Council meeting at 6 pm, you and I exchanged several additional text messages. These text message did refer to the 2:47 pm email I received. I suggested that we deal with any issues she was raising at the Council meeting, and you agreed:

(4) our brief exchange of comments during the celebratory break at last night's Council meeting

As you know, shortly after other Councilmember and I were sworn in at last night's Council meeting, there was a celebratory break. You sought me out and began advocating for a delay in Council's consideration of the Redtail Ridge land use application. I interrupted you, expressing briefly that your comments might relate to a quasi-decision and requested that you make the comments in the meeting. You indicated you were simply trying to avoid needless conflict during the Council meeting. I reiterated my request, and our brief conversation ended.

This exchange did not take place.

CML: Sherry, your statement that "This exchange did not take place" is incorrect.

My recollection of the interaction with you at that time is so clear and my description so detailed, first and foremost, because you accosted me about delaying the December 5 hearing even as I was greeting and thanking those who had come to the Council meeting at my personal request to witness my swearing-in, including my 88 year-old father, who'd traveled 2 hours from Sterling to attend. Second, I was surprised by your raising the issue of delaying the December 5 only hours after I texted you that we would deal with whatever was in your 2:47 pm email "at the meeting," not during a break in the meeting in a private conversation.

Your text "Let's deal with this at the meeting" indicated to me that we would "deal with this at the meeting"

CML: And, indeed, that is exactly what happened. After I halted the conversation during the celebratory break, we resumed the Council meeting, in which you spoke about delaying the December 5 hearing for much of the six minutes you allotted during the time reserved for public comments on items not on the agenda.

At one point during the reception I moved a step in your in your direction. You didn't greet me and began talking to council member Dickinson. I'm a polite person and did not insist when you didn't acknowledge me.

CML: I do recall talking to Councilmember Dickinson during the break. I do not recall your movements but don't dispute your recollection. If you are implying that you did not approach me because of my conversation with Councilmember Dickinson, that is incorrect. The break was lengthy, and the interaction I described above took place as I described it above.

I understand quasi judical rules. It is the obligation of the office holder to maintain proper boundaries.

CML: Based on your experience with City processes, your long-time public involvement with the Redtail Ridge development, and your recent candidacy for mayor, I would expect you to understand rules that bind me as an elected official concerning quasi-judicial matters.

As we can see from our interactions I did not suggest we have a discussion.

CML: Sherry, this statement also is incorrect. In my text to you at 3:57 pm (see above), I asked, "Let's deal with [the issues raised in your 2:47 pm email], yes?" In response, you expressly stated that "We can discuss it then." course you were suggesting that we have a discussion. Contrary to your statement above, your statement that you did not suggest we have a discussion is incorrect.

I already explained in detail above what our interaction during the celebratory break. We did not have a discussion. But that was certainly not for your repeated attempts to do so:

- **by phone at 12:04 pm on November 28,**
- **by text regarding your 2:47 pm email on November 28;**
- **In person outside Council Chambers during the celebratory break when I interrupted your advocacy for delaying the December 5 hearing; and**
- **by text yesterday, November 30.**

During the portion of Council meeting devoted to public comments not on the agenda, you pooled your time with another resident and explained concerns about the proceeding with the December 5 agenda item.

(5) our exchange of text messages today

You again texted me this morning, and you and I exchanged several texts. You reiterated points you had made at the hearing and again advocated for delaying consideration of Redtail Ridge's application. You expressed urgency. I indicated that I needed to talk with staff before getting back to you.

I "expressed urgency".

CML: I'm not going to quibble about your characterization of the communication, nor do I understand the relevance. You started texting me yesterday (11.29) at 12:56 pm yesterday and requested a response by the end of the day.

It is more accurate to say I followed

up.

Since we did not interact at the meeting, I followed up with a text.

CML: If what you mean is that we had no interaction *at all inside or outside Council Chambers,* the premise of your comment is incorrect. First, we had the interaction during the celebratory break that I already described in detail above. Second, you requested in writing to speak multiple times during the Council meeting, and, as a result, I called you to the podium as to each request. If what you mean is that we had no interaction *during the meeting,* your statement is incorrect, but only for the second reason.

I've been quite professional. Customarily a waiting period of 24 hours is considered a courtesy. I was hoping to have the conversation you said we'd have in a timely way. I have obligations today and respectfully let you know when I would be available.

CML: As you know, I must address the RTR application based upon the applicable law, the application itself, and evidence presented in connection with the quasi-judicial proceeding, including materials provided by City Staff
(https://www.louisvilleco.gov/home/showdocument?id=40468&t=638370219277832381 **). Of course, you are welcome to provide further information for the public record about the RTR application, applicable law, and evidence in support of or in opposition to the application, including that which is provided with the Staff Report, the Staff Report Itself, and so on. Please submit any such information to the City Clerk.**

If you felt interacting with me was a potential violation of quasi judicial rules, you could have said so at any time and I would not have insisted.

CML: I never stated or implied in my original email or in this reply that any of my interactions with you violated quasi-judicial rules. To the contrary, I have always sought to avoid any such violation. I have described above our interaction during the celebratory break at City Hall after my swearing-in as Mayor. To reiterate my original email, I did in fact interrupt your advocating for delaying the December 5 hearing during the celebratory break, when you:

> **sought me out and began advocating for a delay in Council's consideration of the Redtail Ridge land use application. I interrupted you, expressing briefly that your comments might relate to a quasi-decision and requested that you make the comments in the meeting. You indicated you were simply trying to avoid needless conflict during the Council meeting. I reiterated my request, and our brief conversation ended.**

Therefore, according to your comment in your response to my original email, I did exactly what you said I should have done.

As promised, I discussed the matter with Jeff Durbin. I am cc'ing him on this email. My understanding is that the staff memo will address questions you and others have raised.

Whether you agree or disagree with the staff memo, however, you are welcome:

1. To submit any other information you would like to regarding the application.

2. To attend the quasi-judicial hearing on this application on Tuesday, December 5, and challenge staff's conclusions or address any other concerns you have with the application in public comment.

Engaging in the democratic process is a right I cherish and will continue to exercise.
CML: I, too, cherish engagement in the democratic process and encourage you to continue to do so.

Thanks.

Best Regards,

Chris Leh
Mayor
City of Louisville (CO)
(c) 303.668.3916
Leh@louisvilleco.gov

On Nov 28, 2023, at 2:47 PM, sherry sommer <hellosherry2@yahoo.com> wrote:

Mayor Leh and members of council,

Please remove Redtail Ridge from your December 5, 2023 agenda. The application is not complete. Only complete applications can be reviewed by council.

—Northwest Parkway has not approved this application. According to Joel Meggers, managing administrator for the parkway, the parkway will not support the preliminary plat until negotiations are finalized. This should happen within the next few weeks.

—Brue Baukol has not updated their application submitted in April 2021. That application incomplete. When submitted and it remains incomplete.

—The City posted notice for this agenda item November 19, 2022. However, information on the current developments on city website has not been updated since April 2021. While the city may have followed the letter of the law in providing public notice, this certainly has not been a transparent process.

This is a very serious matter. Voters rejected the sprawling development proposed by Brue Baukol in our special election. This item must not appear on the council agenda before it is complete.

Sherry Sommer

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From: johnkelin
To: City Council
Subject: Redtail Ridge proposal
Date: Monday, December 4, 2023 8:24:59 AM

Dear Council,

I am writing you as a longtime resident of Louisville, urging you to reject the latest development proposal for Redtail Ridge.

This matter has already been decided by voters, who turned the proposal back in a special election more than two years ago, and by the city's planning commission last year.

The developer's latest proposal is virtually unchanged. Please reject it.

John Kelin

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From: d ervin
To: City Council
Subject: Redtail Ridge Again?
Date: Monday, December 4, 2023 7:53:36 AM

I voted against the Brue Baukol(BB) plan for Redtail Ridge back in April 2021. I have not changed my mind about that, or about this developer.

Please discontinue any further decisions on Redtail Ridge with Brue Baukol.

Debra Ervin
1129Front St
Louisville

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From:	Janette Kotichas
To:	City Council
Cc:	congressmanjoeneguse@mail.house.gov; agrajeda@prairiemountainmedia.com
Subject:	Redtail Ridge Last-Minute Council Vote
Date:	Monday, December 4, 2023 7:28:51 AM

WHAT ARE YOU DOING?!

The agenda for your meeting tomorrow night includes a vote on a preliminary subdivision plat for Redtail Ridge. This plan was rejected last year by the planning commission. It does not meet our city codes.

The decision to push this vote through at the last minute, with only the bare minimum of required notice — in the midst of holiday madness — occurs for me like an effort to sneak in a vote when we aren't watching. One of your council members is expected to recuse himself, leaving this decision to the three people who asked for a citywide vote on the project — Leh, Fahey, and Dickenson —that **3,816 voters in Louisville rejected**. I question your intentions. What do you gain by passing this behind our backs?

I urge you to postpone any decisions until there is a new, complete application that we residents and the planning commission can review. You are starting off your new terms under suspicious circumstances, and we voters will remember this. We **are** watching.

Janette Kotichas
278 Juniper Street
Louisville, CO 80027

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From: Jane Armstrong
To: City Council
Subject: No on Red Tail Ridge
Date: Monday, December 4, 2023 7:27:05 AM

1. Louisville has already voted it down.
2. I live in CCR and have gone through two years of hell with insurance and rebuilding.
3. 21,000 cars a day would destroy the ambiance of our neighborhood.
4. That much grading would destroy habitats. Our land is being raped!
5. We got here first! If I knew Red Tail would come to fruition I would have taken the insurance money and moved. Grandfather us in!

Why is the City Council bringing this up again? Where's the impact statement?

NO ON REDTAIL RIDGE!

Jane Armstong
479 Muirfield Ct.
Louisville

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From: Maryan
To: City Council
Subject: Redtail Ridge R3dux
Date: Sunday, December 3, 2023 9:16:19 PM

Council Members,

It appears that you will reconsider the Redtail Ridge proposal from Bruce Baukol that has already been rejected by the Planning Commission and voters, and that BB has not made any amendments to ease concerns expressed by the Planning Commission and the voters.

I am opposed to the current proposal because it does not make the best use of the space. I've lived in Louisville for 21 years and have served on a City Board. I'm in favor of Avista Hospital relocating there but I would like to see garages rather than parking lots and let's allocate a nice area for trails and open space, not perimeter. Let's take traffic, noise and pollution issues seriously. If their development negatively impacts the Hwy 36/95th St interchange, make them pay for it. A second entrance/egress for Monarch is critical. Thank goodness the kids were not in school during the Marshall Fire.

Bruce Baukol changed their initial proposal significantly from what they presented in informational meetings to the community before they bought the property. They are not listening to the community, only their own pocketbooks. Yes, they have the right to develop the property but we have the right to make sure it is done appropriately and in the best interests of the community.

Recommendation: Get a supermarket (Trader Joe's, King Sooper's?) to build on the corner next to the fire station and capture the tax revenue from those Broomfield residents across the street.

Being a resident of Coal Creek Ranch, I am concerned about the impact on traffic of facilities much larger than StorageTek and hope that thoughtful planning will ease the concerns of our neighborhood.

Thank you,
Maryan Jaross
846 St. Andrews Lane
Louisville

Sent from my iPad

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From:	David Blankinship
To:	City Council
Subject:	Redtail Ridge open space grading
Date:	Sunday, December 3, 2023 8:55:27 PM

Dear City Council,

I am writing to highlight an aspect of the Redtail Ridge preliminary subdivision plat that might not be obvious given the length of the meeting packet for the Tuesday, December 5 meeting. There are plans to perform grading of the open space on the northern part of the property before formally designating it as a part of Redtail Ridge Open Space. Although I am writing this email as a private citizen, I am aware that the Louisville open space advisory board in May and June 2022 did not question the developer on this particular aspect of the proposal. As I see it, it was much more of a function of the many moving parts and sheer complexity of the proposal rather than tacit approval of the idea.

If anything was made clear in the approval of referendum 2C in November, it is that Louisville residents highly value open space, enough that they were willing to approve a 1/8% sales tax increase dedicated to open space funding. If the Redtail Ridge preliminary subdivision plat were to move forward with a recommendation to grade open space, it would certainly impact the environmental value of that open space and not honor the wishes of the majority of city residents.

To provide some background on what should be considered in terms of appropriate open space management for development proposals, one should first refer to the city charter's Section 15-5: Open Space - Effect of Article: "Nothing in this article shall be construed to: (a) Affect or limit the safe and efficient operation, construction and maintenance of the City's water, sewer, drainage, and flood control systems and infrastructure; except that the City shall make reasonable efforts to mitigate the impact of such operation, construction, and maintenance on open space". However, it is also important to consider the city's municipal code Sec 4.03.010 - Classification and management, which states "Open space shall be managed in a manner consistent with good stewardship and sound ecological principles that benefits citizens of Louisville by promoting native plants, wildlife, wildlife and plant habitat, cultural resources, agriculture and scenic vistas and appropriate passive recreation." The tension between the two is captured in the planning commission's fourth reason for denial of the application from August 2022: "The Planning Commission finds that the Application does not comply with LMC Sec. 16.16.020.B., which states that drainage areas should be left in a natural state to the greatest extent possible. The Applicant has not demonstrated that grading of drainage areas within public open spaces has been limited to the greatest extent possible."

So, while It may not be possible to expand the open space acreage in the Redtail Ridge public land dedication (and it is the case that the minimum requirements are met), I do recommend that all open space identified in the preliminary subdivision plat be retained in its current form with no significant modification such as grading.

Sincerely,
David Blankinship
Louisville resident

From: Christina Dozauer-Ray
To: City Council
Subject: Redtail Ridge
Date: Sunday, December 3, 2023 6:00:06 PM

Dear Council,

This message is to ask that you postpone any decisions on Redtail Ridge until there is a complete application viewable by Louisville citizens, with all plans meeting our city codes.

We the voters have already turned down this plan, and so I don't understand why it is being brought up again unchanged.

I voted for open space, transparency, and representation of residents' opinions. None of this is being championed by reopening a destructive development plan that has already been turned down.

Thank you for your service to Louisville and for considering this message.

Sincerely,

Tina Dozauer-Ray
100 West Spruce Street

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From: Carla Bigum
To: City Council
Subject: Redtail Ridge Agenda Item Dec 5 COMMENTS
Date: Sunday, December 3, 2023 5:15:12 PM

273 S Lincoln Ave.
Louisville, CO 80027
December 4, 2023

Dear City Council Members,

I have only recently learned city council will be reviewing the Redtail Ridge proposal presented by Brue Baukol Capital Partners. As I understand, you will be reviewing the **exact same proposal** the Planning Commission voted to deny in 2022.

I understand this is the first regular City Council meeting with our new mayor plus three recently elected members who have not deliberated on the matter previously. Additionally, I have learned there is one vacancy, and if any member chooses to recuse himself/herself from the vote, that will leave 5 voting members in which 3 members, yes 3 members, could have the power to approve a proposal which voters already rejected (3, 816).

I can hardly believe I am writing a letter again to voice my disapproval for the Redtail Ridge proposal. But I am, as I believe it is so very important.

I have two critical reasons why I believe council should disapprove the proposal for our city and citizens. First, the proposal was voted down in a recent election. Second, the Planning Commission determined the proposal failed to meet the criteria laid out in the city's municipal code. The developer could build **IF** they are willing to build a compact development and set aside all land north of Disc Drive for open space. These two reasons alone would honor the voice of the people and local government decisions and codes.

There are also two other considerations of the proposal worthy of voting down the proposal. I live very close to the development site and drive past it regularly. First, traffic is of high concern. The new footprint would increase traffic exponentially. Second, the proposal would destroy acres of wildlife and critical habitat which in turn would be replaced with more buildings and parking lots. How does this fit with our city's climate change responsibilities?

Last, but maybe my most important concern, is the last minute notice to the residents of Louisville to conduct such a meeting. I am very suspect of the reasons why such a decision came to be with a decision of this magnitude. I am disappointed and insulted with this decision,

holding a vote with the minimum amount of time required to notify its residents. You can do better by voting NO on the Redtail Ridge proposal.

City of Louisville Ward III resident,
Carla Bigum

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From: Patricia Hamilton
To: City Council
Subject: Red Tail Ridge
Date: Sunday, December 3, 2023 5:12:29 PM

Dear City Council Members,
Please require the developer to set aside all land north of Disc Drive as open space and build a compact development. Their plan doesn't meet our codes and you must require this.

Please delay a decision until the ward I vacancy is filled. ***With this vacancy and one member expected to recuse themself, there will be only 5 voting members--an unusual situation in which 3 people have the power to approve a proposal 3,816 voters rejected.***

We rejected this plan and you must represent and honor our vote.

Look to our neighboring city of Boulder for guidance - this would not happen there.

Please do the right thing - because once this is a done deal there is no turning back.

Respectfully,
Tricia

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From:	Laura Page
To:	City Council
Subject:	Redtail Ridge
Date:	Sunday, December 3, 2023 4:07:58 PM

Dear Mayor and Members of Council,

The Planning Commission previously rejected the Redtail Ridge proposal due to deficiencies in the application. If these deficiencies have not been remedied, I ask that you, too, reject their proposed preliminary subdivision plat.

I am especially concerned by the grading plan that would alter the landscape in areas that should not be disturbed, per the City Code - "Natural features, historical and archaeological sites, and vegetation of the area, including trees, **must** be preserved to the extent possible." (LMC 16.16.010.D) The destruction of the flora and fauna, essentially undisturbed for almost 40 years, will already be massive *within* the developal area. Do not allow it to extend into sections that should be preserved, as demanded by our Code.

As proposed, this development will unnecessarily exterminate over 110 acres of prairie dog colonies. The colonies support numerous raptors and other animals. Given the web of life, their numbers will no doubt plummet, too, after the decimation of the colonies. Slaughtering the prairie dogs is not 'preserving the natural features of the property.'

I also question whether the wildlife surveys are up to date since three years have passed since the last survey was completed. The surveys were inadequate to begin with in that they weren't taken at peak occupancy times. In particular, since the 2020 survey for federally-protected burrowing owls was conducted by the applicant's consultant, the recommended survey zone for detecting burrowing owls has been expanded almost 10-fold from 150 feet to 1,320 feet. Given the number of prairie dog holes on this property which are attractive to burrowing owls, it is critical that a new survey be conducted using the much larger survey area.

Despite the public's outcry for more open space (public and/or private) as was allowed for in the Conoco-Phillips proposal, the applicant has made no accomodations for more preservation on this property. Do not cut the applicant any slack if they are not offering any compromises. Hold them to our code and local and federal regulations.

Respectfully,

Laura Page
920 Rex Street

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From: A R
To: City Council
Subject: Redtail Ridge
Date: Sunday, December 3, 2023 4:00:55 PM

Members of City Council,

Once again, I am writing to voice my opposition to the latest Redtail Ridge proposal. As best I can tell, this is the identical proposal which was rejected by the Planning Commission over a year ago. Once again, the applicant has chosen to ignore the Commission and is attempting to do an end-around by taking the proposal directly to City Council. The applicant has a (long) history of bringing essentially identical proposals up for approval, and again and again, the answer has been NO. When City Council wanted to hear citizen feedback, a special election was held, and again the answer was NO.

At some point, Council must send a message to the applicant. There has been an enormous waste of time and money expended by the City, the Council, the Commission, and the Citizens dealing with this issue repeatedly, with no particular heed paid by the applicant to the many suggestions and ideas presented by everyone which could make the proposal more likely to be accepted. Frankly, this is disrespectful to the Council, Commission, and the Citizens who have voted on this matter over the last few years.

Please either table this application until more new details are provided, or send it back to square one. How much longer are we to see the same proposal submitted? Enough is enough.

Respectfully,
Andrew Rogowski
260 S Lincoln Ave
Louisville

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From:	Norma Anderson
To:	City Council; Christopher Leh; Caleb Dickinson; Deb Fahey; Judi Kern; Barbara Hamlington; Dietrich Hoefner
Cc:	Norma Jean Auer Anderson
Subject:	Tuesday, December 5th"s City Council meeting and Brue Baukol"s proposal for StorageTek/Redtail Ridge
Date:	Sunday, December 3, 2023 2:29:40 PM

Dear Mayor Leh, Ward I Council Member Dickinson, Ward II Council Member Fahey, Ward II Council Member Kern, Ward III Council Member Hamlington and Ward III Council Member Hoefner,

There will be a meeting of the City Council on Tuesday, December 5, to review again the redevelopment plans by Brue Baukol Capital Partners for the old StorageTek property. A list below summarizes the progress on Brue Baukol's redevelopment plans for the area now referred to as Redtail Ridge.

Over more than a year and a half, the proposals by Brue Baukol have been turned back by the citizens of Louisville, either by letters to the City Council with objections to the plans Brue Baukol has continued to propose, or by an actual City-wide referendum on the proposal by Brue Baukol, in which the proposal was soundly rejected.

Brue Baukol has continued to come either before the City Council or the City Planning Commission, with proposals that fail to address the concerns of the citizens of Louisville, and yet Brue Baukol intends to submit essentially the same proposal to the City Council at this meeting on December 5.

My husband and I have lived in Louisville for five years, having chosen to move here because of the way Louisville has worked to preserve open space for the entire community to enjoy. The quality of life we've found here is reflected in the actions the community continues to take — including reactions to Brue Baukol and its on-going, relatively unchanged proposals for the StorageTek/Redtail Ridge site.

I understand Mayor Leh ran, in part, on the expressed intention to bring development to Louisville, but what Brue Baukol has continued to propose will be harmful to the nature and quality of life we currently have in our community. In addition, the plans that continue to be offered by Brue Baukol fail to meet the Louisville City Municipal Code, and have been denied by the City Planning Commission.

I strongly urge each of you to keep in mind the results of the April, 2022 referendum rejecting the Brue Baukol redevelopment plans for Redtail Ridge, the letters sent to the Mayor and City Council objecting to the Brue Baukol redevelopment plans, and the recommendation for denial by the Louisville City Planning Commission of the Brue Baukol redevelopment plans.

In addition, the City Council has one vacancy, in Ward I (the Ward in which we live). I'd like to know what plans are to fill this vacancy in Ward I.

As for the vote on December 5th, in addition to being "short" one Council Member (Ward I), I understand one member is expected to recuse himself. This will leave only five voting members (the Mayor and four City Council Members) at this December 5th Council Meeting. This means there will be an understaffed Council that has the power to approve (or disapprove) the Brue Baukol proposal, which was rejected by nearly 4,000 votes in April of 2022. There should be a full voting membership on this issue, especially when part of the discussion should

include the fact the current Brue Baukol proposal fails to meet the Louisville City Municipal Code.

Thank you,

Norma Anderson - Ward I
1904 Steel Street
Louisville, Colorado 80027
Email: norma22@me.com
Landline: 303-954a-9373
Cell: 720-537-5901

The history of Brue Baukol and the old StorageTek property, now referred to as Redtail Ridge:

2020-2021: Brue Baukol Capital Partners submitted different iterations of a plan to redevelop the old StorageTek property, with plans to massively exceed StorageTek's footprint and paving over previously undeveloped areas of the site. This plan would destroy wildlife and critical habitat in the process. Community opinion was strongly against all iterations of Brue Baukol's redevelopment plans.

April, 2022: Louisville voters overturned the City Council's approval of the Redtail Ridge application by referendum. This made legally clear the reaction of Louisville citizens to all prior Brue Baukol's redevelopment plans.

November, 2022: Louisville's Planning Commission voted to recommend the City Council deny the Brue Baukol's next application. Planners found the proposal failed to meet the criteria laid out in the Louisville City Municipal Code, and expressed their concerns about the plan to upgrade nearly the entire site, including areas not slated for buildings, parking lots or roads. Essential wildlife habitat would be destroyed under this plan.

December 5, 2023 (Tuesday): City Council will begin deliberations on the Redtail Ridge proposal, presenting the exact same proposal the Planning Commission voted to deny in November, 2022. This will be the first regular City Council meeting headed by our new mayor, Chris Leh. Three Council members will be in new positions, and may not have deliberated on Redtail Ridge.

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From: Laura Pederson
To: City Council
Subject: The Louisville Voters and the Planning Commission Have Spoken - REJECT the Redtail Ridge Development Plan
Date: Sunday, December 3, 2023 1:51:14 PM

The Redtail Ridge development plan that was previously REJECTED by the Louisville Planning Commission and the citizens of Louisville is once again being brought forth for approval.

Perhaps the Redtail Ridge backers have taken the cynical view that, given the newly reconstituted Louisville City Council, they can now slip the plan through -- even though no changes have been made to the previously rejected plan. Perhaps they are counting on the citizens of Louisville being too distracted by the December holiday season to notice their current shenanigans.

The Louisville City Council has pledged to represent the citizens of Louisville -- not big money, not corporate interests. The current plan does NOT meet the city's Municipal Code, and it is the City Council's duty to reject it.

We see you, we are watching. Please honor your responsibility and deny this proposal.

Thanks and Regards,

Laura Parks-Pederson

2297 Cliffrose Lane

Louisville, Co.

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From:	Larry Donner
To:	City Council
Subject:	Support For Redtail
Date:	Sunday, December 3, 2023 1:37:29 PM

Dear City Council,

I am writing to urge your approval of the Redtail Ridge proposal. After reviewing the materials in your packet, it is obvious that the developer meets and exceeds Louisville's development requirements.

The Redtail proposal provides a quality development with energy efficient buildings, open spaces and trails available to the public. In addition, it dramatically enhances City revenues with the potential to relieve the average homeowners property tax burdens.

Concerns with traffic to existing City streets is greatly overblown. The bulk of the traffic accessing the properties will be from the Northwest Parkway at an intersection that already is controlled with a traffic signal.

Louisville has wrestled with this parcel of land for nearly 15 years. It is time to move ahead.

Thank you.

Larry Donner
1020 Willow Pl.
Louisville, Colorado

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From: lkoglin
To: City Council
Subject: Pleae dont fall for the nonsene from the preserve louisville campaign
Date: Sunday, December 3, 2023 12:41:45 PM

Please dont fall for the scare tactics of Preserve Louisville a second time. It was bad enough they used lies and scare tactics to get on the ballot. Telling people this development would drive up cost and limit materials for the home owners that lost their home to the fire.

Thanks,

Lynn Christopher Koglin
www.KoglinGroupLLC.com
Cell 303.551.3073

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From:	CHALK4PEACE
To:	City Council; preservelouisville@gmail.com
Cc:	hg.indigoink@gmail.com; ccorsell@mac.com
Subject:	Redtail Ridge Rehash- John Aaron, Louisville resident
Date:	Sunday, December 3, 2023 12:19:49 PM

To the City Council,
As I voted AGAINST the Redtail Ridge subdivision project, I continue to stand against its creation and ask that City Council postpone any decisions until a complete application is submitted that the public can review. The massive traffic congestion alone that the creation of this subdivision will cause for Louisville is reason enough to stop the developer from having its way with this project the people of this city soundly defeated in 2022. This is a disturbing example of greed without any regard to impact. As well as an entity that won't take NO for an answer. So...Just say NO.

I am not able to attend December 5; but I wanted to put forth my opinion as a Louisville resident.
Thank you,
John Aaron
1045 1/2 Lafarge Ave.
Louisville, CO 80027

Sent from my iPad

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From:	Richard Morgan
To:	City Council; Christopher Leh; Deb Fahey; Judi Kern
Subject:	Support for Redtail Ridge 2023 Plat
Date:	Sunday, December 3, 2023 11:39:03 AM

Mayor Leh, Ward 2 Councilors Fahey and Kern, and City Council:

I live at 644 W Pine Street and have for the past 25 years.

I'm writing to express my **strong support** for the Redtail Ridge 2023 Plat.

I remain impressed by the thoughtfulness of developers Brue Baukol Capital Partners (BBCP) and Sterling Bay. Notwithstanding the pushback over the past three years, BBCP remains committed to listening to Louisville residents' needs and wants for this development and strike a balance between what is feasible and what is not.

BBCP has structurally redesigned its plans to not only align with City goals, but also to accommodate residents' wishes for a smaller overall total building footprint (2.55 million SF); commit to commercial sustainability; set aside more open space (155-acres vs 38-acres); prioritize 40-acres along NW Parkway for Avista Hospital, Louisville's largest employer; invest in intersection improvements to NW Parkway and 96th Street; and most importantly, BBCP is committed to paying for the re-engineering of Campus Drive so that it will be a full thoroughfare and not a dead-end, one way in/out street that Louisville Police and Fire deem highly problematic. The safety of our children attending the Monarch School System should be a top priority, whether it's a bomb threat or the most damaging fire in Colorado history.

Kicking the can down the road is NOT an option. The cost of further inaction is incredibly costly to our community. The obvious is the potential loss of Avista Hospital, a cherished and vital community asset. Now that Avista is no longer a subsidiary of Centura, its long-term viability and profitability is ever more paramount. Financially, Louisville could lose out on millions of projected dollars in local fees ($37.8 million paid to Louisville), $2 million in annual tax revenue to the City, together with the many new customers and unique tenants for our downtown and McCaslin retail corridor, a key consideration since we've lost so much retail to neighboring communities.

I know each of you are committed to what's best for Louisville. This project has the real possibility to generate good, long-term revenue for the City, be beneficial for our local business community, reprioritize safety for our children that attend Monarch, and make accessible 155-acres of private land currently off limits to residents. Please vote to approve the Redtail Ridge 2023 Plat.

Thank you,

Richard Morgan

Richard Morgan
303.956.8188 (cell)

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From: Rich Kithil
To: City Council
Subject: Redtail Ridge (RR)
Date: Sunday, December 3, 2023 8:00:01 AM

Council members will consider the wishes of their constituency.
RR will consider their profits.

Be Safe.

Rich Kithil

Sent from Proton Mail for iOS

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From: villablair
To: City Council
Subject: Postpone any decisions on Redtail
Date: Sunday, December 3, 2023 7:03:46 AM

Good Afternoon:

Postpone any decisions on Redtail development until there is a complete application that is available for the public to view and the residents can voice their approval or disapproval of the proposed plan.

I walk every day three to five miles in my neighborhood by Fireside Elementary School.

I have noticed an emense increase in traffic on ALL streets in this area: Dillon, Cherry and McCaslin traffic have become exponentially congested with traffic. More homes will ONLY exacerbate this problem.

Louisville does NOT have the infrastructure to handle an increase in traffic that the Redtail development will create lthat Louiville currently has.

The residents of Louisville must have an input and be taken seriously by the city council.

Sincerely
Debra Blair
Louisville Resident since 2000

Sent from my Verizon, Samsung Galaxy smartphone

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From: Gale Chapman
To: City Council
Subject: Redtail Ridge concerns...
Date: Saturday, December 2, 2023 9:40:56 PM

Greetings
I am concerned that the council is not taking into account the recommendations of the Planning Commission regarding this development. It appears that the developer has minimal concern for the wishes of the Louisville community and has not fully complied with all required city codes.
I am not against growth but it must be done in a compliant and methodical manner to enhance the character of the Louisville community.
Regards
Local resident ...for 26 years

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From: joy brook
To: City Council
Subject: Redtail ridge
Date: Saturday, December 2, 2023 5:47:52 PM

- Please send the current plan back! The developer is not listening.
- Remember what we have seen so far. The citizens and the planning commission have made it clear this proposal is not acceptable.
- In 2020-2021 Brue Baukol Capital Partners submitted different iterations of the plan to redevelop the old StorageTek property, massively exceeding StorageTek's footprint and paving over previously undeveloped areas of the site, destroying wildlife and critical habitat in the process. Local opposition is fierce.

- In April 2022 Louisville voters overturned City Council's approval of the Redtail Ridge application by referendum.

- November 2022: Louisville's Planning Commission voted to recommend that City Council deny the developer's next application. Planners found the proposal fails to meet the criteria laid out in the city's municipal code, and were concerned about the plan to grade nearly the entire site, including areas NOT slated for buildings, parking lots, or roads.

Where We Are Now:

- **City Council begins deliberations on the Redtail Ridge proposal Tuesday December 5th on the same EXACT proposal Planning Commission voted to deny.**

Please deny this proposal and follow our city code!!

Tane Mahuta E Tu!
Blessings to the Creator, trees! Stand Tall!

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From:	terre rushton
To:	City Council; Christopher Leh
Subject:	Please Approve the Redtail Ridge Plat
Date:	Saturday, December 2, 2023 3:33:32 PM

Dear Mayor and Members of the Louisville City Council,

I am a longtime resident of Louisville, having moved here in 1984, and raised three children in this community. My husband was on CIty Council and Mayor for 20 years, and we have both been very involved in this community, a community I love.

I again write in strong support of the Redtail Ridge project, this time in support of the preliminary plat before you. The numerous benefits of moving forward on Redtail Ridge are clear and vital for our town. This project aligns perfectly with our Comp Plan and our city's goals for compatible development, sustainability, transportation, and economic vitality. We need and have always supported a more connected and environmentally responsible Louisville. Approval of this plat is just a first step.

You all are aware of the importance of keeping Avista Hospital, a major new tenant on this site. Avista is Louisville's largest employer and a great contributor to our culture. Keeping Avista here in Louisville is not just only about the jobs and economics. Avista helps us to maintain a strong sense of community and provides essential healthcare services to our residents. How many of our children were born at Avista? Approving this plat ensures Avista's continued contribution to our community's well-being.

The 155 acres of open space in Redtail Ridge would be one of the largest donations in Louisville's history. The commitments to habitat management and preservation are equally important, and create new opportunities for residents to enjoy open space. It's a rare opportunity to enhance our community's recreational spaces and overall quality of life. This opportunity should not be missed.

Approving the plat is a vital next step in developing the network of roads, trails, and infrastructure that can create a safe and healthy campus. It is what allows Campus Drive to finally be extended. The favorable impact on Monarch High School has been repeatedly stated by BVSD administration, And yes, it keeps Avista Hospital in Louisville.

Approving the Redtail Ridge plat is more than a procedural step; it's a statement about the kind of city we want to be. A city that is forward-thinking, family-friendly, and open to new opportunities. We can't afford to be anything less. Let's not delay this any longer.

Thank you for your attention to this matter. I trust you will make a decision that benefits all of Louisville. I thank you in advance,

Terre Rushton
671 West Ash Street,
Louisville, Colorado
303-956-8338 cell phone

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From:	Shari Edelstein
To:	City Council
Cc:	Caleb Dickinson; Deb Fahey; Christopher Leh
Subject:	Save RTR again!
Date:	Saturday, December 2, 2023 10:52:37 AM

I am overseas and cannot attend the meeting. I find this decision to love forward after all that we went through incomprehensible.

Please postpone any decisions until there is a **complete application** that the public can view. The developer must set aside all land north of Disc Drive as open space and build a compact development. The developer has the right to build but not if their plan doesn't meet our codes. Let all council members know that the plan **must** meet our city codes.

The residents of Louisville rejected Brue Baukol's sprawling development in the special election of April 2021. Brue Baukol has not changed anything in the proposal since the planning commission recommended denial in November of 2022. The commission recommended denial and made several notes, comments, and recommendations on the proposal. The developer has ignored them all.

The application is incomplete. City council should not be voting on incomplete proposals.

The information on the current developments page on the city's website has not been updated since April 2021. The city has met the bare minimum requirements for notifying residents of the hearing—but for a development of this size, with such enormous potential impact and such widespread and well-known opposition—the bare minimum isn't enough**.**

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From: Sharon Johnson
To: City Council
Subject: Red tail Ridge
Date: Friday, December 1, 2023 3:39:38 PM

Dear Council Members:
Please postpone any decisions on the Redtail Ridge development until there is a complete application that the public can view. The plan needs to meet city codes and insure destructive impact does not occur.
Thank you.
Sharon Johnson
Sharonjohnson656@gmail.com

Sent from my iPhone

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From: Kim
To: City Council
Subject: Red tail ridge
Date: Friday, December 1, 2023 3:18:27 PM

Hello,
Are you kidding? Didn’t we just vote this down?
It still does not meet Louisville standards.
Is this due to our new Mayor.
Please please don’t Boulderfy Louisville.
Kim Daldos 839 McKinley Ave.
Lighting Strikes LLC.

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From: joy brook
To: City Council
Subject: Redtail Ridge
Date: Friday, December 1, 2023 2:21:15 PM

I am confused as to why staff would recommend passing Redtail ridge when no issues with the plan were addressed. Please send this back and think of our town's future. The developers need to address issues and improve the plan not railroad it through. Citizens made their concerns known and that should be the council's guide, not pleasing the developers. Traffic on 95th continues to be a problem and there are traffic studies that show failing of roads even without this development. Please protect our quality of life and safety. Air pollution is another health concern. I retired here and it would be wonderful if things improved! Thank you for your help and concern.

Tane Mahuta E Tu!
Blessings to the Creator, trees! Stand Tall!

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From: Sandy Peer
To: City Council
Subject: My vote is no!
Date: Friday, December 1, 2023 1:50:33 PM

LOUISVILLE NEEDS YOUR HELP!
City council is scheduled to make a decision on a preliminary subdivision plat for Redtail Ridge on December 5. This is the same proposal the planning commission rejected back in November of 2022, and it has the same destructive impact on the land that the voters already rejected. This plan does NOT meet our city codes and it will cause overwhelming traffic congestion.
HERE'S WHAT YOU CAN DO:
SPEAK at the city council meeting December 5, 6:00 PM in council chambers. The mayor and council members were elected to represent you. They need to hear from you!
EMAIL council and tell them to postpone any decisions until there is a complete application that the public can view. Tell them they should require the developer to set aside all land north of Disc Drive as open space and build a compact development. The developer has the right to build but not if their plan doesn't meet our codes. Let all council members know that the plan must meet our city codes.
Council@LouisvilleCO.gov
Email council members Dickinson, Fahey, and Mayor Leh. They wanted to hear from the voters in the special election, and the voters said no. They need to hear from us again.
CDickinson@LouisvilleCo.gov DFahey@LouisvilleCo.gov Leh@LouisvilleCo.gov

Here's why the hearing shouldn't take place next week:
The residents of Louisville rejected Brue Baukol's sprawling development in the special election of April 2021. Brue Baukol has not changed anything in the proposal since the planning commission recommended denial in November of 2022. The commission recommended denial and made several notes, comments, and recommendations on the proposal. The developer has ignored them all.
The application is incomplete. City council should not be voting on incomplete proposals.
The information on the current developments page on the city's website has not been updated since April 2021. The city has met the bare minimum requirements for notifying residents of the hearing—but for a development of this size, with such enormous potential impact and such widespread and well-known opposition—the bare minimum isn't enough.

DEMOCRACY NEEDS YOUR VOICE. STAND UP AND BE HEARD!
Sent from my iPhone

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From:	Joel Meggers
To:	City Council
Cc:	Austin Ward; stephanie.walton@lafayetteco.gov; Tamara Seaver; acorley@isp-law.com; PCosta@nwpky.com; Dykstra, Russell W.; Rob Zuccaro; Nancy Rodgers; Jennifer Hoffman; mlmacsalka@H-Mlaw.net; Kayla Blair; Brenda Shuler; Alexander, Matt
Subject:	Northwest Parkway Public Highway Authority - PLAT-0262-2019 – Redtail Ridge Filing No. 1 Preliminary Subdivision Plat
Date:	Friday, December 1, 2023 11:37:08 AM
Attachments:	

Dear City Council Members,

Please see attached.

Kind regards,

Joel Meggers
President of Community Resource Services (CRS) of Colorado
303-204-0803
www.crsofcolorado.com

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Public

Northwest Parkway Public Highway Authority

Joel Meggers, Managing Administrator
Community Resource Services of Colorado, LLC
The Offices at the Promenade East Building
7995 East Prentice Avenue, Suite 103E
Greenwood Village, CO 80111
Phone: 303-204-0803
E-mail: jmeggers@crsofcolorado.com

November 30, 2023

***VIA ELECTRONIC MAIL*: council@louisvilleco.gov**

City Council, City of Louisville
Council Chambers
749 Main Street
Louisville, CO 80027

RE: PLAT-0262-2019 – Redtail Ridge Filing No. 1 Preliminary Subdivision Plat

Dear City Council Members:

The Northwest Parkway Public Highway Authority (the "Authority") and the Northwest Parkway, LLC (the "LLC") have been notified that the City of Louisville (the "City) has scheduled the Redtail Ridge Filing No. 1 Preliminary Plat (the "Preliminary Plat") for hearing before the Louisville City Council on December 5, 2023. The LLC leases the Northwest Parkway from the Authority, and has obtained all rights, licenses, and privileges to operate, maintain, and toll the Northwest Parkway. The Authority and the LLC have not reached any agreement with Sterling Bay Co., the applicant for the project, to allow the offsite improvements proposed within the Preliminary Plat to be constructed, and both entities are concerned that these proposed offsite improvements impacting the Northwest Parkway are not consistent with the operation of the Northwest Parkway for its intended use as a high-speed public highway. While the parties are in active discussions, which we believe will result in various agreements protective of the Northwest Parkway and its operations, the Authority and LLC believe that the City's consideration of the Preliminary Plat at this juncture is premature and object to its consideration in advance of agreements being reached and made part of the approval. Attached please find correspondence from the Authority and LLC to Sterling Bay Co. setting forth the terms and conditions necessary for the parties to reach an agreement to allow for the construction of the proposed offsite improvements impacting the Northwest Parkway.

NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY

By: _____
Joel Meggers
Managing Administrator,
Northwest Parkway Public Highway Authority

Public

NORTHWEST PARKWAY, LLC

By: _____

Pedro Costa, CEO
Northwest Parkway, LLC

Enclosure

cc: Rob Zucaro, AICP, City of Louisville Planning and Building Safety Director
Tamara Seaver, Esq., Counsel for Northwest Parkway Public Highway Authority
Russ Dykstra, Esq., Counsel for Northwest Parkway, LLC
Nancy Rodgers, Esq., City and County Attorney for the City and County of Broomfield
Jennifer Hoffman, City and County Manager for the City and County of Broomfield
Austin Ward, Northwest Parkway Public Highway Authority Board Member
Stephanie Walton, Northwest Parkway Public Highway Authority Board Member
Mary Lynn Macsalka, City Attorney for the City of Lafayette

Northwest Parkway Public Highway Authority

Joel Meggers, Managing Administrator

Community Resource Services of Colorado, LLC

The Offices at the Promenade East Building
7995 East Prentice Avenue, Suite 103E
Greenwood Village, CO 80111

Phone: 303-204-0803

E-mail: jmeggers@crsofcolorado.com

November 30, 2023

VIA ELECTRONIC MAIL: EPesonen@sterlingbay.com

Evan Pesonen, Vice President – Asset Management and Acquisitions
Sterling Bay Co.
100 Bayview, Suite 355
Newport Beach, CA 92660

Re: Redtail Ridge/Northwest Parkway

Dear Mr. Pesonen:

We have received your letter dated November 7, 2023 as a follow up to the October 30, 2023 meeting of the parties regarding the Redtail Ridge project (the "Project"), along with the supplemental traffic analysis completed by Fox Tuttle.

In order for the Northwest Parkway Public Highway Authority (the "Authority") to reach an agreement with Sterling Bay Co. ("Sterling Bay") to allow for construction of the Campus Drive/96th Street intersection within the Authority right-of-way and multi-use easements, with the consent of the Northwest Parkway, LLC (the "LLC"), which agreement would have to be formally approved by the board of directors, the following conditions must be met during the first phase of development:

1. The Campus Drive/96th Street intersection shall include the following:

   a. Northbound: Three (3) through lanes and two (2) left-turn lanes.
   b. Southbound: Two (2) through lanes and one (1) right-turn lane.
   c. Eastbound: Two left-turn lanes and one right-turn lane.

2. Modification of the 96th Street/Northwest Parkway highway ("NWP") intersection to include the addition of the following, designed to allow for a future grade separated interchange:

a. Three (3) southbound left turn lanes from 96th Street to the NWP.
b. An acceleration lane eastbound on NWP to accept traffic from the inside left turn lane from southbound 96th Street.

3. A third southbound through lane on the NWP from 96th Street to US 36, including modifications to the NWP and Tape Drive/Via Varra intersection. This intersection shall include two (2) eastbound left turn lanes from Tape Drive to the NWP.

4. The elimination of all improvements related to pedestrian/bicycle traffic crossing the NWP at the 96th Street/NWP and Tape Drive/NWP intersections, including, but not limited to signage, striping, ADA sidewalk ramps, and pedestrian crossing signals. Signage shall be installed directing pedestrians and bicyclists to the culvert crossing under the NWP south of Tape Drive.

5. Elimination of the proposed right-in/right-out access to the proposed Avista Hospital facility opposite Via Lata Drive.

6. Construction must be undertaken pursuant to the terms of the NWP permit to be issued by the LLC, including all special permit terms and conditions.

7. With regard to the extension of Campus Drive, the Intergovernmental Agreement Regarding Use of the 96th Street Area between the PHA and the City and County of Broomfield dated December 2, 2003, will need to be amended, or a new intergovernmental agreement will need to be executed between the Authority and the appropriate governing jurisdiction(s), to provide for management and maintenance of all newly constructed improvements within the NWP right of way/multi use easements.

8. The Developer shall obtain all necessary approvals from all governmental entities with jurisdiction.

9. The Developer/district shall pay for the cost of all consultants performing quality assurance for the Authority and LLC regarding improvements within the Authority's right-of-way/multi-use easements.

In addition, but not as a requirement, the Authority would like the opportunity to discuss with you the possibility of incorporating Broomfield's Varra Park project into the Redtail Ridge development plans.

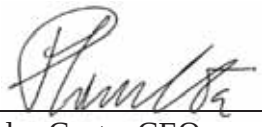
The Authority and LLC appreciate the collaborative efforts here and look forward to continuing to work with Sterling Bay, the City of Louisville, and others to help the Project become a reality, while addressing our concerns and operational needs of the NWP.

Sincerely,

NORTHWEST PARKWAY PUBLIC HIGHWAY AUTHORITY

By: _____
Joel Meggers
Managing Administrator,
Northwest Parkway Public Highway Authority

NORTHWEST PARKWAY, LLC



By: _____
Pedro Costa, CEO
Northwest Parkway, LLC

From: christine vranka
To: City Council
Subject: Postpone the Redtail Ridge hearing
Date: Monday, December 4, 2023 8:10:09 PM

To Whom It May Concern,

I am an almost 25-year resident of Louisville and an almost 60-year resident of Colorado. As such, the qaulity of living here in Louisville is extremely important to me. I have remained in this area because of its proximity to nature and the value Coloradans typically place on Open Space and the natural world. I feel that to move forward with the Redtail Ridge Development as it currently stands is a violation of everything I value about Colorado in general, and Louisville in specific. At the bare minimum, you should require the developer to set aside all land north of Disc Drive as open space and build a compact development. I am urging you to postpone any decisions until there is a complete application that the public can view and weigh in on. The plan for Redtail Ridge must meet our city codes.

Thank You,
Christine Vranka
1013 Jefferson Ave.
Louisville, CO 80027

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From: Michiko Christiansen
To: City Council
Subject: Letter to Council members for Dec 5th meeting
Date: Monday, December 4, 2023 7:57:08 PM
Attachments:

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Dear council members

Thank you for your time to read this letter.

Knowing the holidays are fast approaching, for all of us need much more time to focus ourselves and enjoy the last month of the year without any stress, mental health, and physical exhaustion. We all have plans of traveling to or receiving visitation from family, friends, colleagues, and community. rush and stress out especially during the holidays

By having the Preliminary Subdivision plat for Redtail Ridge which have 969 pages on the agenda this month DECEMBER is an irresponsible thing to do. It is best for all of us, meaning the community and yourselves, to have the time to sit and read this novel next year to be better prepared and understanding these 969 pages packet with your and our questions written down.

It is far better to postpone any decision and reschedule next year until there is a fully complete application for the public to read and study.
The reasons are outlined:

- The application is incomplete.
- Needs more information regarding the Broomfield's decision on the Northwest Parkway BOD approval is missing.
- City codes is not yet met.
- The City of Louisville adopted the Internal Decarbonization Plan, and the question is are they aligned or complying with this our new Internal Decarbonization Plan.

Please listen to your community who voted for you to be on the city council.

Thank you,
Michiko Christiansen
A concern resident of Louisville

From: Weiyan Chen
To: City Council
Subject: Deny Redtail Ridge plan
Date: Monday, December 4, 2023 7:44:00 PM

City council members and Major Leh,

I was surprised to learn from neighboring Superior friends, the council will discuss the Redtail Ridge project. This discussion should not take place since this project is in Louisville, not Superior, and Louisville residents have to be informed. An incomplete project plan should not be in the agenda at all.

I was dislocated to a Boulder hotel after Marshall Fire for more than two months. My house was smoke damaged. During that difficult time, taking a short walk to de-stress was not an easy thing to do. In Boulder, trails constantly follow heavy traffic streets, or cross noisy roads. That two months made me appreciate more our Louisville small towns character, friendly neighborhood and people.
The Redtail Ridge project will add 20000 cars/day in our roads and streets. McCaslin Blvd would become Boulder's Foothill PKWY with non-stop 24x7 traffic and pollution. That's not what Louisville residents want. We don't want Louisville to be the next Boulder.

Please deny the Redtail Ridge project!

Thank you

Weiyan Chen

146 Cherrywood Lane

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From:	stephanierowe00@gmail.com
To:	City Council
Subject:	Redtail Ridge: once again, NOPE
Date:	Monday, December 4, 2023 7:30:27 PM
Attachments:	Prairie Dog Mgmt Response Redtail Ridge Draft Plan Final

December 4, 2023

Dear Louisville City Council and Mayor Leh,

I am writing to ask you to reject the application for the Redtail Ridge development proposed for the old StorageTek property. This is on two grounds: 1) The current plan is essentially the same as the plan voters rejected last year, and 2) The plan does not meet the criteria of Louisville's municipal code.

Section 7-5 of the city's home rule charter prevents the city from approving an ordinance that voters have rejected by referendum. This means that, in order for City Council to approve a plan for Redtail Ridge, the plan has to be substantively different from the plan that was overturned this spring. The only change that has been made is in the category: now, instead of submitting the plan as an ordinance, it's a resolution. This is a distinction without a difference: the change is technical, not substantive.

When the developer does submit a new plan, it is imperative that City Council and the Planning Commission make a systematic, rational effort to ascertain whether or not it complies with Louisville's municipal code.

So far as I can see, the plan does NOT comply with several sections of the code. The one I personally am most concerned about is LMC 16.16.010, which states: "**Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible**."

By law and according to the oath you swore when you assumed your seat on Council, you must determine:

1. Does the application demonstrate that every effort has been made to "preserve and enhance to the extent reasonably possible" the natural features, including trees, of this property?

2. What are these efforts, exactly?

3. Does the developer make a convincing case, supported by credible documentation, that the destruction of the trees, vegetation, and a pond is justified?

(This is the sort of systematic approach Council should take with every one of the LMC's relevant provisions.)

One criterion I'd like to suggest you use for the LMC 16.16.010 question is the developer's plan for the prairie dog towns on the site. Pam Wanek's response to the Redtail Ridge Prairie Dog Management Plan, a copy of which was sent to City Council in January 2021 (attached here), should be instrumental for this. Ms. Wanek's report shows that the developers are relying on a flawed assessment by their environmental consultants to reach the conclusion that up to 5,500 prairie dogs must be exterminated to make way for buildings and parking lots. She also notes the beneficial role of prairie dogs and their burrows in creating diverse and healthy native plant landscapes and in combatting Colorado's ongoing drought, pointing out the scientific consensus that drought conditions worldwide are exacerbated by

the destruction of burrowing animal habitat.

I appreciate that serving on City Council is an enormous commitment of time and effort. It's a shame the developer has been so unwilling to create a new plan, one that respects the city's municipal code and the concerns of residents. Send them back to the drawing board, again.

Thank you,

Stephanie Rowe
631 West Street, Louisville

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Prairie Preserves LLC
2251 W. 154th Place
Broomfield, CO 80023
P: 303-507-8580
Wanek@Q.com

May 6, 2021

Jay Hardy
Brue Baukol Capital Partners
1555 Blake Street, Suite 210
Denver, Colorado 80202

Dear Mr. Hardy:

RE: Prairie Dog Management Plan Redtail Ridge Broomfield and Boulder Counties, Colorado
19 January 2021 DRAFT

Please accept this correspondence as my formal response to the Prairie Dog Management Plan –Draft for Discussion (PDMP) prepared by ERO on January 19, 2021. I intend my responses to elucidate and correct comments and information in the PDMP in order to increase insight and share perspectives that might otherwise be overlooked. I also intend my responses to clarify the "Nonlethal Management and Passive Dispersal" section of the PDMP that discusses Reverse Dispersal Translocation™.

My background in prairie dog conservation is comprised of more than 25 years of field experience and work on policy at various agency levels. This includes at least two projects involving your property in which I was directly involved: Monarch High School (removal of prairie dogs coming off the subject property) and the direct removal of prairie dogs from your campus, under Conoco Phillips as the prior property owner. I am also the creator of Reverse Dispersal Translocation™ (RDT), a passive prairie dog relocation method that I trademarked in 2008.

Please see the following:

1. Under the heading "Black-Tailed Prairie Dog Biology and Life History" On page 1, the PDMP states **"migrating prairie dogs travel less than 2 miles, but a few migrate up to 6 miles."**

Response: In wildlife biology, migration is defined as the movement of entire populations, but prairie dogs do not migrate, they disperse singly and understanding this concept is fundamental when working with prairie dogs. Dr. John Hoogland, a world renowned expert on prairie dogs, observed that prairie dogs have a tendency to remain in the same area for very long periods of time and dispersal was more likely to occur by breeding males moving from one unaffiliated coterie to another within the same natal (birth) colony to avoid inbreeding with their offspring. Incest with closely related prairie dogs is rare. Dispersal to another colony occurs less frequently than dispersals within a colony due to predation risks. Long distance dispersal can

occur within an average range of 1.4 miles where a prairie dog will join up on the edge of an existing colony. Establishing new colonies out of the visual range and and comfort of other prairie dogs occurs infrequently.

Coteries are highly territorial family units comprised of a haram of females and their offspring that are all closely related. Females have a tendency to remain within the natal (birth) coterie boundaries for life. Coteries do not blend with nonrelated family members; they tolerate each other for the purpose of safety in numbers against predators. Average coterie size is .80 of an acre but can range from .12 to 2.5 acres.

When considering prairie dog management options, it is important to evaluate prairie dog colonies and to ascertain if the colonies are old and established or young and expanding (Hoogland, J.). Young and expanding colonies tend to have high prairie dog population numbers whereas older, stabilized colonies tend to have lower population numbers in accord with limited resources (burrows, food and breeding mates). Older colonies also tend to have well-developed social structures among coteries. In the case of the Redtail Ridge property, satellite imagery reveals that prairie dog colonies are old and established, as burrows have been present from at least the year 2000. Satellite imagery also reveals fluctuations in burrow occupancy, 2000-present, probably as the result of plague, poisoning and/or prior translocations.

Colonies stabilize when expansion is restricted such as by naturalized landscapes (topographical and vegetation elements) or man-made environments (roads, housing, commercial and industrial development). The point here is that prairie dogs adjust to restricted expansion and resulting competition for limited resources (burrows, food and breeding mates) by having fewer births. Prairie dogs literally and significantly control their own populations. Prey species are so dependent upon each other for survival that a prairie dog would rather live with other prairie dogs in areas with sparse food sources, than live by themselves in a lush grassland.

2. Under the heading: "Prairie Dogs in Urban Settings" on page 4, the PDMP states **"Prairie dogs in urban settings have the potential to negatively impact native plant communities by overgrazing small confined areas. Overgrazing can lead to severe noxious weed infestations. "**

Response: The assertion that prairie dogs overgraze and create noxious weed infestations is an over-simplified and negligent description of prairie dog-vegetation interactions. Prairie dogs are a keystone species providing at least three functions: 1. A direct prey source; 2. Burrows and tunnels as harborage for a multitude of other species; and 3. Alter vegetation from a monoculture of grasses to a diversity of forb species that are important for pollinators.

The keystone effect of prairie dogs on vegetation in urban corridors in Denver and Boulder is highly documented by Seth Magle. Magle's studies reveal that urban and rural prairie dog influences on vegetation were the same; reductions of grass and litter and increases in forb and bare ground. Thus, prairie dogs' keystone effect on urban fragmented landscapes is similar to that occurring in intact rural landscapes and conservation of urban prairie dog colonies may be important for the overall grasslands steppe (Magle & Crooks, 2008).

Prairie dogs, as a prey species, prefer to live in dense populations as safety in numbers, even when there are competing interests for limited resources. They tend to remain in the exact same spot for long periods of time. Consistency in occupying one area exerts a change to vegetation structure from predominately grasses to forb plant communities, thus increasing plant diversity. Some studies indicate that newly establishing colonies can convert grasses to forbs within two years where grasses were replaced almost entirely with forbs. Bare ground patches are important for ground nesting birds and likely enhances the visibility of insects thus providing a higher food source for small mammals and birds (Detling, J.K.). Moonscapes are common in prairie dog colonies and have been documented to occur by early pioneers in the 1850's!

The frustration with vegetation occurs in our contemporary society that has long forgotten that we live in a landscape that has been destroyed by prior agricultural practices that killed almost all (100%) of prairie dog species by the early 1900's and then destroyed native plants with the introduction of farming equipment that plowed up native plants and introduced European grasses and other livestock forage. Prairie dogs did not introduce Eurasian noxious weeds, our ancestors did. Prairie dogs do not make good habitat bad, people do. To combat this problem, many agencies such as USFWS, City of Boulder and the Humane Society of the US, are taking a closer look at the native plants that thrived under the feet of prairie dogs prior to European occupation. I have also been extensively involved in the process of documenting and reintroducing plants that are resistant or resilient to prairie dog activities. Several hundred native forbs and subshrub communities have been identified to perform well directly inside active prairie dog colonies. I have found that plants from the aster, figwort, flax, astragalus, mallow, rose, geranium, primrose, milkweed, sage, and many other plant families co-exist nicely directly on top of black-tailed prairie dog colonies.

Other common misconceptions include notions that prairie dog activities cause desertification and increase climate warming. In my work I find that one acre of occupied prairie dog habitat contains between 50 to 100 four inch diameter holes that allow rain and snow to deeply saturate soil and enrich the underground ecosystem that may have positive influences in the sequestration of carbon. In fact, the worldwide destruction of burrowing animals is thought to be one of many contributing factors to a warming climate (Adams et al., 2012).

3. Under the heading: "Prairie Dogs in Urban Settings" on page 4, the PDMP states**, "In confined suburban locations, prairie dogs can move onto adjacent private residences, damaging lawns, gardens, and property with grazing and digging activities."**

Response: Indeed, prairie dogs in suburban locations do sometimes move onto the properties of adjacent residences. These conflicting situations are often the product of failure by local community development departments to look beyond the subject property during planning and consider what on the land surrounding the property within at least ¼ mile, could give rise to potential conflicts. Simple ideas such as vegetation management (e.g. allowing grasses to obtain good heights, strategically-timed mowing, and installation of windbreaks and

hedgerows) and modified fences keep prairie dogs out of conflict areas. Urban community planners must take initiative to prevent/resolve conflicts with wildlife in ways that least effect the environment.

4. Under the heading: "Prairie Dogs in Urban Settings" on page 4, the PDMP states, **"Prairie dogs are known carriers of plague …"**

Response: This statement is erroneous. Prairie dogs cannot carry plague (Yersinia pestis) because they rapidly die from it once infected. Plague is so decimating to prairie dog conservation that many local, state and federal agencies consider it to be a high-level threat to prairie dog conservation. Colorado Parks and Wildlife can provide information about the devastating impacts of plague and recommendations to retain healthy colonies.

This exotic disease, introduced to the United States by rats aboard ships from Asia, is now endemic in over 70 North American wildlife species. Some wildlife species are resistant and some are not. In fact Prairie dogs are so highly sensitive to plague that they are deemed "the canary in the coal mine," meaning that an abrupt, inexplicable disappearance of a prairie dog population is an early indicator that plague is present in the area. Other wildlife species that may have plague have more dispersed behaviors where such indicators are more difficult to discern. However, because prairie dog colonies are frequented by a variety of other wildlife species, this may increase the likelihood of transmission to prairie dogs. Outdoor cats that hunt wild rodents (mice, voles) and birds are the biggest transmitter of plague to people.

The prairie dogs on the Redtail Ridge Site are isolated from other prairie dog colonies and therefore their risk of exposure to plague is quite low. Likewise, prairie dogs do not interact physically with humans, and therefore the prairie dogs pose little threat to human health.

5. Under the heading: "Prairie Dogs in Urban Settings" on page 4, the PDMP states, **"Prairie dogs are known carriers of ….other diseases transmittable to humans and/or their pets that raise human health and safety concerns."**

Response: There is no clarification regarding what "transmittable diseases" are being referred to and unless the author can pinpoint exactly what these diseases are, this statement should be removed from the report. As a professional in the field for over two decades, there are two diseases in addition to plague that prairie dogs are wrongly blamed for: hantavirus and rabies, there has not been one documented case of rabies in prairie dogs and the disease is generally unheard of in rodents. And hantavirus is unlikely because prairie dog burrows and tunnels have circulating airflow; this disease circulates among certain species of mice in enclosed areas.

Please do not think that I support intermixing wildlife with people, I believe that prairie dogs and people should not physically interact, and that wildlife should be observed from a distance. I also object to people and pets walking through colonies and allowing animals to run off-leash in prairie dog towns (harassment of wildlife is illegal in the state).

6. Under the heading: “Project Area Description” on page 4, the PDMP **discusses native and nonnative plant species and attention to better management of vegetation.**

Response: I applaud the author’s discussion on this topic as it is extremely important that people, especially people new to this state, understand the importance of working with native plants and avoiding nonnative plants in landscapes, particularly with respect to Asian grasses that are so prolific in urban communities. Asian grasses create massive problems in naturalized areas and should be avoided at all costs.

Prairie dogs are very responsive to vegetation features so it will be important to create plant mosaics on the Redtail Ridge site. I recommend windbreaks, hedgerows and tall grasses as living fences to keep prairie dogs out of conflict areas. I recommend planting mid to tall grasses and incorporating cool and warm season grasses with an assortment of tall forbs such as sunflowers, Rocky Mountain Bee Plant, penstemons, coreopsis, blanketflower, coneflower, etc. This will extend seasonal effectiveness, increase plant diversity, and help to feed pollinators.

In wetter areas, I recommend adding more willows , rushes and sedges and adding additional plants such as three-leaf sumac, New Mexico privet, Big Western sage, and rabbitbrush, distanced where soils are naturally drier.

I further recommend use of shorter warm season grasses as infill in difficult vegetation areas with attention to the type of landscaping around the building. In high pedestrian use areas where people congregate, I recommend hardscaping intermixed with shade trees, shrubs and clustered native flowers. Inclusion of nonnative turf grasses should be limited and in active use areas only, and not used for landscaping.

7. Under the heading: **“**Potential Impacts**”** on page 5, the PDMP states**, “It is estimated the project would impact 110.65 acres of active prairie dog colony.”**

Response: The PDMP does not provide and estimation of prairie dog numbers on the Redtail Ridge site, but I believe, based upon the historical occupancy of this site (seen via Google Earth) and understanding the cyclical nature of prairie dogs, that the spring population is between 40 and 50 prairie dogs per acre (includes young-of-the-year) and that this population will dramatically drop to almost half in mid to late summer and into early fall. Given 111 acres impacted, that means that approximately 5,550 prairie dogs in the spring, or 2,775 prairie dogs in later summer to early fall will be destroyed if relocation does not occur. Additionally, removal of this many prairie dogs would be essentially a “colony collapse” with devastating impacts to wildlife that depend on these prairie dogs for survival.

Please take note that prairie dogs are unlike typical rodents in that prairie dogs give birth only one time per year. They also have delayed sexual maturity and less than 50% of the prior year’s offspring survive to adulthood. Population sizes dramatically swing seasonally and sometimes annually.

The preliminary mapping that I reviewed, revealed that 144 acres (approximately 6.2 million square feet) is largely prairie dog-free and could be immediately built upon. This would provide an opportunity to postpone extermination and allow exploration of land use planning options more compatible for future property uses.

8. Under the heading **"**Potential Impacts**"** on page 5, the PDMP states **"The sparsely active prairie dog colony mapped is not shown as an impact area, nor are the 28.49 acres of proposed prairie dog conservation area located in the southern portion of the project area in the City and County of Broomfield (Broomfield), since avoidance of these areas are recommended.**"

Response: There is little specific discussion about what will happen west and northwest and what will happen to the smaller prairie dog populations that sporadically occur throughout the site. Directly west of 88th Street, there is a sizeable population of prairie dogs that would be considered a ward off the bigger colony located on the subject site.

9. Under the heading "Regulations" on page 5, the PDMP discusses **federal and state listing of threatened or endangered species status.**

Response: Unfortunately this section neglects to mention discussions by both federal and state agencies about why all states, local governments, private landowners and stakeholders must conserve prairie dogs and avoid future listing on the Endangered Species Act.

10. Under the heading "State" on page 5, the PDMP states, "**Currently in Colorado, the black-tailed prairie dog is classified as a "destructive rodent pest" by the Colorado Department of Agriculture** …"

Response: The PDMP refers to the state classification for prairie dogs but neglects to provide the specific statute terminology. The state statute clearly indicates this definition is used for conflicting agricultural operations –see excerpt below

> " *C.R.S. 35-7-203 Release of destructive rodent pests …(2) For purposes of this section, "destructive rodent pests" means one or more rodents, including but not limited to prairie dogs, ground squirrels, pocket gophers, jackrabbits, and rats, that pose a threat to agricultural, horticultural, or livestock concerns or to human health."*

11. Under the heading "State" on page 5, the PDMP states, **"Currently in Colorado, the black-tailed prairie dog is classified … as small game by Colorado Parks and Wildlife."**

Response: the CPW regulates all take of wildlife in Colorado, and this does not mean that CPW endorses shooting prairie dogs. I am confused about why shooting is even mentioned in this PDMP as shooting prairie dogs is prohibited within incorporated city limits and therefore does not apply to the Redtail Ridge site.

Additionally this PDMP neglects to mention that prairie dogs are listed as a Species of Greatest Conservation Need in the State Wildlife Action Plan (SWAP 2005 and 2015) and a Species of Concern for the state. These designations should not be taken lightly! We continue to lose prairie dogs and the problem cannot be resolved by CPW as a single agency. This is a cumulative problem that other agencies, including local governments, private landowners and stakeholders need to understand so as to avoid future listing as an endangered species. In my opinion the SWAP is likely the most significantly important state conservation plan that is funded by the federal government. The SWAP is considered the state blueprint for species conservation and can be found on the CPW website.

A more detailed document about black-tailed prairie dogs in particular, can be found on the CPW website under "Conservation Plan for Grassland Species in Colorado," November 2003.

11. Under the heading **"**State**"** on page 5, the PDMP states, **"CPW allows (except as prohibited by federal, state, and local statutes or regulations) the use of toxicants or other legal extermination where necessary to control damage on private land."**

Response: Technically, this statement is incorrect. CPW has little to no control over toxicants approved by the CDA. In fact, both the USFWS and CPW adamantly opposed the CDA's approval of the rodenticide bait products called Kaput and Rozel (a copy of that letter is available upon request).

12. Under the heading **"**State**"** on page 5, the PDMP states, "**CPW prohibits relocation of prairie dogs in March, April, and May.**"

Response: This statement is not true. Whereas the CPW may not approve relocation in March, April and May, they do not necessarily prohibit it.

13. Under the heading **"**City of Louisville Prairie Dog Policy**"** on page 7, the PDMP **discusses Broomfield's policy to avoid adverse impacts on prairie dog towns.**

Response: The fact that the City of Louisville does not address prairie dog conservation is truly unfortunate, especially for private developers. Locally, elected officials are expected to protect public health, safety, general welfare and the environment. And under the Local Land Use Control Enabling Act local officials have strong powers over public and private land uses and permitting within their political jurisdiction to protect species from activities that would endanger wildlife species. This is not the job of the federal government, state, nor county; rather this is the city's sole responsibility. The City of Louisville has chosen to ignore this responsibility and thereby cause the very dilemma being presented here with this project. If the city annexes land for development, they must also provide an avenue for mitigation, but they have not and by so doing, they lean on other entities to resolve the very problem they themselves have created.

This PDMP discusses finding lands from the jurisdictional county government but counties have very little control over land use on annexed lands. There is mention that SB99-111 blocks relocation of prairie dogs to other counties, but why should another county take prairie dogs when it is the developer and city that created the problem in the first place? While I recognize that SB99-111 is imperfect, I am also realize that many rural counties already have prairie dogs and do not care to relieve wealthy Front Range local governments of their poor land use decisions involving prairie dogs.

14. Under the heading **"**Management Options**"** on page 8, the PDMP **discusses passive relocation and mentions my name.**

Response: In 2008 I developed and trademarked a passive relocation technique called Reverse Dispersal Translocation™ (RDT). I will avoid critiquing how ERO wrote most of this section; suffice to say ERO should have contacted me to fully understand what this particular passive relocation method involves. Passive relocation is a habitat-based relocation technique that causes prairie dogs to move out of burrows in areas of conflict and move into non-conflicting areas. RDT is used when natural densities have declined and there is a large number of existing burrows to receive incoming prairie dogs (preferably August 15th - November 15th). RDT relies upon existing habitat and does not expand habitat occupancy and employs the same burrow blocking concept naturally utilized by prairie dogs. Burrows are blocked to protect young, keep out predators, protect selected burrow from flooding, and keep out unaffiliated coterie members. The most critical element of RDT is that the receiving (protected) portion of the colony is substantially larger than (e.g. exceeding at least 75%) of the sending areas. RDT may be useful in smaller areas of the Redtail Ridge site where barriers are desired, but will not save the majority of the prairie dogs.

The PDMP's discussion of barriers also concerns me. Ideally permanent prairie dog barriers should be opaque, difficult to climb and trenched into the ground where above ground heights are not less than 3 feet (and taller in some cases). This PDMP mentions 2.5 feet with 6 inches trenched into the ground. I suspect that ERO is describing silt fencing that has a common width of 3 feet and is only a temporary barrier designed for short-term projects. Longer term construction projects require more substantial barriers and if prairie dog preserves are to remain permanently on the site, additional types of barriers may include manmade materials, vegetation or both and should be carefully reviewed.

15. Under the heading **"**Lethal Control**"** on page 11, the PDMP **discusses lethal management options.**

Response: Few relocators are willing to discuss lethal control because killing imperiled animals with populations below 5 percent of historical occupation, makes no sense. I do not support lethal control because it encourages inept wildlife conservation planning. But, because in many cases developers and private landowners are left to their own resources, in my experience with what is out there today, in my opinion is the use of carbon monoxide (CO) that is available as a

cartridge or through a fairly new apparatus called the Pressurized Rodent Exhaust Control™ or PERC machine. Very limited research has proven that when applied correctly (moist soils), CO has higher efficacy than rodenticides. Secondary poisoning does not occur because carbon monoxide dissipates from animal tissues, however, primary poisoning may occur to other animals directly exposed to carbon monoxide. Research on the direct impacts to other species living within the tunnels is largely unknown in field conditions.

Also, the CDA regulates all use of rodenticides, including carbon monoxide (an unrestricted general use fumigant) if the persons using such chemicals or devices utilize the method on a commercial basis.

Finally, local governments have largely kept away from regulating pesticides within their own local community and have ceded primary authority to the CDA. While the CDA regulates and approves pesticides, local governments can still regulate private landowners who elect to use rodenticides or other methods to kill animals. A local government could for example require a permit process where other less toxic choices might be better, evaluate opportunities for avoidance (transfer density rights, set-backs, overlay zoning, land swaps, etc) question short-term and long-term plans to avoid the same problem from reoccurring, require larger notification signs or rope off entire areas, question how to protect the public and pets from accidental exposure, require publications in the newspaper and many other choices. Local governments can do this because they are responsible for protecting the health, safety, general welfare and the environment for which they have political jurisdiction. Local governments cannot dictate rules to a state licensed exterminator above or below what the state already requires.

Since the developer of the project has been literally left to their own direction, it will be incumbent upon you to know the laws, to understand prairie dog biology and reduce as much environmental damage as possible. Read the label of the rodenticide products and conduct preliminary research into the product (i.e. read the user manual!). Also, agricultural statutes are very weak in the area of protecting laborers, including hiring minor children to exterminate prairie dogs; this has already occurred once on this site. You are responsible for asking good questions and taking the matter seriously.

Thank you for allowing me to comment on this Draft PDMP, I hope for the sake of these animals that it will make sense in some capacity to avoid as much lethal control as possible.

Regards,

Pam Wanek
Pam Wanek
Prairie Preserves LLC
2251 W. 144th Place
Broomfield, CO
80023

References:

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From:	Irfan Azeem
To:	City Council
Subject:	Request to reschedule RESOLUTION NO. 80, SERIES 2023
Date:	Monday, December 4, 2023 7:21:19 PM

Dear Louisville Mayor and City Council Members,

I am writing to you with a request for a change in your city council agenda for December 5, 2023. Please reschedule the discussion of RESOLUTION NO. 80, SERIES 2023 – A RESOLUTION APPROVING THE REDTAIL RIDGE FILING NO. 1 PRELIMINARY SUBDIVISION PLAT to a new date in the future. The city failed to provide a reasonable notice to the citizens of Louisville who are interested stakeholders in this matter.

I believe that a new date for the Redtail Ridge hearing is warranted because the original proposed date is inadequate based on the precedence set by a CO Supreme Court ruling. In Hamman v. County Court, Jefferson County, a woman gave notice in a newspaper to her child-support-paying-ex-husband that a hearing was scheduled to change her child's last name. He didn't see the published notice and the name was changed. Though the subject matter differs, this shows that the state's Supreme Court is willing to look at the issue of reasonable notice to stakeholders. In this case, the Court reversed the name change, determining that the newspaper ad was not sufficient even though public notice requirements were met. Reasonable notice was expected. Similarly, in the case of this Redtail hearing, even if minimum public notice requirements were met, reasonable notice was not provided to interested parties.

At the November 28, 2023 city council hearing, a number of Louisville residents expressed that they were blindsided by the news that this subdivision plat would be on the agenda for December 5, 2023. Apparently, public notices were posted on November 17, 2023, but interested parties did not find out about the application until one week before the hearing date and then only by chance because a resident within 750 feet of the parcel shared information about a mailed notice.

LMC Sec. 16.04.070. describes the minimum requirements for public notice. In this case, meeting the minimum requirements while deliberately avoiding other typical paths for communications demonstrates lack of transparency of the city staff and council members who set this agenda item.

Clearly interested parties were not notified. The Citizens' Action Council, the DBA, and the hundreds of residents who wrote letters and showed up at previous hearings were not informed. The registered agent for Preserve Louisville, who led the "No" campaign in the April special election in which over 3,000 residents voted against the ordinance, did not receive a courtesy phone call or email.

Typically, interested stakeholders learn of upcoming hearings when city council discusses future agenda items. While other future agenda items were mentioned, this was not discussed at the November 6 regular city council meeting. Also, it is typical to list upcoming hearing schedules on the city's Current Development website. As of today, the website still lists the date for the city council hearing as "TBD."

Efforts to meet the public notice requirements were likewise minimal. Signs on HWY 36 and NW parkway are not readable at the speeds at which vehicles travel. The most readable sign is on Campus Drive, where the speed limit is 20 MPH. If this was posted 15 days prior to the hearing it would have gone up November 20, the first day of Thanksgiving Break when no traffic is expected on Campus Drive. Even then, the sign is located at the dead end, taking it off the path of all traffic headed to Monarch K-8. If the sign was meant to inform the public, it would have been placed closer to the 88th Street intersection. Likewise, the sign on 96th Street is set far back from traffic and is only readable if one exits onto the driveway by the fire station.

This entire process of notification almost looks like an attempt to subvert the will of the citizens of Louisville. It is apparent that the city is advancing this matter under the radar of stakeholders to avoid any

organization of opposition. I (and other Louisville citizens) believe that this is being rushed through to minimize the number of votes required for passage while there is a vacancy on council. Therefore, I'm requesting you to move reschedule the discussion of RESOLUTION NO. 80, SERIES 2023 – A RESOLUTION APPROVING THE REDTAIL RIDGE FILING NO. 1 PRELIMINARY SUBDIVISION PLAT to a later date.

Sincerely,

Irfan Azeem

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From: Adrianne Middleton
To: City Council; Deb Fahey
Subject: No on Red Tail Ridge
Date: Monday, December 4, 2023 6:54:54 PM

While I understand that the StorageTek/Red Tail Ridge property is privately owned, and will be developed, we need to stand firm in our commitment to Louisville's current municipal code. We need to protect open space and our city from over-development.

Please do not let them bulldoze over the entire property, and destroy our fragile prairie landscape. Please have them set aside all the land north of Disk Drive for open space, as the previous city council recommended. Wildlife can't live in tiny strips of land, and people do better when we get away from noisy building fans and traffic.

In April of 2022, the city voted to deny the developer's plan. The current plan uses the same unacceptable footprint as the old plan. Have the developer apply the requirements agreed to by the previous city council, and go for higher density development on a smaller parcel of land. Don't give them the idea that they can come back in a few months and increase the development to the 3.1 million sq ft development that they were pushing last year.

Louisville can't afford higher water prices with ever more demand on this shrinking resource. Encourage the developer to figure out no water landscaping and other water conservation efforts. Louisville can't afford to rebuild the Interlocken interchange to accommodate gazillions more cars. Have them pay for the upgrades their development will require.

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From: dgcamell
To: City Council
Subject: Proposed Red Tail Ridge development
Date: Monday, December 4, 2023 6:51:57 PM

Hello,
I'm writing because I won't make the council meeting tomorrow and wanted to participate.
I've heard you're going to discuss/vote on this matter again without any real changes in the plan. I don't like that.
Please reconsider and consider the previous votes.
I don't want it to look like the Broomfield side.
Thanks for your consideration and service.
Dennis Camell
701 West St

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From: Kim Contini
To: City Council
Subject: Red Tail Ridge Development Plan
Date: Monday, December 4, 2023 6:36:02 PM

Dear Louisville City Council members,

I have been a resident of Louisville for 30 years and have appreciated the quality of life the City has provided. My concern is that the Red Tail Ridge Development is more in the developer's interest then the residents of our City. I urge you to hold off on all approvals until the entire plan meets our city codes.

Where can a resident find a complete *updated* proposal of the development on the City website?

Sincerely,

Kim Contini

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From:	Gerri Foley
To:	City Council
Cc:	Gerri Foley
Subject:	In Favor of Redtail Ridge Development Proposal
Date:	Monday, December 4, 2023 5:55:12 PM

My name is Gerri Foley, and I now live at 267 South Lark Avenue, Louisville. I am here while my house is being rebuilt; I own a home at 922 St Andrews Lane, Louisville that was destroyed in the Marshall Fire.

Back in 2021 I wrote to city council (a few times) regarding my support for Redtail Ridge. I am here again to voice my support for the Redtail Ridge proposal, and for the same reasons I gave before.

I understand resident concerns regarding size, use, 'small town' impact, effect on city utilities, etc. So, the previous/original proposal crashed and burned. I get it.

From what I've read, the developer, Brue Baukol, is not asking for any zoning changes, and is looking to work within the confines of Louisville's Comprehensive Plan and Louisville policies. They've significantly reduced building density, allocated numerous acres to public land, and targeting numerous acres to open space. Yet, the 'No on Redtail Ridge' advocates continue to cry foul, claiming they want to keep Louisville the way it is and let the wildlife take over that space.

The reality is that if Louisville is to maintain our city amenities (fire, police, water, etc, etc) then we must be able to financially support our police, firehouses, water inspection, and the multitude of city ordinances and regulations created for our protection. We get a large portion of that through revenue from the groups we are pushing away. We've lost Medtronic, which would have been a tremendous addition to our tax base and our community spirit. We've lost any opportunity to have residential properties such as senior housing and rental apartments, and with it the possibility finally of getting more affordable housing and increasing socioeconomic diversity. Yet the developers withdrew their request to change the 'rural' designation (which would have allowed for residential development) so as not to rock the boat.

In an article I read previously it stated that in the past decade, prairie dogs, foxes, coyotes, etc. have been reclaiming the current Redtail Ridge land and that this should continue. Really? (1) I'm concerned that a large number of foxes, coyotes and prairie dogs roaming paths I would like to walk and where children should be able to play could be unsafe, and (2) foxes, coyotes, and prairie dogs do not contribute to our revenue base last I heard.

Brue Baukol is conforming to the zoning requirement that Louisville currently has. He's

following what we, Louisville, have asked for. Yet there are still nay sayers. I wonder how big this group really is. My experience is that there is usually a small group of people who are very verbal, while the majority of people who don't really oppose something remain silent.

I support the current development proposal. I wouldn't even have sent this comment had it not been for the extreme and sometimes misleading opposition articles I've read. Measured growth for Louisville is a good thing. We can still keep the small town feeling we all love and maintain a revenue base to keep and grow the small town ambiance we have.

Respectfully submitted,
Gerri Foley

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From: LEE ANN CAST
To: City Council
Subject: Please approve the Redtail Ridge Plat
Date: Monday, December 4, 2023 5:37:05 PM

Dear Members of the Louisville City Council,

I write in strong support of the Redtail Ridge preliminary plat. The comprehensive benefits of moving forward on Redtail Ridge are clear and vital for our town. This project aligns perfectly with our Comp Plan and our city's goals for compatible development, sustainability, transportation, and economic vitality. By approving this plat, we take a significant step towards a more connected and environmentally responsible Louisville.

The importance of keeping Avista Hospital, our largest employer, in Louisville cannot be overstated. Its presence is not just about jobs; it's about maintaining a sense of community and providing essential healthcare services to our residents. Approving this plat ensures Avista's continued contribution to our community's well-being.

The 155 acres of open space in Redtail Ridge would be one of the largest donations in Louisville's history. The commitments to habitat management and preservation are equally important, and create new opportunities for residents to enjoy open space. It's a rare opportunity to enhance our community's recreational spaces and overall quality of life.

Approving the plat is a vital next step in developing the network of roads, trails, and infrastructure that can create a safe and healthy campus. It is what allows Campus Drive to finally be extended. And yes, it keeps Avista Hospital in Louisville.

Approving the Redtail Ridge plat is more than a procedural step; it's a statement about the kind of city we want to be. A city that is forward-thinking, family-friendly, and open to new opportunities. Let's not delay this any longer.

Lee Ann Cast
485 Front St
Louisville, CO

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From: Orion Pilger
To: City Council
Subject: Dec 5 Brue Baukol Redtail Ridge Development Plan
Date: Monday, December 4, 2023 5:21:06 PM

Hello,

It has come to my attention that you will be voting on the preliminary subdivision plat for Redtail Ridge tomorrow. Please **postpone any decisions** until there is a complete application that the public can view. The public has voted on this matter several times and it is in our interest.

Council should require the developer of this project to set aside all land north of Disc Drive as **open space** and build a compact development. The developer should not be able to build until the plan meets our city codes.

Thank you,
Orion

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From:	shawnfawson
To:	City Council
Subject:	No to decisions about Redtail Ridge
Date:	Monday, December 4, 2023 5:10:21 PM

Hello City Council:

I am a resident of Louisville, CO, and I ask you to **postpone any decisions on a preliminary subdivision for Redtail Ridge** until there is a complete application that the public can view.You should require the developer to set aside all land north of Disc Drive as open space and build a compact development. The developer has the right to build but not if their plan doesn't meet our codes. **The plan must meet our city codes.**

A resident in Louisville,
Shawn Fawson

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From: F McGarey
To: City Council
Subject: Retail Ridge preliminary subdivision plat hearing
Date: Monday, December 4, 2023 5:09:17 PM

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30 Year LoLouisville Resident here - just happy OI heard about the short window to submit my comment on this issue.

I am not in favor of of Baukol's work on his second run at this property development - Please postponeany vote oon moving forward until the developer's application is complete and in compliance with City Codes. What has the developer done to address the issues cited by Louisville's planning Commission a year ago?
This is a big development that will affect the quality of every Louisville residen't's life daily. Please exercise prudence at this stage of RedTail II so us citizens can be proud of your diligence in a good project.

Jerry Mv=cGarey
2348 Senator Ct.
Louisville CO 80027

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From: gdoty
To: City Council
Subject: Redtail Ridge
Date: Monday, December 4, 2023 4:54:56 PM

Hello,

I am writing to ask why Redtail Ridge is still being pursued. Our community Voted NO on this why are you not paying attention?

NO MEANS NO!

Thanks,

Gary

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From: Kim Gustafson
To: City Council
Subject: Redtail Ridge plat decision
Date: Monday, December 4, 2023 4:34:04 PM

Please postpone any decisions regarding the Redtail Ridge preliminary subdivision plat until there is a complete application we voters can preview. I am concerned the proposal under consideration does not meet city codes and ignores the concerns the planning commission expressed in its rejection of it a year ago.
Additionally, voters disapproved of the negative impact the sprawling development will bring to areas north of Disc Drive. Those areas need to be set aside as open space and the developer needs to commit to a more compact development plan.

Please respect the will of Louisville citizens and hold off on voting until the proposal under consideration is complete.
Thank you.
Kim Gustafson
600 Dahlia Way, Louisville, CO 80027

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From: Puska
To: City Council
Subject: Redtail Ridge
Date: Monday, December 4, 2023 4:01:07 PM

Hello

We are 23 year residents of Louisville and have raised our children here. We value Louisville's small town atmosphere, the safe community feel, and the lack of congestion. We are concerned that the Redtail Ridge proposal, as it is, will have a significantly negative impact on these values. Our understanding is the proposal before the city council is unchanged from the original proposal that does not have the support of the majority of Louisville residents or fit the city's master plan. Building a large commercial and industrial complex in a small town will add to congestion and dilute the community feel of Louisville. Doing so without adding a sufficient amount of affordable housing will further drive up the cost of housing and associated property taxes. It will price out many of the children who grew up here.

While we agree the developer must be able to develop the land to get a return on investment, it should be done in a manner consistent with the planning codes, values, and feel of Louisville. The developer does not live here. Their motivation is profit. It is the responsibility of the city council to maintain our values. We encourage you to reject this proposal until the developer's plans meet the values that have made this town so desirable. We will be watching to see how the city council members respond.

Klaus and Carolyn Puska
552 W Spruce Way

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From: John Obremski
To: City Council
Subject: No "Retail" Ridge quick approval
Date: Monday, December 4, 2023 3:15:43 PM

Council members,

Please postpone any decision on this issue of approval for "Retail" Ridge until there has been a completed application submitted. "Retail Ridge", as we locals call it, should be a compact development with open space reserved to the north. Any plan must meet Louisville city codes. We do not want a crowded city with traffic problems.

Thanks,
John Obremski
248 Centennial Drive
Louisville, CO

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From: JEFFREY MEIER
To: City Council
Subject: Please Approve the Redtail Ridge Plat
Date: Monday, December 4, 2023 3:13:59 PM

Dear Louisville City Council Members,
I am writing to you as a resident of Louisville, to express my strong support for the approval of the preliminary plat for the Redtail Ridge development. This project represents a pivotal opportunity for our community and aligns completely with Louisville's Comprehensive Plan and code. It embodies our community's goals for sustainable development, open space and public lands, and economic revitalization.
One of the most compelling reasons to support the plat is that it will secure Avista's presence in Louisville. As our largest employer, Avista's presence is integral to the economic and social fabric of our community. More than 60,000 babies have been born at Avista, and we all know someone who has received care there. Approving the Redtail Ridge plat ensures that Avista remains in Louisville, and that should be a top priority.
Approving this plat also creates the opportunity to turn this privately owned land into more than 155 acres of new public open space. This dedication will be the second-largest public land dedication in our city's history–and the single largest if you don't include land used for golf courses. For generations, Louisville residents have never had the opportunity to legally visit and enjoy the site. Approving the plat opens up new avenues for recreation and nature conservation, habitat preservation, and so much more.
It's time to move forward on Redtail Ridge. This plat meets the Comp Plan and our code, and does so in a way that respects our community's values, contributes to our economic vitality, and enhances our living environment. **I strongly urge the Council to approve the preliminary plat for Redtail Ridge, setting Louisville on a path to sustainable growth and prosperity.**
Thank you for your consideration.
Jeff Meier
470 County Rd.

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From: Will Purdy
To: City Council
Subject: Redtail Ridge
Date: Monday, December 4, 2023 2:54:33 PM

Greetings,

We are writing to oppose the Redtail Ridge development plan by Brue Baukol (again).

We are 30 year residents of Louisville. This is NOT what the city needs.

Infill Kohl's/Sam's/Lowe's first. Try to get a Trader Joe's in the Alfalfa's space.

No more sprawl please.

Sincerely,
Will Purdy and Georgia Patterson
158 W. Elm Street

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From: STEVE GRIMSLEY
To: City Council
Subject: Redtail Ridge
Date: Monday, December 4, 2023 2:48:36 PM

Hello, council memebers Dickinson, Fahey and Mayor Leh, hope things are good.
Thank you for the oppurtunity to allow Louisville citizens voice their concerns about the proposed use of the Redtail Ridge property.
This has been a topic that I have reviewed from different angles coming to the same conclusion.

1. Lousiville does not, (if it does please share this information, I have not seen any of this), the infrastructure , roads, water, sewer, first responders, to handle anything like what Brue Baukol's development has presented
2. There is not enough retail , King Soopers, Safeway etc...., to handle such a large amount of people this development has slated to occupy this property.
3. Traffic, now, has a three light change to get through during peak hours, can you imagine this will cause the three light change in non peak hours, and let you mind wonder to peak hours?
4. Schools, "all" schools in the area of this property are over crowded, most class rooms average 30 students per class per grades and this property being right next door to both Monarch schools will inundated the buildings and most of all the staff!

Now, don't bring me problems, bring me solutions.

1. Multi use, convention center, sports fields, arenas, bigger and better recreation center
2. A mini Red Rocks amphitheater, concerts, sunrise services, etc...

Do you have to choose something that destroys the environment, causes strife among Louisville citizens, just to put a few coins in the kiddy?
If you feel all that has been said is not true, please provide public documents that "prove" the above will not happen. In conclusion, has or will the council and Mayor address the proposed alternate solutions for the Redtail Ridge property?
Thank You and Best Regards,

Steve Grimsley
518 Catalpa Ct

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From: Douglas Schofield
To: City Council
Subject: VOTE AGAINST REDTAIL DEVELOPMENT, AGAIN!!!
Date: Monday, December 4, 2023 2:42:26 PM

RE: Redtail Ridge (and any similar proposals)

Dear Council Members:

It certainly appears that, in the barrage of detail and hype about Redtail, the Council has completely lost sight of the hugely important fundamentals about Louisville and its current residents:

1. We moved to Louisville for its many current attractions (eg large open spaces, long and open views of the mountains, LOW volume of traffic).

2. We do NOT want additional development, with all the massive traffic congestion, loss of open space, etc it entails.

3. We do NOT want ever bigger local government and higher taxes which come with more development (and we recognize that while tax revenue is higher from new development , COSTS are like to be even higher).

DO NOT APPROVE ANY NEW LARGE SCALE DEVELOPMENT IN LOUISVILLE!!

Douglas Schofield

12-4-23

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From: sabocci
To: City Council
Subject: December 5 Council meeting re: Redtail Ridge
Date: Monday, December 4, 2023 2:17:14 PM

Sent from my iPhone

Please fill the Ward 1 vacant seat prior to the vote of approval.
Keep the voice of the community and the cherished spirit of our town in mind as you require developers to meet the current city codes.
Lower building height, footprint spread, more untouched land. Goodhue ditch preservation.
Never lose sight of what we have built and preserved in the town of Louisville.
Thanks to you, Sara Bocci

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From: beverlycampbell
To: City Council
Subject: Brue Baukol Development
Date: Monday, December 4, 2023 2:16:10 PM
Importance: High

Good Afternoon,

I'm unable to attend the council meeting tomorrow evening, but wanted to let you know my thoughts regarding the Baukol development. It seems like many decisions are being made in a hasty manner lately without the necessary input and thought being given to the impact and/or final outcome of those decisions. I'd like this not to be another of those such decisions.

The residents of Louisville rejected this development in 2021, and from what I've heard and seen the proposal by Baukol hasn't changed. The planning commission recommended denial in 2022 making comments and recommendations on the proposal, which the developer has ignored. Consequently, until the developer makes a complete application, the council should postpone any decision until the developer's plan meets our city codes.

Please don't make any rash and speedy decision regarding the Brue Baukol Developement.

Bev Campbell
586 Cleveland Ave.
Louisville, CO

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From: jeannemosher
To: City Council
Cc: "Mark Mosher"; "Jeanne Mosher"
Subject: Redtail Ridge NO
Date: Monday, December 4, 2023 1:41:27 PM

Hello Council members,

Please do not approve the proposal that is being reviewed later this week. This application is not complete and we have not been able to review it. As far as we can tell, it is the same proposal already rejected by the planning commission and disliked by citizens. We must meet city codes in any development. That has to be a fundamental requirement.

Thank you,
Jeanne and Mark Mosher

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From:	Jennifer Singer-Rupp
To:	City Council
Cc:	Christopher Leh; jkern@lousivilleco.gov; Barbara Hamlington; Dietrich Hoefner; Deb Fahey; Caleb Dickinson
Subject:	Redtail Ridge
Date:	Monday, December 4, 2023 1:22:00 PM

Greetings Louisville City Council Members, Greetings Mayor Leh,

I wanted to reach out to you about one of the agenda items included in the Tuesday City Council meeting - Redtail Ridge. As a fire family, seeing this agenda item included in your first meeting as a newly formed City Council with many new members given the timing has been very distressing. Let me explain. The insurance and financial implications accompanying the two year anniversary of the Marshall Fire are causing many fire families extreme stress. We are running out of insurance funds and the City is stretched thin trying to keep up with building inspections. Many fire families are also stressed emotionally with the second year anniversary of the Marshall Fire approaching. The referendum took place right after the fire and the citizens spoke. Many of us were barely able to turn in our ballots - we were all displaced with no address to mail our ballots to. Now Council has decided to bring this agenda item to the table weeks before the two year anniversary.

Having Brue baukol turn in essentially the same application after our citizen referendum that rejected their proposal gives us the message that they are unwilling to incorporate any citizen input. The speed that this is happening with a new city council and mayor and the timing is disappointing. Since the topic was pushed through to be included on the agenda, at this point, I sincerely hope that the Louisville City Council takes the Planning Commissions' recommendation to reject the application into account and recognizes that the current application does not meet our municipal code.

The site will be developed, but the plans and application need to meet the City of Louisville municipal code, the application should be complete including the Northwest Parkway BoD approval, and the referendum needs to be respected by incorporating citizen input into the application. Our family had to meet City requirements to rebuild our home after the Marshall fire. Why should an investment firm looking to develop millions of square feet in Louisville be exempt from such requirements and processes?

Thank you for your time and consideration.

Sincerely,

Jennifer Singer Rupp
Original: 466 Muirfield Circle, Louisville, CO 80027
Temporary rental during rebuild: 643 South Manorwood Lane, Louisville, CO 80027

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From: Betty Solek
To: City Council
Subject: Voting on Redtail Ridge
Date: Monday, December 4, 2023 1:19:55 PM

Dear current council members:
I understand there could be a vote on the resubmitted application for the RedTail Ridge proposal tomorrow. In light of the current vacant seat on the council, It doesn't seem the consideration of this proposal is appropriate. Louisville voters said no to this proposal and it's disturbing to see a new council immediately reconsider the application. And not even a complete council!
Louisville residents have made clear their opposition to the vision for the last big undeveloped opportunity for this community. The city was supportive of the original vision when ConocoPhillips proposed a sustainable energy research center. It seems the council continues to be presented with the vision of a large corporate entity, with out the sustainable energy research center. Now the plan is presenting more of the same corporate buildings that Broomfield Interlocken Business park provides. I heard all of the city council candidates voice their support for the small town character of Louisville. I am not convinced that "more of the same" corporate office park will support a small town character.
This is the year that Louisville begins its Comprehensive Plan update. It seems to me that this council needs to find a way to allow that process to proceed and give Louisville citizens the opportunity to voice their vision for this property, while also considering Louisville as a whole.
Thank you for considering my input.
Betty Solek
1101 N Franklin Ave
Louisville

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From: Rob Zuccaro
To: Joel Meggers; Anna Bertanzetti; City Council
Subject: Re: Redtail Ridge Plat and S 96th St Access
Date: Monday, December 4, 2023 1:00:17 PM

Hi Anna,

I tried to call your cell phone but got went straight to voicemail. Nothing is changing with that right of way as part of this plat. Please call when you get a chance. 393-591-4901

Get Outlook for iOS

From: Joel Meggers <jmeggers@crsofcolorado.com>
Sent: Monday, December 4, 2023 12:52:47 PM
To: Anna Bertanzetti <abertanzetti@broomfield.org>; City Council <Council@louisvilleco.gov>
Cc: Rob Zuccaro <rzuccaro@louisvilleco.gov>
Subject: RE: Redtail Ridge Plat and S 96th St Access

> Some people who received this message don't often get email from jmeggers@crsofcolorado.com. Learn why this is important

Thanks Anna.

I cc'd Rob on this item on Friday when I sent it out.

In addition, I'm just reading this… so I also just sent you a copy of it because I didn't you already received it. I wanted to let you both know to avoid any confusion.

Thanks,

Joel Meggers
President of Community Resource Services (CRS) of Colorado
303-204-0803
www.crsofcolorado.com

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From: Anna Bertanzetti <abertanzetti@broomfield.org>
Sent: Monday, December 4, 2023 12:15 PM
To: council@louisvilleco.gov
Cc: Rob Zuccaro <rzuccaro@louisvilleco.gov>; Joel Meggers <jmeggers@crsofcolorado.com>
Subject: Redtail Ridge Plat and S 96th St Access

Louisville City Council,

Please see the attached letter regarding the Redtail Ridge Preliminary Plat public hearing scheduled for December 5, 2023.

Thank you,
Anna

Anna Bertanzetti
Planning Director, Codirector of Community Development

City and County of Broomfield
Community Development
One DesCombes Drive
Broomfield, CO 80020

Cell: (303) 349-0509

Pronouns: she, her, hers

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From: Joel Meggers
To: Anna Bertanzetti; City Council
Cc: Rob Zuccaro
Subject: RE: Redtail Ridge Plat and S 96th St Access
Date: Monday, December 4, 2023 12:52:54 PM

> Some people who received this message don't often get email from jmeggers@crsofcolorado.com. Learn why this is important

Thanks Anna.

I cc'd Rob on this item on Friday when I sent it out.

In addition, I'm just reading this… so I also just sent you a copy of it because I didn't you already received it. I wanted to let you both know to avoid any confusion.

Thanks,

Joel Meggers
President of Community Resource Services (CRS) of Colorado
303-204-0803
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From: Anna Bertanzetti <abertanzetti@broomfield.org>
Sent: Monday, December 4, 2023 12:15 PM
To: council@louisvilleco.gov
Cc: Rob Zuccaro <rzuccaro@louisvilleco.gov>; Joel Meggers <jmeggers@crsofcolorado.com>
Subject: Redtail Ridge Plat and S 96th St Access

Louisville City Council,

Please see the attached letter regarding the Redtail Ridge Preliminary Plat public hearing scheduled for December 5, 2023.

Thank you,
Anna

Anna Bertanzetti
Planning Director, Codirector of Community Development

City and County of Broomfield
Community Development

One DesCombes Drive
Broomfield, CO 80020

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From: CHARLIE FISHER
To: City Council
Subject: Redtail Ridge Vote Tues. Dec. 5th
Date: Monday, December 4, 2023 12:48:09 PM

The plans that were submitted by Baukol, and denied by the planning commission, as well as the voters here in Louisville, are not complete. They have not been updated since April of 2021. If you vote to push forward with these plans, you are going against our votes. And I find it odd that there wasn't much notice when you added this to your agenda, knowing full well that most of us are in the middle of our holiday plans. Please postpone this vote until a new set of plans has been submitted. These plans will cause traffic problems in and around our Monarch High School (also putting our students' safety at risk); they do not include an infrastructure that supports the additional traffic. The plans are not environmentally sound, and they are not within Louisville's zoning laws. If we allow this project to go forward as is, we are setting a precedent for more building projects that raise our height limits, and we will soon look just like Boulder.

Charlie Fisher
280 S. Monroe Ct.
Louisville, CO 80027

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From: Kathy Small
To: City Council
Subject: NO (again) on Redtail Ridge!
Date: Monday, December 4, 2023 12:43:16 PM

Seriously, the developer believes they can just waltz back into Louisville with the same massively faulty proposal to develop the Storage Tek property... right after our new council members are seated??

PLEASE REMIND THE DEVELOPER THAT THE LOUISVILLE VOTERS (including me) HAVE SOUNDLY TURNED DOWN THIS PROPOSAL. It's absolutely out-of-scale for the property, and not at all what we want for that area of our beautiful city.

Thank you for representing me.

Kathy Small
2170 Dogwood Cir, Louisville, CO 80027
kathy.small.boulder@gmail.com

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From: Vicki Quarles
To: City Council
Subject: Redtail Ridge
Date: Monday, December 4, 2023 12:38:21 PM

I am writing to express concern about the preliminary subdivision plat for Redtail Ridge.

Please postpone any decisions until there is a complete application that the public can view. Please require the developer to set aside all land north of Disc Dr. as open space and build a compact development. I know the developer has a right to build, but the plan must meet city codes.

This development has huge implications for the future. Let's be responsible in its planning.

Thank you.

Vicki Quarles, West St., Louisville

"Adopt the pace of nature: her secret is patience." Ralph Waldo Emerson

"The secret of a good old age is simply an honorable pact with solitude." Gabriel Garcia Marquez

"Nobody can go back and start a new beginning, but anyone can start today and make a new ending." Maria Robinson

"What happens to you does not matter: what you become through those experiences is all that is significant. This is the true meaning of life." Paraphrased from Buddhist philosophy

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From:	Anna Bertanzetti
To:	City Council
Cc:	Rob Zuccaro; Joel Meggers
Subject:	Redtail Ridge Plat and S 96th St Access
Date:	Monday, December 4, 2023 12:15:22 PM
Attachments:	Redtail Ridge Letter.pdf

Louisville City Council,

Please see the attached letter regarding the Redtail Ridge Preliminary Plat public hearing scheduled for December 5, 2023.

Thank you,
Anna

Anna Bertanzetti
Planning Director, Codirector of Community Development

City and County of Broomfield
Community Development
One DesCombes Drive
Broomfield, CO 80020

Cell: (303) 349-0509

Pronouns: she, her, hers

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COMMUNITY DEVELOPMENT
One DesCombes Drive • Broomfield, CO 80020 • 303.438.6389 • www.broomfield.org

December 4, 2023

Attn: Louisville City Council (council@louisvilleco.gov)

RE: **Redtail Ridge Plat and S 96th St Access**

To Whom it May Concern:

The City and County of Broomfield has been made aware of a public hearing scheduled for 12/5/2023 on the Redtail Ridge Preliminary Plat.

The Northwest Parkway Public Highway Authority owns a parcel in Broomfield at 13951 S 96th Street (Parcel Number 157521310002) at the terminus of Disc Drive and S. 96th Street. This parcel is owned by the Parkway and intended for a future public park. Northwest Parkway is obligated to construct public park improvements, including trails, a pedestrian bridge, an information sign and parking by the Deed of Conservation Easement regulating the property, of which Louisville is a party.

Based on review of the most recent version of this preliminary plat, access for the above referenced property will no longer be available as S 96th St does not appear to continue to extend south to provide public access to the subject property and Disc Drive is not shown extending east to the parcel. Since this parcel is intended for development as a public passive park, vehicular access is necessary.

We believe it is critical to plan for public access, including vehicular access, to the park and although Broomfield is not objecting to the preliminary plat moving forward, we would like to confirm our intent to continue to work with the developer, Louisville, and Northwest Parkway to ensure vehicular access can be incorporated into the plans prior to consideration of the final plat.

Additionally, Broomfield looks forward to continuing to work with Louisville and Northwest Parkway to address all remaining concerns, questions, and comments regarding the development plans for Redtail Ridge prior to their formal consideration for approval.

Should you have any additional questions, please do not hesitate to contact us.

Sincerely,

Anna Bertanzetti

Anna Bertanzetti
CoDirector of Community Development/Planning Director
City and County of Broomfield
abertanzetti@broomfield.org

CC: Rob Zuccaro, Community Development Director, City of Louisville
Joel Meggers as Managing Administrator, Northwest Parkway Authority

From:	traffdr@aol.com
To:	City Council
Subject:	Tom Rafferty Ward 3 Comment on 12-5-2023 REDTAIL RIDGE Meeting
Date:	Monday, December 4, 2023 12:09:16 PM

Dear Honorable Mayor and Councilors:

If this application is incomplete, please send it back for completion and resubmittal. Many of my feelings towards the development of this property remain the same as it was when I participated in citizen meetings and comments starting in the Summer of 2019, over four years ago. Therefore, I am repeating such herein.

1. PERIPHERAL VISUAL IMPACT: Landscaping and View Corridors: Please consider the value and successful precedent of shielding improvements from the view of the TURNPIKE and ALL OTHER PERIMETER ROADS as Storage Tech and the Authorities did back in the 1970s. I can only speak for me, but I suspect many of us believe that all of the build-out in the remaining spaces of our front range without regards to masking such with effective landscapes and adequate OPEN SPACE is psychologically REVOLTING. It would be most appreciated if you and the Developer can ask the Landscape Architects to help push the buildings inboard to accommodate adequate landscape berms and trees to help mitigate all this visible depletion of our beautiful once rural surroundings? I also hope you can strategically place the tall buildings behind these landscape veils and maintain ADEQUATE VIEW CORRIDORS across the property from ALL sides. If a taller building or sprawling complex is mitigated by Landscaping, it can soften the impact. This will help set a good example as compared to the GARISH COMMERCIAL CAR DEALERSHIPS and Residential Sardine Factories' BLIGHT imho to the east. And, it seems insane and inconsiderate to regrade this property before an approved design is reached.

2. TRAFFIC: How much TRAFFIC is too much traffic? Many of us in Louisville long for the small town we use to have. I realize it is gone. However, I do hope that the improvements are a good balance for our town without unfairly taking a property owner's right to develop, and most importantly that they do not put too much TRAFFIC BURDEN out there and onto our current town.

3. HOSPITAL: Please do what you can fairly do to keep our Hospital here in Louisville. This is very important to our town and economic vitality. It was hard to have to watch us loose Medtronic, and still no apparent economic improvements to the McCaslin area.

4. AFFORDABLE HOUSING: Why do we have to continually hear this term in so many politician's campaigns, when there apparently is no effective way (Watch the last City Council Meeting regarding East Street Project) to define or implement it, all the while down the street there is a simple townhouse for sale for just a measly UNAFFORDABLE $1,000,000. I hope you can close that gap soon, regardless of whether this project includes housing or not.

Respectfully, and thank you,
Tom Rafferty
Ward 3

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From: alexiskhan@comcast.net
To: City Council
Subject: Red Tail Ridge
Date: Monday, December 4, 2023 11:48:32 AM

Hello,

I am a citizen of Louisville since 1986.

I have seen some growth over these years and I would like to see Red Tail Ridge developed according to their plan as long as it is within the planning commissions specifications. I would also like to say that I feel that the benefits outweigh the negatives. I also feel Brue Baukol has been generous with open space demands. I would also like to make it easier for the hospital to expand and remain in Louisville.

I am tired of a small group of people in Louisville with loud voices speaking against every single thing and making unreasonable demands…and building obstacles for any development. Businesses don't seem to want to come or stay in Louisville. Lafayette and Erie seem to be attracting all our once were anchor stores. It is sad to see.

Let them build the property, it is private property, as long as they are within the specifications by the City code. Stop letting an unreasonable group make unreasonable demands.

Alexis Khan

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From: Jim&Diana
To: City Council
Subject: FW: Comments for support of Redtail Ridge GDP
Date: Monday, December 4, 2023 11:25:55 AM
Attachments:

Dear Planning Commission Members,

Attached is a word document that expresses my conditional support for the current Redtail General Development Plan (GDP) Amendment. Thank you for the opportunity to express my opinions.

Jim Hornbeck
207 Springs Dr.
Louisville, CO 80027

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Dear Planning Commission Members:

Louisville has struggled with the issue of Redtail Ridge development for more than two years.

Like many in the Louisville community I would prefer that Redtail Ridge remain for the foreseeable future as a dedicated Open Space with public access for all to enjoy the mountain views and the many species of wildlife that inhabit the area. Yet after so many years (since the demise of Storage Tech) neither the city nor Boulder County have acted and apparently have no plans to preserve and protect this acreage as Open Space.

In light of this inaction, I conditionally support the Redtail General Development Plan (GDP) Amendment. The GDP presents a promising plan to balance investment in Louisville's development while maintaining the essence of the existing ecosystem.

Some of the conditions I place upon this support are:

- Modification of plan to allow wildlife corridors between Coal Creek and Rock Creek open spaces.
- Maximum allocation of Common Open Space on property.
- No construction on or southwest of the existing berm in Parcel E (Development Plan, Sheet 2 of 3, https://www.louisvilleco.gov/home/showpublisheddocument/30888/637557261494970000
- Proposal must meet all county and Louisville's Municipal codes
- City of Louisville must maintain right to review and approve/disallow all specific projects on property once the GDP is approved.

I have been impressed by the developer's willingness to revise their plans based on community and City feedback. They have significantly scaled back their initial planned development while maintaining on-site public amenities, extending regional trail connections, and enhancing traffic flow. I require that the developer continue to work with the community and City as Redtail Ridge is developed.

Please vote yes and approve the proposed GDP Amendment with the conditions specified above.

Jim Hornbeck
207 Springs Dr.
Louisville, CO 80027

From:	Gail Hartman
To:	City Council
Subject:	Vote NO on the Redtail Ridge application
Date:	Monday, December 4, 2023 11:08:56 AM

To City Council,

Here we go again. I was honestly stunned to hear that city staff and Council are trying to sneak in another go-round of the already rejected RedTail Ridge plan during your Dec. 5 meeting. Was it purposeful? Don't know but it sure smells rotten and is therefore being perceived by residents of Louisville as exactly that.

Please remember that In April of 2022, Louisville voters overturned the City Council's approval of the Redtail Ridge application **by referendum**. Then in November, 2022, Louisville's Planning Commission recommended that City Council deny the developer's next application because it failed to meet the criteria laid out in the city's municipal code. They were also concerned about the plan to grade nearly the entire site, including areas not slated for buildings, parking lots, and roads. Additionally, the Northwest Parkway Authority has not signed off on the application and therefore, it is still considered incomplete. Why is City Council voting on an incomplete application? Something smells rotten.

According to the city attorney, the only question you have to address on Dec. 5 is whether the unchanged plan for Redtail Ridge meets the criteria of the municipal code or not. IT DOES NOT. Years of meetings and voter input has already proven that the negative impact of this sprawling development on local traffic, air quality, and quality of life would be tremendous. The residents of Louisville and the city's own Planning Commission have already rejected it repeatedly. Do you actually think people don't care anymore that Redtail Ridge developers are attempting to sneak in their horrendous plan again? Something smells rotten.

Please vote to **deny the application** based on the simple fact that the **Redtail Ridge application still does not meet the criteria of Louisville's municipal code**.

Gail Hartman
Louisville, CO

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From: rtist456@yahoo.com
To: City Council
Cc: preservelouisville@gmail.com
Subject: NO to Redtail Ridge
Date: Monday, December 4, 2023 10:51:27 AM

As a resident of Louisville I'm very frustrated that I received a flier on my doorstep about a hearing on the very same issue that we rejected in the special election of April 2021. This feels like a sneaky, behind our backs way of passing something through that most of us oppose.

POSTPONE any decision on the the preliminary subdivision plan for Redtail Ridge until there is a complete application that the public can view.

REQUIRE the developer to set aside all land north of Disc Drive as open space and build a compact development.

THE PLAN MUST MEET CITY CODES.

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From: Sally Wilkinson
To: City Council
Subject: Redtail Ridge
Date: Monday, December 4, 2023 10:33:27 AM

I urge you to vote against the Redtail Ridge proposal. It means sprawl, traffic, environmental destruction and an economic burden for taxpayers. It has already been denied by the Planning Commission and the voters of Louisville.

Sincerely,

Sally Wilkinson
764 Peach Ct.
Louisville, CO

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From: Chris Gabriel
To: City Council
Subject: yes on redtail ridge
Date: Monday, December 4, 2023 9:41:21 AM

Hello
I am writing in support of the RedTail Ridge Development. I know there is a very vocal minority of Louisville citizens that will attend the meeting tomorrow and yell at you to vote no because some citizens do not want any new buildings ever to be built unless they are mansions near Old Town.

I think you have to do what's right and legal for Louisvlle and do not make perfect the enemy of progress for this site that has remained empty for quite a long time and will remain empty if this is once again voted down. Please remember that just because a loud minority of people show up at the meetings it does not mean they are in the majority and you do not have to cave to their demands.

Thanks
Chris Gabriel
217 Short Pl, Louisville, CO 80027

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From:	Nidhi Khanna
To:	City Council
Cc:	AA Gau
Subject:	Redtail development - needs to stop
Date:	Monday, December 4, 2023 9:03:15 AM

To,
The City Council,
Louisville, CO 80027

Re: Redtail Ridge development

Dear Madam / Sir,
I am writing because I am surprised that the City council is still entertaining proposals for the development of Redtail ridge, after this subject was voted down overwhelmingly in Nov 2022 elections.

In case something is new or changed, I would like the city to present the complete application to the public once again.

Please consider this as my written petition to put this back for a public vote.

Sincerely,
Gautam and Nidhi Khanna
720 Johnson Street
Louisville, CO 80027

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From: Wendy Bohling
To: City Council
Subject: postpone any decision until complete application for redtail ridge is available for public to view
Date: Monday, December 4, 2023 8:49:15 AM

Louisville City Council,
Please do NOT make a decision at the upcoming dec 5th meeting on the redtail ridge development until we the public can see a complete application. Please require the developer to set aside all land north of Disc Drive as open space and build a COMPACT development, especially if the developer doesn't meet our city codes. I am part of the wildflower townhomes that burned down and we have had to deal with excruciating lengthy issues to ensure we build to code - a BIG development shouldn't be let off the hook!
Thank you for being open to the community's feedback.
Wendy BOhling

Wendy Hall Bohling
303-718-4090
whbohling@gmail.com
www.corporatecowgirlup.com
Linkedin Twitter/Facebook/Youtube: corpcowgirlup

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From: John Linz
To: City Council
Subject: Brue Baukol Development
Date: Tuesday, December 5, 2023 7:40:08 AM

Attn. city council.

Please delay your decision on this development site as it was rejected by vote of the citizens of Louisville in 2021 Nothing has changed in the Proposal and as it does not comply with our city codes it should not be approved as it is currently presented.
My family and I settled in this beautiful small town in 1992 and have loved living here ever since. We would not approve of destroying the small town charm of Louisville.
Sincerely,
John Linz

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From: Amy Knox
To: City Council
Subject: redtail ridge
Date: Tuesday, December 5, 2023 7:38:29 AM

As a Louisville resident I urge you to postpone a decision on this development. I am angered that the developer has not made further concessions after considering the will of the people of Louisville. We reside in Louisville because of the lifestyle and values of this community that separate it from it's neighbors and want further development to be in line with those values such as open space . We have enough cross traffic to deal with. We require a plan which solves and does not create problems for us.
Amy Knox

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From: Gaylynn Potemkin
To: City Council
Subject: NO on Redtail Ridge Preliminary Subdivision Plat
Date: Tuesday, December 5, 2023 7:20:51 AM

Dear Council,
I'm writing to ask you to vote not to approve the submitted Redtail Ridge Preliminary Subdivision Plat dated 12/5/23.
The Planning Commission did not recommend approving this preliminary plat and the NW Parkway Authority has not approved the 96th Street connection
Planning Commission and Council should determine whether the grading impact on the open space has been minimized to the extent possible.
Any revised preliminary plat should be returned to the Planning Commission and other reviewers for a public and expert review of the grading on dedicated open space, a site engineering review, and the addition of requirements for the mitigation of impacts on public open space and habitat restoration.
Please vote no in order to protect and preserve open space!
Sincerely,
Gaylynn Potemkin
Louisville Resident

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From: Steven Fawson
To: City Council
Subject: No to decisions about Redtail Ridge
Date: Tuesday, December 5, 2023 6:51:45 AM

Attn. City Council:

I am a resident of Louisville, CO and I am asking you today to Postpone any decisions on a preliminary subdivision
for Redtail Ridge Until there is a complete application that the public can view. You should or must require the developer
to set aside all land north of Disc Drive as open space and build a smaller compact development. And yes, the developer
has a right to build BUT not if their plan does not meet our codes! The plan must meet our codes!

Resident of Louisville,

Steven Fawson

Steven Fawson

801-450-1423

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From: Sarah Gibson
To: City Council
Subject: Postpone Decision on Redtail Ridge
Date: Tuesday, December 5, 2023 6:39:13 AM

Hi — I have been informed that you are voting on Redtail Ridge subdivision plat today. I don't understand how and why this is happening so fast, since we just voted in a special election this past spring, and rejected a development plan there. Obviously this is something the community cares about deeply, so hurrying things along behind our backs is simply not fair.

Do right by our city. Give us time to understand what is going on, and to be heard!

Sarah Gibson
748 Cleveland Ave
Louisville CO
80027

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From:	Jonathan Singer
To:	City Council
Cc:	eric@louisvillechamber.com
Subject:	Support of the Redtail Plat
Date:	Tuesday, December 5, 2023 1:36:13 AM
Attachments:	image001.png image002.png image003.png image004.png image006.png image009.png Redtail Ridge Letter Plat Louisville.pdf

Some people who received this message don't often get email from jonathan.singer@boulderchamber.com. Learn why this is important

Mayor and Members of Council,

Below and attached is a letter of support for the Redtail Plat. Please let me know if you would like to have any further conversations and we thank you for your consideration.

Best,

Jonathan

Jonathan Singer (he/him)
Senior Director of Policy Programs
Ph. 303.938.2084 | jonathan.singer@boulderchamber.com
We Build Community Through Business

BOULDER CHAMBER

Re: Support of the Redtail Plat

Dear Mayor Leh and Council Members,

While it may come as a slight surprise to have the Boulder Chamber writing in support of the approval of the Redtail Plat, I want to highlight our coalition role with the Northwest Chamber Alliance. They represent the seven largest Chambers of Commerce in the Boulder / Broomfield County area. As such, we sent a letter of support to the Northwest Highway Parkway Authority leadership this summer. We ask you to please read the enclosed letter below as the same discussion points remain true.

In addition to this, I wanted to highlight the fact that our Chambers depend on regional partnerships. The economic, transit, and community advantages of this proposal will ensure that sustainable jobs will add to the tax base while alleviating many of the traffic congestion concerns improving our quality of life and

sustainability goals. With the University of Colorado acting as a flagship institution, we are already incubating the next generation of bioscience leaders. This project will allow our tax-subsidized homegrown talent to remain in this community. It will also contribute to creating an exemplary template for our Boulder County's burgeoning bioscience hub.

If you have any questions for the Boulder Chamber or the Northwest Chamber Alliance, please do not hesitate to reach out at any time. Your success as a city will contribute to the region's well-being and we hope you approve this plat and allow the process to continue.

Best,

Jonathan Singer

Jonathan Singer (he/him)
Senior Director of Policy Programs
Ph. 303.938.2084 | jonathan.singer@boulderchamber.com
We Build Community Through Business

Northwest Parkway Authority Leadership:

The Northwest Chamber Alliance is urging the Northwest Parkway Public Highway Authority's approval of the proposed Redtail Ridge project. This visionary life sciences campus holds immense promise to further propel our region forward as one of the nation's premier destinations for life science companies.

We are writing on behalf of a coalition of chambers of commerce in the northwest metropolitan region representing approximately 3,700 businesses and 380,000 employees - the Northwest Chamber Alliance is made of seven chambers representing numerous communities in Boulder and Broomfield County.

Our diverse spectrum of member business enterprises - ranging from large international corporations to small businesses, startups, nonprofits, and public institutions - are keenly aware of the positive impact the Redtail Ridge project can bring to our business community. This visionary endeavor offers a range of benefits that deeply resonate with our mission to promote business vitality:

More than $16 Million in Planned Improvements: With several intersections and stretches of road along both Northwest Parkway and 96th Street destined to reach an "F" level of service, the infrastructure and engineering improvements that would be completed as part of the Redtail plan create safer streets and intersections that materially improve the tollway.

Meeting a Profound Market Need: Already, the Denver-Boulder corridor is one of the country's top ten biggest markets for life sciences – despite a deficiency of next-generation laboratory and light industrial facilities that Redtail Ridge and development opportunities along the corridor are designed to fill. By fostering collaboration, research, and development, this campus holds the potential to attract leading life science companies, helping to further advance our region's status as a magnet for cutting-edge research and groundbreaking advancements.

Unleashing Accessible Business Potential: The project's strategic location near major thoroughfares such as U.S. 36 and the Northwest Parkway holds the promise of heightened accessibility for our business community. This translates into streamlined logistics, expanded customer reach, and amplified business potential that will benefit the entire region.

Revolutionizing Mobility and Connectivity: We commend the project's commitment to enhancing multi-modal transportation options and aligning with Louisville's progressive Transportation Master Plan and other regional mobility planning efforts. These enhancements will alleviate congestion, improve accessibility for employees and customers, and continue to position our region as an attractive destination for life science ventures.

Catalyzing Collaborative Synergies: The success of Redtail Ridge has the potential to trigger a ripple effect of opportunities beyond its immediate confines. The campus will catalyze partnerships, drive innovation, and cultivate mutually beneficial business relationships across the region by fostering an environment that encourages collaboration.

A Beacon of Sustainability in Business Growth: Redtail Ridge's emphasis on sustainability and wellness mirrors the values of forward-thinking regional business community. This focus resonates deeply with the eco-conscious mindset of the life sciences industry, contributing to our appeal as a hub for responsible and impactful business practices.

For all the above reasons, the Northwest Chamber Alliance urges your support for the improvements that will be catalyzed by the Redtail Ridge project. With your support, we can continue propelling our region to the forefront of life sciences innovation, further solidifying our stature as a premier destination for pioneering companies.

Thank you for your thoughtful consideration. We are eager to witness the tremendous positive impact that approval of the Redtail Ridge project will generate for our dynamic regional business community.

Warm regards,

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Jonathan Singer (he/him)
Senior Director of Policy Programs
Ph. 303.938.2084 | jonathan.singer@boulderchamber.com
We Build Community Through Business

Northwest Chamber
ALLIANCE

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Thank you for your thoughtful consideration. We are eager to witness the tremendous positive impact that approval of the Redtail Ridge project will generate for our dynamic regional business community.

Warm regards,

From: Naomi E Heiser
To: City Council
Subject: More time needed to work on Redtail Ridge proposal
Date: Monday, December 4, 2023 10:23:48 PM

Dear City Council representatives,

Louisville's voters rejected the Redtail Ridge proposal in November 2022 because it would bring harms to the natural environment, wildlife, and citizens alike. It is crucial to mitigate these harms in order to create a development that serves business, the city, and all living beings on the property and surrounds.

I am especially concerned with its potential effects on the Monarch school campus, as well as the large amount of traffic it will add to our transportation corridors. As well, a maximum amount of open space, all connected for wildlife transit, should be asked of the developer. The developer's proposal to grade the majority of the site, rather than preserving existing trees and other plants, waterways, and topography, is contrary to the criteria in Louisville's municipal code.

The proposal in its current form does not meet the expectations of the community (as proven by the rejection by our voters last year), and appears to be offered without improvements, in bad faith, by the developer. Please postpone voting on this proposal until it can be researched and reworked for the good of Louisville's future.

Thank you,

Naomi Heiser
440 W. Sycamore Ct.
Louisville, CO 80027

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From:	H M
To:	City Council
Subject:	Council vote on 12/5 Preliminary Subdivision Plat
Date:	Monday, December 4, 2023 9:00:15 PM

Dear Council,

I am writing to ask you to vote to not approve the submitted Redtail Ridge Filing No. I Preliminary Subdivision Plat dated December 5, 2023. Vote no to protect and preserve the open space. The City of Louisville Planning Commission did not recommend approving this preliminary plat and the NW Parkway Authority has not approved the 96th Street connection, they describe today's vote as "premature".

Since receiving the denial from the Planning Commission last year, the applicant has revised the documentation and grading plan and submitted it directly to Council without returning it to the Planning Commission. Today's revised preliminary plat should be returned to the Planning Commission for a public and expert review of the grading on dedicated open space and a site engineering review. Per city code, the Planning Commission and Council should both review the revised plan, apply the standard, and independent from the applicant, determine whether the grading impact on the open space has been minimized to the extent possible.

The City and Planning Commission should also require that the applicant mitigate the grading and construction impacts on public open space and restore the natural habitat.

The applicant asserts in their Response Memo (p.659-662) that:

A.They asked the design team to scrutinize and reduce the grading in certain areas. Their engineers feel that they have done everything possible and "The Proposed grading of the site is necessary to meet the development's drainage requirements, so the proposal satisfies the code requirement to preserve the vegetation and natural features 'to the extent possible'.
and
B. "We will have one of our consultants present on these issues specially, which will help defuse concerns in this area."

- The Planning Commission, City engineering and land management experts, and Open Space Advisory Board should review the revisions to the grading plan, its impacts on open space and the applicant's consultant presentation to make a recommendation on whether this grading plan meets the code standards before the Council votes. This additional review will provide an independent and comprehensive expert review without the possible perception of bias or conflict of interest. It is a question, not of defusing concerns, but of meeting the requirements of our municipal code.

- After the minimum level of grading disturbance is established by the city experts, the City and Council should also require the restoration and rehabilitation of any public open space land impacted by the site grading or construction. The City should establish the restoration standards and reserve the right to determine whether the restoration results meet these standards.

2. This preliminary plat should not go to council vote until the NW Parkway Authority approves the 96th Street connection. The City of Louisville should not assume the outcome of

NW Parkway Authority's review and approval process. Per the NW Parkway Authority, today's vote is "premature".

This revised preliminary plat should be returned to the Planning Commission and other reviewers for a public and expert review of the grading on dedicated open space, a site engineering review, and the addition of requirements for the mitigation of impacts on public open space and habitat restoration. Thank you.

Sincerely yours,
Helen Moshak
Louisvillle Resident

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From: NANCY ADLER
To: City Council
Subject: REDTAIL RIDGE
Date: Tuesday, December 5, 2023 6:29:09 PM

Some people who received this message don't often get email from nandene16@comcast.net. Learn why this is important

Yes. I know the deadline to submit a comment was noon today HOWEVER, I also note that the "staff" has recommended the vote on RedTail be continued to January 16, 2024. Good Move. I mean, really - how much garbage can you expect to shove down our throats without due notice and without full disclosure?! We are not just peons living in Louisville for fun and frolic. We are already facing exorbitant property tax increases (can't wait to see THAT bill in the mail).....and now you apparently just think we're going to roll over and take THIS affront to rules and decorum on THIS important issue. So thanks for delaying and/or preventing what would definitely be a contentious and ugly debacle. Obviously the citizens of this municipality have enough acumen to demand that proper channels are followed and that City Codes, as ALREADY established, apply in EVERY case. If any variance is requested, WE need to be aware and WE need to have time to address these issues.
Thank you.
Nancy Adler

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From: sherry sommer
To: City Council
Subject: Fwd: Redtail Ridge
Date: Tuesday, December 5, 2023 3:57:34 PM

I would like to enter these corrections to an email sent to me by Mayor Leh into the public record.

Sherry Sommer

Hi Chris,

Thank you for sending this log. See corrections below

I do not see the staff memo or when it will be available to the public. That information will conclude our communication on this matter.

Sherry Sommer

Sherry,

I am emailing you concerning recent communications between us relating to Redtail Ridge. As a Councilmember, and for the sake of all stakeholders, I wanted to ensure legally compliant and transparent public processes as to that property. As Mayor, I continue to want that. I am sure that you appreciate those obligations. To that end, I want to capture and organize our communications while they are fresh in mind and to avoid misunderstandings in the future.

(1) Your Noontime Text Yesterday

Just after noon yesterday, I received from you a text requesting to talk. It did not specify what you wanted to discuss. I would have responded but was tied up in meetings and preparations for the swearing it.

I called at 12:04 without leaving a message.

(2) Your mid-afternoon Email Re “Incomplete Redtail Ridge preliminary application/Council agenda December 5.”

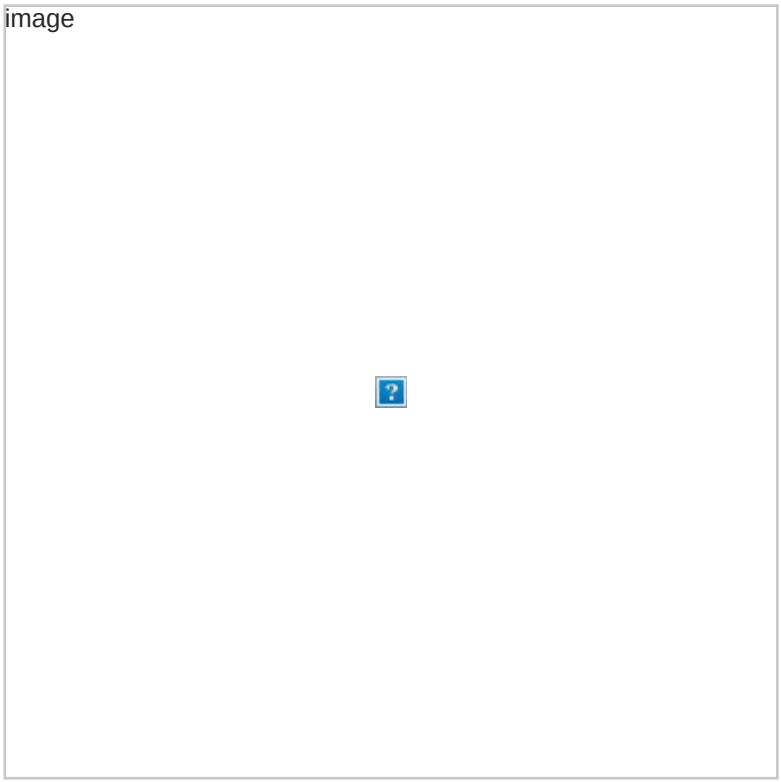
At 2:47 pm, I received an email from you that you sent Council and City Staff. The subject line was “Incomplete Redtail Ridge preliminary application/Council agenda December 5.” After reading the subject line only, concluded that it likely would contain information concerning land use application that Council would be considering in a quasi-judicial proceeding on December 5.

In the exercise of caution, I did not read further to avoid consideration outside that hearing. Although I am forwarding the text of the email below, I still have not read it and will not unless it appears in the meeting packet that will be made available to all of us later this week.

(3) Text Exchange Between Us Yesterday

After receiving your email at 2:47pm, but before the City Council meeting at 6 pm, you and I exchanged several additional text messages. These text message did refer to the 2:47 pm email I received. I suggested that we deal with any issues she was raising at the Council meeting, and you agreed:

image



(4) our brief exchange of comments during the celebratory break at last night's Council meeting

As you know, shortly after other Councilmember and I were sworn in at last night's Council meeting, there was a celebratory break. You sought me out and began advocating for a delay in Council's consideration of the Redtail Ridge land use application. I interrupted you, expressing briefly that your comments might relate to a quasi-decision and requested that you make the comments in the meeting. You indicated you were simply trying to avoid needless conflict during the Council meeting. I reiterated my request, and our brief conversation ended.

This exchange did not take place.

Your text "Let's deal with this at the meeting" indicated to me that we would "deal with this at the meeting" **At one point during the reception I moved a step in your in your direction. You didn't greet me and began talking to council member Dickinson. I'm a polite person and did not insist when you didn't acknowledge me.**

I understand quasi judical rules. It is the obligation of the office holder to maintain proper boundaries. As we can see from our interactions I did not suggest we have a discussion.

During the portion of Council meeting devoted to public comments not on the agenda, you pooled your time with another resident and explained concerns about the proceeding with the December 5 agenda item.

(5) our exchange of text messages today

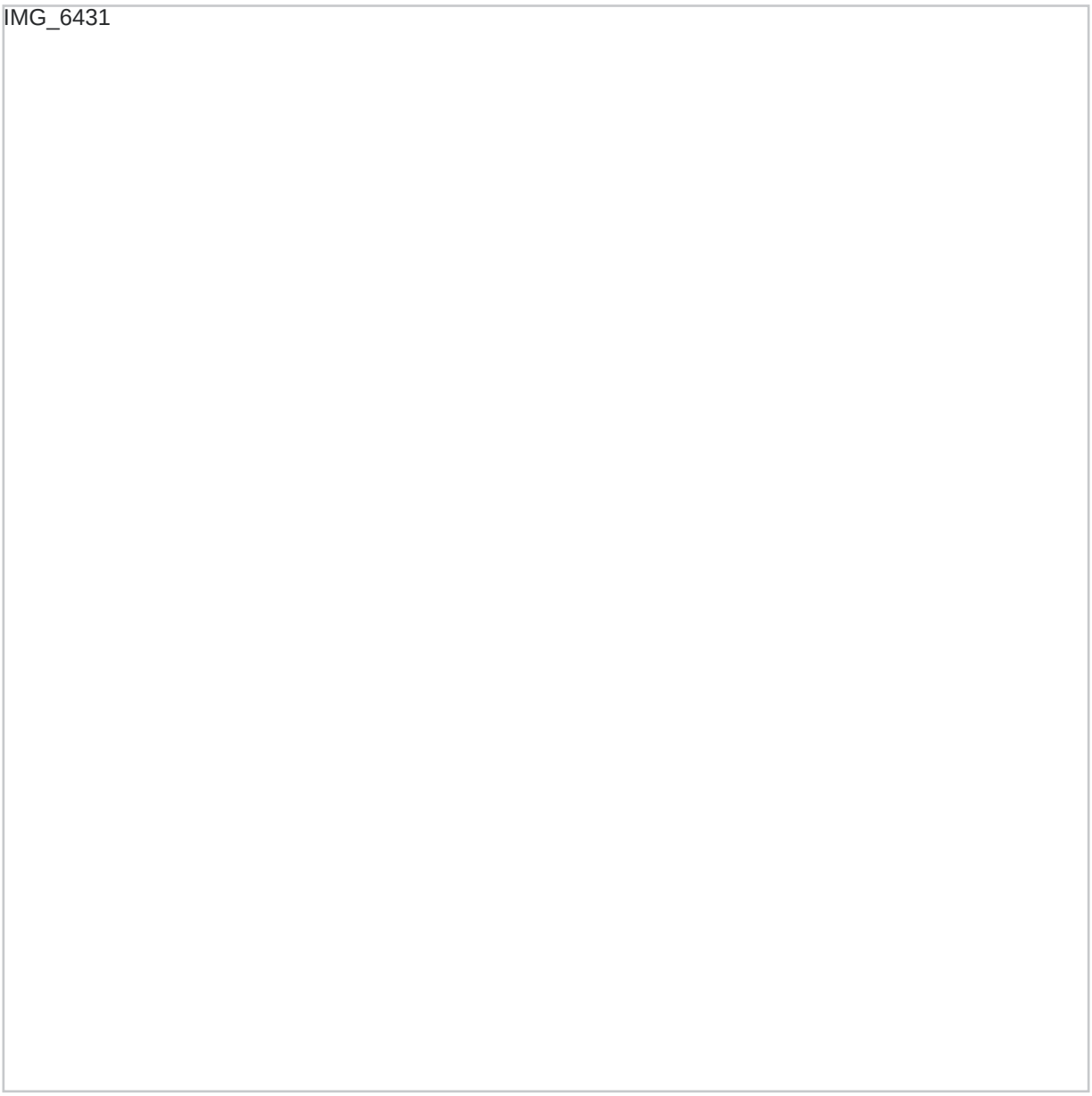
You again texted me this morning, and you and I exchanged several texts. You reiterated points you had made at the hearing and again advocated for delaying consideration of Redtail Ridge's application. You expressed urgency. I indicated that I needed to talk with staff before getting back to you.

I "expressed urgency".

It is more accurate to say I followed up. Since we did not interact at the meeting, I followed up with a text.

I've been quite professional. Customarily a waiting period of 24 hours is considered a courtesy. I was hoping to have the conversation you said we'd have in a timely way. I have obligations today and respectfully let you know when I would be available.

If you felt interacting with me was a potential violation of quasi judicial rules, you could have said so at any time and I would not have insisted.



As promised, I discussed the matter with Jeff Durbin. I am cc'ing him on this email. My understanding is that the staff memo will address questions you and others have raised.

Whether you agree or disagree with the staff memo, however, you are welcome:

1. To submit any other information you would like to regarding the application.

2. To attend the quasi-judicial hearing on this application on Tuesday, December 5, and challenge staff's conclusions or address any other concerns you have with the application in public comment.

Engaging in the democratic process is a right I cherish and will continue to exercise.

Thanks.

Best Regards,

Chris Leh
Mayor
City of Louisville (CO)
(c) 303.668.3916
Leh@louisvilleco.gov

On Nov 28, 2023, at 2:47 PM, sherry sommer <hellosherry2@yahoo.com> wrote:

Mayor Leh and members of council,

Please remove Redtail Ridge from your December 5, 2023 agenda. The application is not complete. Only complete applications can be reviewed by council.

—Northwest Parkway has not approved this application. According to Joel Meggers, managing administrator for the parkway, the parkway will not support the preliminary plat until negotiations are finalized. This should happen within the next few weeks.

—Brue Baukol has not updated their application submitted in April 2021. That application incomplete. When submitted and it remains incomplete.

—The City posted notice for this agenda item November 19, 2022. However, information on the current developments on city website has not been updated since April 2021. While the city may have followed the letter of the law in providing public notice, this certainly has not been a transparent process.

This is a very serious matter. Voters rejected the sprawling development proposed by Brue Baukol in our special election. This item must not appear on the council agenda before it is complete.

Sherry Sommer

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From: Mark Miesch
To: City Council
Subject: Postpone decision on Redtail Ridge
Date: Tuesday, December 5, 2023 3:40:59 PM

Some people who received this message don't often get email from mark.s.miesch@gmail.com. Learn why this is important

I understand that the Louisville city council is voting today on whether to go through with the Redtail Ridge development. This is being done too fast, without sufficient community input. In fact, the only input you bothered to collect was negative, when residents rejected that development in a special election last year. Not only has the new development been pushed rather covertly and against the wishes of residents, but it does not even meet city codes.

Do not make a decision today on Redtail Ridge. Enforce city codes and give residents more time to understand and comment on the path forward. This development affects all of our lives. We need to have a say in how it is done.

Mark Miesch
748 Cleveland Ave
Louisville CO 80027

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From:	Ligea Ferraro
To:	Meredyth Muth; Rob Zuccaro; Jeff Hirt
Subject:	FW: Feedback for City of Louisville, CO
Date:	Wednesday, December 6, 2023 12:18:54 PM
Attachments:	image001.png

Hi All,

This came in through the Citizen Inquiry email and I thought I should forward it to you. Please let me know if there is someone else who should receive it.

Thanks!

Ligea Ferraro
Executive Assistant
LFerraro@LouisvilleCO.gov
303.335.4533

Remote: Friday

City of Louisville

From: City of Louisville, CO <info@louisvilleco.gov>
Sent: Tuesday, December 5, 2023 3:45 PM
To: Citizen Inquiries <info@louisvilleco.gov>
Subject: Feedback for City of Louisville, CO

You have received this feedback from Kathleen Kimmel < kckimmel@gmail.com > for the following page:

https://www.louisvilleco.gov/local-government/government/city-council/councilmember-chris-leh-ward-i

Red Tail Ridge, Congratulations on becoming our new mayor! Before you were elected there was strong city-wide dissent regarding the proposed Red Tail Ridge. Personally, my husband and I were interested in the first plan that included an Erickson properties Senior Living Community. It would be desirable if the Erickson Community could be re-evaluated.

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Date:	Wednesday, December 6, 2023 12:18:54 PM
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Ligea Ferraro
Executive Assistant
LFerraro@LouisvilleCO.gov
303.335.4533

Remote: Friday

City of Louisville

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Sent: Tuesday, December 5, 2023 3:45 PM
To: Citizen Inquiries <info@louisvilleco.gov>
Subject: Feedback for City of Louisville, CO

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https://www.louisvilleco.gov/local-government/government/city-council/councilmember-chris-leh-ward-i

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is safe. Please contact IT if you believe this email is suspicious.

From:	Chris Leh
To:	Meredyth Muth
Subject:	Fwd: congratulations
Date:	Friday, December 8, 2023 11:11:19 AM

For the RTR Record

Best Regards,

Chris Leh
Experienced. Engaged. Effective.
Leh for Louisville
www.LehForLouisville.org
(c) 303.668.3916

Begin forwarded message:

> **From:** David Litoff <dlitoff7@yahoo.com>
> **Date:** December 8, 2023 at 8:25:29 AM MST
> **To:** Chris Leh <chris@lehforlouisville.org>
> **Subject: congratulations**
>
> Chris
>
> First I want to congratulate you on becoming Mayor of Louisville. I know you put a lot of time and effect in making this happen. You deserve it and I believe you will continue to be a positive influence on our community. Second I wanted to thank you for doing this job. I know it will not be easy and you will be committed to spending a lot of hours of work so thank you. Lastly I wanted to just give you my brief perspective on the Redtail Ridge property. I am sure there are many strong feelings in the community and I suspect you have some good ideas on what should be done there. I wanted to give you a brief thought on Avista Hospital relocating to that location. I am a firm believer in a women's right to choose and unfortunately Avista hospital being a Christian hospital does not share that belief. This causes pain and suffering in women. The simplest example is a women comes in to the hospital for a cesarian and wants to get a tubal ligation because she does not want more children. A relatively simple procedure that could be done at the same time but the hospital will refuse resulting in a second surgery somewhere else if the women wants this done. Perhaps I am trying to throw the baby out with the bathwater but I do feel that a women's right to choose is paramount and I find it difficult to support any organization that does not align with this belief.
>
> Thanks for listening.
>
> Thanks again for all of your work

Your neighbor

David Litoff

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From: Eric & Elizabeth Ryterski
To: City Council
Subject: YES on Redtail
Date: Saturday, December 9, 2023 8:52:48 AM

[Some people who received this message don't often get email from elizabeth.ryterski@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Dear Louisville City Council,

Thank you for all you do for Louisville! I'm writing to express my support for the Redtail Ridge development, and I encourage you to vote to move ahead with this project.

I am grateful that as a community, we do an excellent job of investing in open space. We have also passed multiple measures designed to guide us toward a more environmentally conscious future. In my opinion, it is also important to recognize the importance of our economic sustainability and to pursue opportunities that support the economic vitality of Louisville.

Please vote yes on Redtail Ridge.

Thank you,
Elizabeth Ryterski
941 Garfield Ave
Louisville
720-300-5680

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Meredyth Muth

From:	Diane Shepard <dmshepard@comcast.net>
Sent:	Tuesday, December 12, 2023 9:20 AM
To:	City Council
Subject:	Fwd: Redtail Ridge discussion
Attachments:	Redtail Ridge sunrise 11-2023.jpg; Redtail Ridge pond reflection at sunrise 11-2023.jpg

Some people who received this message don't often get email from dmshepard@comcast.net. Learn why this is important

Hello,

This agenda item has been postponed until Jan. 16th and am resending this email to the entire city council.

Diane Shepard
Coal Creek Ranch North
Louisville, CO

-------- Forwarded Message --------
Subject: Redtail Ridge Dec. 5th discussion
Date: Sat, 2 Dec 2023 18:55:29 -0700
From: Diane Shepard <dmshepard@comcast.net>
To: Leh@LouisvilleCO.gov, CDickinson@LouisvilleCO.gov, DFahey@LouisvilleCO.gov, JKern@LouisvilleCO.gov, BHamlington@LouisvilleCO.gov, DHoefner@LouisvilleCO.gov

Hello Mayor and Council Members,

I'm writing today about the discussion you'll be having Dec. 5th regarding Redtail Ridge. I am opposed to approval to redevelop this property based on the proposal that is currently in place. This proposal application is the same one that we voted down in April 2022. It is the same one that the Louisville planning commission stated fails to meet the criteria laid out in the city's municipal code, and were concerned about the plan to grade nearly the entire site, including areas NOT slated for buildings, parking lots, or roads. Migratory bird and tree studies have not been completed on the site. It would be a huge loss of valuable open space to our community to move forward with redevelop as currently planned by the developer.

I could write volumes about my passion around preserving open space. I worked at the StorageTek campus on that property and am an avid nature lover. I seek places with unobstructed views to watch sunrises and sunsets, to walk quietly without constant traffic noise and air pollution and bright lights. This is becoming almost impossible to find within the city. We don't always have the liberty of time to drive to open spaces further away. It is difficult to understand where all the buildings will be placed based on the documents I've seen and I fear we will lose any resemblance of its current natural beauty with the proposal as it stands now. I'll leave you with a couple photos I took recently looking east across that property from the Monarch campus. This view will be gone if you approve the current proposal.

Thank you for serving our city in the best interests of its residents.

--
Diane Shepard
Louisville, Colorado

From:	Bob Garcia
To:	City Council; Christopher Leh
Subject:	Redtail and Lines
Date:	Thursday, December 14, 2023 7:06:01 AM

[Some people who received this message don't often get email from bobjg540@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

This is Bob Garcia - 653 W. Juniper Ct. 303 666-6907
I've lived in Louisville for over 45 years.
Why are we revisiting this proposal when it was voted down in election last April? The residents voted they did not want this development.
What has been offered up as new? I am not in favor.

Concerning all the lines and traffic patter changes over the last few years…..way to much.
Particularly Dahlia one lane…..dangerous. I am a cyclist and will avoid Dahlia in the future…. it is not safe.
Really, two way traffic and cyclist/pedestrians going to school and work in the morning and this has made it safer?
What is all this been based on…. I alway felt we could get around our great city easily and safely.
I don't believe we had too many deaths, pedestrian/car accidents. Cycling/ car accidents
What is the data over the last 10 years….deaths, accidents etc. that prompted we have to add lines and speed bumps.
Why not hire more officers to issue tickets for unsafe driving and leave the rest of us alone.
Bob Garcia

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From:	Audrey DeBarros
To:	City Council
Subject:	Support for Redtail Ridge and Multimodal Options
Date:	Monday, December 18, 2023 7:07:19 PM

Dear Mayor Leh and Councilmembers,

I write in support of the preliminary plat for Redtail Ridge. The project includes a number of innovative measures to promote mobility and mass transit ridership and includes more than 19 miles of new trails, multi-use paths, and bike lanes. The site is located less than a half-mile from the US 36 & Flatiron Station and the US 36 Bikeway, providing safe and easily accessible access to regional cycling and transit facilities.

The Redtail Ridge project has proposed some incredible travel demand management (TDM) tools that would simultaneously reduce the need for cars, promote multi-mobility, including providing RTD EcoPass to employees, co-funding a shuttle to provide first and final mile connections, secure bike parking, and preferential parking for van and carpools. Recognizing complete streets are a key part of the multimodal elements that will accommodate all travelers, solo driving will be reduced by making it safer and more attractive to travel by other modes.

Thanks for considering your support of Redtail Ridge.

Best,
Audrey DeBarros
839 West Mulberry Street

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From: Dan Waldrip
To: City Council
Subject: Redtail Ridge
Date: Wednesday, December 20, 2023 10:44:15 PM

[Some people who received this message don't often get email from danwaldrip@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Word is going around that the Council is considering moving ahead with this development in spite of the citizens voting it down. I hope this isn't true.

You would quickly lose the trust of the people you live around. Please respect the vote.

Regards,

Dan Waldrip
1172 Grove Ct.

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From:	Rita Zamora
To:	City Council; Caleb Dickinson; Deb Fahey; Christopher Leh
Subject:	Fwd: Red Tail Ridge Development
Date:	Thursday, December 21, 2023 12:54:54 PM

Some people who received this message don't often get email from rita@ritazamora.com. Learn why this is important

Hello Louisville City Council and All - I am writing to reshare my concerns, below, about the proposed Red Tail Ridge Development. It is my understanding that the plan that was rejected by Louisville residents is going to be revived without making any changes. How can this be?

I hope the office sector economy is also being carefully examined: https://www.wsj.com/real-estate/commercial/empty-office-space-f4e6ad0d

Kindly take Louisville residents' wishes into consideration. Thank you for your time and consideration.

---------- Forwarded message ---------
From: **Rita Zamora** <rita@ritazamora.com>
Date: Mon, Jul 26, 2021 at 4:01 PM
Subject: Storage Tek Development
To: <Council@louisvilleco.gov>

Hello Louisville City Council - I understand that you will be voting on the Storage Tek/Conoco Phillips Development proposal this week.

I am so sad and deeply concerned about our open space and wildlife habitats. Could you provide input to the city council and the planning commission regarding the impacts of this development to open space, wildlife and habitat in Louisville?

Please let them and the developer know that more must be done to protect the precious open space that many Louisville residents cherish and enjoy, as well as protecting the wildlife habitat on the property.

This area represents what I believe is 8% of Louisville’s total land area and is our last chance to save a meaningful open parcel.

Respectfully, "The name of our state, Colorado, has its origin in the Spanish language, as the word for 'colored red'. This was the name chosen for Colorado as a Territory in 1861 by Congress. ... Colorado is also called 'Colorful Colorado' presumably because of our magnificent scenery of mountains, rivers and plains." Quote source: Colorado.gov.

With the origins of what makes Colorado so special in mind, *precious nature*, please help save the scenery in this area for current and future humans and wildlife to enjoy.

Thank you for considering my comment.
Sincerely,
Rita Zamora, Louisville Resident

--

Rita Zamora

--

Rita Zamora

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Meredyth Muth

From: Elyse Blazevich <eblazevich@cobioscience.com>
Sent: Thursday, December 21, 2023 9:11 PM
To: City Council
Subject: Letter of Support: Redtail Ridge
Attachments: COBioScience Letter for RedTail Ridge 12.21.2023.pdf

Some people who received this message don't often get email from eblazevich@cobioscience.com. Learn why this is important

Dear Louisville City Council Members,

I respectfully submit these comments in support of the Redtail Ridge proposal to build a premier life and bioscience campus in Louisville. Sterling Bay's proposed Redtail Ridge campus makes an important investment in Louisville to benefit from the economic growth fueled by Colorado's life sciences ecosystem. Their new plan reflects thoughtful and responsible design modifications that address considerations previously raised by stakeholders.

I also respectfully ask that you grant Sterling Bay the approval it is seeking for this important and calculated life sciences development project to support the people and the companies in Colorado developing groundbreaking and life-saving health technologies.

Please review the attached letter of support and feel free to contact me with any questions.

Elyse Blazevich
President & CEO | Colorado BioScience Association
President | Colorado BioScience Institute
303.592.4072 direct | 303.594.6895 cell
eblazevich@cobioscience.com
www.cobioscience.com | www.cobioinstitute.org
600 Grant St #306 | Denver, CO 80203

Get Involved! Visit CBSA's **online calendar** to learn about our upcoming events. **Subscribe** to CBSA emails and follow us on **LinkedIn**, **Twitter**, and **Facebook**.

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COLORADO BIOSCIENCE ASSOCIATION

303.592.4073
info@cobioscience.com
cobioscience.com
600 Grant Street, Suite 306
Denver, CO 80203

December 21, 2023

Louisville City Council
749 Main St
Louisville, CO 80027

Re: the Redtail Ridge proposal for premier life- and bio-science campus in Louisville

Dear Louisville City Council Members,

I respectfully submit these comments in support of the Redtail Ridge proposal to build a premier life and bioscience campus in Louisville. Sterling Bay's proposed Redtail Ridge campus makes an important investment in Louisville to benefit from the economic growth fueled by Colorado's life sciences ecosystem. Their new plan reflects thoughtful and responsible design modifications that address considerations previously raised by stakeholders.

Colorado is home to a vibrant and growing cluster of life sciences companies that are developing life-saving breakthroughs in biotechnology, pharmaceuticals, medical devices, diagnostics, agricultural biotechnology, animal health and digital health. Some of our greatest strengths are in medical devices for orthopedics, in vitro diagnostics, surgical, dental, health IT, and cardiovascular and in research and development of early-stage therapeutics (72.8% discovery and preclinical) for oncology, immunology, central nervous system, and metabolic disorders. The Northwest Corridor, running along US Highway 36, connecting Denver and Boulder, including Superior and neighboring cities of Westminster, Thornton, Broomfield, Louisville, and Lafayette is home to 14.5% of the Colorado's life sciences ecosystem.

Colorado continues to rise in the rankings as a leading national and international hub for life sciences, with Boulder and the Northwest Corridor recently ranking the 8th leading life sciences hub in the U.S. by Jones Lang LaSalle. Colorado life sciences companies employ more than 38,000 people, representing more than $4.4 billion in annual payroll with an average salary of nearly $120,000. Between 2017 and 2022, the Denver/Boulder market has experienced a remarkable increase in the number of life sciences researchers with a growth rate the second highest among the 25 leading U.S. markets, highlighting the region's growing prominence in the life sciences sector. Our ecosystem has also seen a growing infusion of capital into Colorado life sciences companies with financings in excess of $1B for six consecutive years and a steady increase in federal funding reaching more than $550M in 2022.

The proposed Redtail Ridge project brings an important community on line to support the purpose-driven work of innovative life sciences professionals at a key inflection point. The real estate market for life sciences in Colorado remains strong and stable as a spike in new spec deliveries meets unprecedented demand for lab space over the past two years. According to CBRE in their Q3 2023 Denver/Boulder Life Sciences Market Overview, lab space vacancy rates in the Denver/Boulder market remain low at 8.5%. Approximately 70% of the conversion space expected to deliver over the next three to six months is already preleased.

Access to safe and effective technologies and treatments is essential for patients throughout the country and globe, which is why all life sciences research, development and manufacturing must be done in buildings that clear regulations by multiple federal agencies, including the Food and Drug Administration, Environmental Protection Agency and Occupational Safety and Health Administration. These regulations are designed to keep products, patients, workers and the public safe.

At Colorado BioScience Association, we champion life sciences on behalf of our members and the Colorado's life sciences community and at Colorado BioScience Institute, we cultivate and diversify the state's life sciences workforce from classroom, to campus, to career. Therefore, I respectfully ask that you grant Sterling Bay the approval it is seeking for this important and calculated life sciences development project to support the people and the companies in Colorado developing groundbreaking and life-saving health technologies.

Thank you in advance for your consideration. Please feel free to contact me with any questions.

Elyse Blazevich
President & CEO, Colorado BioScience Association
President, Colorado BioScience Institute

COLORADO BIOSCIENCE ASSOCIATION

COLORADO BIOSCIENCE INSTITUTE

From: shari.edelstein@gmail.com
To: City Council
Cc: Caleb Dickinson; Deb Fahey; Christopher Leh; Judi Kern; Barbara Hamlington; Dietrich Hoefner
Subject: RedTail Ridge: Request for transparency and clear and concise information
Date: Thursday, December 28, 2023 8:12:27 PM
Attachments: image001.png
Importance: High

Some people who received this message don't often get email from shari.edelstein@gmail.com. Learn why this is important

I am writing to share my concerns with regards to the developments around the RedTail Ridge Project.

The initial hearing scheduled in December was planned without proper and due notice to the residents of Louisville. The city met the bare minimum requirements for notifying residents of the hearing — but for a development of this size, with such enormous potential impact and widespread and well-known opposition — the bare minimum isn't enough**.**

Moreover, it is imperative that the city (and/or developer) provide clear information so that residents can make an informed assessment. A 900 page document is not appropriate for the average citizen. It would be helpful to provide clear information that is assessable to all so we can be properly informed.

If Brue Baukol has made any changes to the proposal denied in November 2022, it would be helpful to have that clearly stated.

I truly believe that the city can do a better job of communication and transparency.

Additionally, I am concerned that Brue Baukol Capital Partner's partner, Sterling Bay Developers from Chicago, is promoting this development before it has been approved. In my estimation, this is premature and presumptuous and does not reflect good faith. I am confident that there are better ways to conduct market research that do not suggest a done deal – at a minimum, they should disclose on their promotional material that this project has yet to be approved. Please see https://sterlingbay.com/properties/redtail-ridge/

Respectfully,
Shari Edelstein

Shari L. Edelstein
PO Box 270249
Louisville, CO 80027

I slept and dreamt that life was joy. I awoke and saw that life was service. I acted and behold, service was joy. Tagore

Boulder, CO

Redtail Ridge

Situated in Boulder County, the project development site covers approximately 475 acres and is strategically located along Highway 36, the primary thoroughfare connecting Boulder and Denver. The site will include up to 2.6 million square feet of mixed-use space designated for purpose-built life sciences R&D, bio-manufacturing, office, and industrial logistics facilities, in addition to a best-in-class tenant amenity center. Boulder has become one of the top emergent life sciences cluster regions in the U.S. following an influx of technology and life sciences companies, including Google, Twitter, Facebook, Eli Lilly, Pfizer, and Medtronic. The area is also conveniently located near several large university systems, including the University of Colorado Boulder, University of Denver, and Colorado State University.

Development Type

Creative Office, Life Sciences, Industrial

Footprint

475 acres

Contact

leasing@sterlingbay.com

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From: Genny Kline
To: Meredyth Muth
Subject: FW: Redtail Ridge
Date: Wednesday, December 27, 2023 9:35:56 AM

Genny Kline (she/her/hers)
Deputy City Clerk
City Clerk's Office

303.335.4574 (office)
720.762.2459 (cell)
GKline@LouisvilleCO.gov

-----Original Message-----
From: Dan Waldrip <danwaldrip@gmail.com>
Sent: Wednesday, December 20, 2023 10:44 PM
To: City Council <Council@louisvilleco.gov>
Subject: Redtail Ridge

[Some people who received this message don't often get email from danwaldrip@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Word is going around that the Council is considering moving ahead with this development in spite of the citizens voting it down. I hope this isn't true.

You would quickly lose the trust of the people you live around. Please respect the vote.

Regards,

Dan Waldrip
1172 Grove Ct.

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From:	Genny Kline
To:	Meredyth Muth
Subject:	FW: Support for Redtail Ridge and Multimodal Options
Date:	Wednesday, December 27, 2023 9:36:24 AM

Genny Kline *(she/her/hers)*
Deputy City Clerk
City Clerk's Office

303.335.4574 (office)
720.762.2459 (cell)
GKline@LouisvilleCO.gov

From: Audrey DeBarros <audreydebarros@yahoo.com>
Sent: Monday, December 18, 2023 7:07 PM
To: City Council <Council@louisvilleco.gov>
Subject: Support for Redtail Ridge and Multimodal Options

Dear Mayor Leh and Councilmembers,

I write in support of the preliminary plat for Redtail Ridge. The project includes a number of innovative measures to promote mobility and mass transit ridership and includes more than 19 miles of new trails, multi-use paths, and bike lanes. The site is located less than a half-mile from the US 36 & Flatiron Station and the US 36 Bikeway, providing safe and easily accessible access to regional cycling and transit facilities.

The Redtail Ridge project has proposed some incredible travel demand management (TDM) tools that would simultaneously reduce the need for cars, promote multi-mobility, including providing RTD EcoPass to employees, co-funding a shuttle to provide first and final mile connections, secure bike parking, and preferential parking for van and carpools. Recognizing complete streets are a key part of the multimodal elements that will accommodate all travelers, solo driving will be reduced by making it safer and more attractive to travel by other modes.

Thanks for considering your support of Redtail Ridge.

Best,
Audrey DeBarros
839 West Mulberry Street

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From:	Genny Kline
To:	Meredyth Muth
Subject:	FW: Red Tail Ridge Development
Date:	Wednesday, December 27, 2023 9:35:39 AM

Genny Kline *(she/her/hers)*
Deputy City Clerk
City Clerk's Office

303.335.4574 (office)
720.762.2459 (cell)
GKline@LouisvilleCO.gov

From: Rita Zamora <rita@ritazamora.com>
Sent: Thursday, December 21, 2023 12:55 PM
To: City Council <Council@louisvilleco.gov>; Caleb Dickinson <cdickinson@louisvilleco.gov>; Deb Fahey <dfahey@louisvilleco.gov>; Christopher Leh <leh@louisvilleco.gov>
Subject: Fwd: Red Tail Ridge Development

> Some people who received this message don't often get email from rita@ritazamora.com. Learn why this is important

Hello Louisville City Council and All - I am writing to reshare my concerns, below, about the proposed Red Tail Ridge Development. It is my understanding that the plan that was rejected by Louisville residents is going to be revived without making any changes. How can this be?

I hope the office sector economy is also being carefully examined: https://www.wsj.com/real-estate/commercial/empty-office-space-f4e6ad0d

Kindly take Louisville residents' wishes into consideration. Thank you for your time and consideration.

---------- Forwarded message ---------
From: **Rita Zamora** <rita@ritazamora.com>
Date: Mon, Jul 26, 2021 at 4:01 PM
Subject: Storage Tek Development
To: <Council@louisvilleco.gov>

Hello Louisville City Council - I understand that you will be voting on the Storage Tek/Conoco Phillips Development proposal this week.

I am so sad and deeply concerned about our open space and wildlife habitats. Could you provide input to the city council and the planning commission regarding the impacts of this development to open space, wildlife and habitat in Louisville?

Please let them and the developer know that more must be done to protect the precious open

space that many Louisville residents cherish and enjoy, as well as protecting the wildlife habitat on the property.

This area represents what I believe is 8% of Louisville’s total land area and is our last chance to save a meaningful open parcel.

Respectfully, "The name of our state, Colorado, has its origin in the Spanish language, as the word for 'colored red'. This was the name chosen for Colorado as a Territory in 1861 by Congress. ... Colorado is also called 'Colorful Colorado' presumably because of our magnificent scenery of mountains, rivers and plains." Quote source: Colorado.gov.

With the origins of what makes Colorado so special in mind, *precious nature*, please help save the scenery in this area for current and future humans and wildlife to enjoy.

Thank you for considering my comment.
Sincerely,
Rita Zamora, Louisville Resident

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Rita Zamora

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Rita Zamora

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From: Genny Kline
To: Meredyth Muth
Subject: FW: Redtail Ridge : Please postpone any decision
Date: Wednesday, December 27, 2023 9:35:14 AM

Genny Kline *(she/her/hers)*
Deputy City Clerk
City Clerk's Office

303.335.4574 (office)
720.762.2459 (cell)
GKline@LouisvilleCO.gov

From: brad shogrin <bashogrin@gmail.com>
Sent: Saturday, December 23, 2023 9:09 AM
To: City Council <Council@louisvilleco.gov>
Subject: Redtail Ridge : Please postpone any decision

Some people who received this message don't often get email from bashogrin@gmail.com. Learn why this is important

Hi - I live in downtown Louisville. I am against any development of this area and believe it should be designated open space.

Please postpone any decisions until there is a complete application that the public can view.

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From: Rebecca Kornas, MD, FACEP, FAAEM
To: City Council
Subject: Supporting Avista"s Future in Louisville
Date: Saturday, January 20, 2024 10:25:46 PM

Some people who received this message don't often get email from kornasr@usacs.com. Learn why this is important

Dear Council members,

I am reaching out as the President Elect of the AdventHealth Avista medical staff and the medical director of the Avista emergency department to express my support for our hospital's relocation to Redtail Ridge. This move is symbolizes a new chapter, not just for Avista but for the entire Louisville community. A state-of-the-art facility at Redtail will enhance our service quality and accessibility, which are crucial for meeting the evolving healthcare needs of our community.

Our move to Redtail Ridge is a significant stride towards better serving Louisville. It is about bringing top tier healthcare closer to more people and integrating it seamlessly into their daily lives. The Redtail location with its improved accessibility to US 36 and Northwest Highway will be more readily accessible for emergency medical services (EMS) as well as community members. As it currently stands, it is challenging for our EMS colleagues to access our facility with its indirect access points which was a critical point that was highlighted during the Marshall Fire evacuation.

Avista's future heavily relies on this relocation to a new, state-of-the-art facility so that we can continue to provide the best care and the most sustainable and accessible way to the people of Louisville.

The only way that Avista can move into this new location is with your approval of the preliminary plan for Redtail Ridge.

Thank you for your consideration.

Best wishes,
Rebecca

Rebecca Kornas, MD, FACEP, FAAEM
Medical Director - AdventHealth Avista
National Clinical Governance Board
Colorado State Advocacy Lead
USACS West
kornasr@usacs.com
C: (810) 265-2693

Rebecca Kornas, MD, FACEP, FAAEM
Medical Director, West Division
kornasr@usacs.com

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From: DAVID RAPHAEL
To: City Council
Subject: Avista"s Future In Louisville
Date: Sunday, January 21, 2024 2:57:13 PM

Some people who received this message don't often get email from david.raphael@comcast.net. Learn why this is important

Dear Council Members,

I am writing today to express my support for AdventHealth Avista's relocation to Retail Ridge. As a member of Avista's medical staff for over 30 years, I have seen Avista grow in fits and starts into a high quality community hospital that attracts patients from throughout the Front Range.

Unfortunately, Avista's current location severely restricts its ability to continue to grow and offer more comprehensive medical care to Louisville and the surrounding communities. The Redtail Ridge location will allow Louisville to keep top-tier healthcare for its residents in a much less intrusive location. As a resident of Louisville I consider the Redtail Ridge location a win-win for all parties.

Avista's future heavily relies on this relocation which will allow for the needs of modern, high quality, and sustainable healthcare to be delivered to our surrounding communities.

It is my hope that the City Council sees the benefits of keeping Avista in Louisville, and will approve the preliminary plat for Redtail Ridge.

Warmest Regards,

David A Raphael, MD

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From: Finch, Ken
To: City Council
Subject: Email from AdventHealth Avista regarding Redtail Ridge
Date: Monday, January 22, 2024 5:00:32 PM
Attachments: image001.png

Some people who received this message don't often get email from ken.finch@adventhealth.com. Learn why this is important

Dear Louisville City Council Members,

On behalf of the senior leadership of AdventHealth Avista hospital, I am writing to express our strong support for the approval of the preliminary plat for the Redtail Ridge development, a decision that will significantly impact the future of healthcare in Louisville. In my Interim President/CEO role I have been here for over 1 year. I am very proud of AdventHealth Avista and the Louisville community. I have over 42 years of healthcare experience. The growing healthcare needs of this community are very clear. I am sure that community members want their healthcare to be provided in their community. There is an opportunity to grow the healthcare services in our community with the AdventHealth commitment to do so.

AdventHealth Avista has been a pillar in the Louisville community for over 33 years, not only as the largest employer but also as a provider of compassionate and comprehensive healthcare. Our presence in Louisville has been more than just a service; it's been a partnership with the community, contributing significantly to the local economy and the well-being of our residents. AdventHealth Avista is your local hospital.

The approval of the Redtail Ridge plat is crucial for AdventHealth Avista to move into a modern, accessible location. This move is not just about a new building; it's about continuing to provide exceptional healthcare in a facility that matches the quality of our services. The strategic location along Northwest Parkway will enhance accessibility for more than 100,000 Boulder County residents, ensuring that top-tier medical care is within a reasonable distance for a broader community.

Our current facility, while rich in history and achievements, faces challenges in expansion and accessibility. The proposed location at Redtail Ridge offers the opportunity to overcome these challenges, enabling us to continue to grow and meet the evolving healthcare needs of our community. A state-of-the-art facility at Redtail Ridge means improved emergency access, enhanced patient and staff safety, and the ability to incorporate cutting-edge technology and services.

Moreover, the move will have a positive ripple effect on Louisville's economy. As we expand and modernize, we will continue to be a major employer, providing a range of job opportunities and contributing to the economic vitality of Louisville. Our presence in Redtail Ridge will also drive growth in related sectors, including retail, hospitality, and services, further invigorating the local economy.

We respectfully urge the Council to approve the preliminary plat for Redtail Ridge. This decision is more than a development approval; it is a commitment to the health and prosperity of Louisville, ensuring that our community continues to have access to premier healthcare services in an environment that reflects our dedication to excellence.

Thank you for your consideration and for your continued commitment to the well-being of our Louisville community.

Sincerely,
Ken

Ken Finch
AdventHealth Avista
Interim President/CEO
O 303-673-1280
M 817-501-7515
Ken.finch@adventhealth.com

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From: Sorensen MD, Lief
To: City Council
Subject: Email from AdventHealth Avista regarding Redtail Ridge
Date: Tuesday, January 23, 2024 10:48:21 PM

Some people who received this message don't often get email from lief.sorensen.md@adventhealth.com. Learn why this is important

Dear Louisville City Council Members,

On behalf of the senior leadership of AdventHealth Avista, I am writing to express our strong support for the approval of the preliminary plat for the Redtail Ridge development, a decision that will significantly impact the future of healthcare in Louisville.

For years, AdventHealth Avista has been a pillar in the Louisville community, not only as the largest employer but also as a provider of compassionate and comprehensive healthcare. Our presence in Louisville has been more than just a service; it's been a partnership with the community, contributing significantly to the local economy and the well-being of our residents.

I have personally been a part of the medical staff at Avista since 2009. During that time, serving both as a practicing physician and also for the past 5 years as our Chief Medical Officer. My two sons were born at Avista. This community and this hospital are special to me. In those 15 years I have seen many evolutions at Avista. These changes all had the goal of Avista being able to continue providing quality, safe, and reliable healthcare to our community.

The approval of the Redtail Ridge plat is crucial for Avista to move into a modern, accessible location. The strategic location along Northwest Parkway will enhance accessibility for more than 100,000 Boulder County residents, ensuring that top-tier medical care is within a reasonable distance for a broader community.

Our current facility faces challenges in expansion and accessibility. The proposed location at Redtail Ridge offers the opportunity to overcome these challenges, enabling us to continue to grow and meet the evolving healthcare needs of our community. A state-of-the-art facility at Redtail Ridge means improved emergency access, enhanced patient and staff safety, easier access to public transportation for patients and staff, and the ability to incorporate cutting-edge technology and services.

This move will also have a positive ripple effect on Louisville's economy. As we expand and modernize, we will continue to be a major employer, providing a range of job opportunities and contributing to the economic vitality of Louisville. Our presence in Redtail Ridge will also drive growth in related sectors, including retail, hospitality, and services, further invigorating the local economy.

On behalf of our senior leadership team I respectfully urge the Council to approve the preliminary plat for Redtail Ridge. This decision is more than a development approval; it is a commitment to the health and prosperity of Louisville, ensuring that our community continues to have access to premier healthcare services in an environment that reflects our dedication to excellence.

Thank you for your consideration and for your continued commitment to the well-being of our

Louisville community.

Sincerely,

Lief Sorensen

Lief Sorensen, MD, MBA
AdventHealth
Chief Medical Officer | AdventHealth Avista
O 303-673-1280
M 720-234-8492
lief.sorensen@AdventHealth.com

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From: Parkin, Christan
To: City Council
Subject: Support for Avista"s move to Redtail Ridge
Date: Wednesday, January 24, 2024 3:39:56 PM

Some people who received this message don't often get email from christan.parkin2@adventhealth.com. Learn why this is important

Dear Members of the Louisville City Council:

I trust this email finds you well. My name is Christan Parkin and I have worked for AdventHealth Avista since 2016, and I am writing to express my strong support of the City Council approving the Redtail Ridge development.

AdventHealth Avista has been a cornerstone of our community, providing essential medical services, emergency care, and support to countless individuals and families. I would like to outline some compelling reasons why the move of AdventHealth Avista is in the best interest of Louisville:

Improved Accessibility: Relocating AdventHealth Avista to a more accessible location would ensure that a larger portion of Louisville residents have easier access to essential medical services. This would be especially beneficial in emergency situations.

Population Growth: Our community has experienced significant population growth in recent years. A relocated hospital would be better positioned to accommodate the increasing healthcare demands of our residents.

Community Well-Being: The hospital contributes significantly to the overall well-being of our community. It serves as a hub for health education, preventive care, and various wellness programs, promoting a healthier lifestyle among residents.

Employment Opportunities: AdventHealth Avista is a major employer in Louisville, providing jobs and contributing to the local economy. The hospital's staff, from healthcare professionals to support staff, play a crucial role in Louisville's economic stability.

Expanded Services: A new hospital would allow us to offer a broader range of medical services, including specialized care, outpatient services, and preventive healthcare programs. This would contribute to the overall health and well-being of Louisville.

Support for Vulnerable Populations: The hospital plays a crucial role in supporting vulnerable populations, including the elderly, low-income individuals, and those with chronic illnesses. It ensures that everyone in our community has access to quality healthcare.

Technological Advancements: Advances in medical technology have transformed the healthcare landscape. A new facility would allow us to incorporate state-of-the-art equipment and facilities, providing our residents with access to cutting-edge healthcare services.

I kindly urge the City Council to continue supporting AdventHealth Avista and to explore avenues for the relocation of our services to the Redtail Ridge development. The well-being of Louisville is directly tied to the strength and accessibility of our healthcare infrastructure, and AdventHealth Avista is an integral part of that infrastructure. The health and well-being of Louisville residents is paramount, and I believe that investing in a modern and well-equipped hospital is a strategic move for Louisville.

Thank you for your time and consideration. I look forward to the positive impact that the relocation of AdventHealth Avista could have for Louisville. I appreciate your dedication to serving our community and ensuring that our residents have access to the healthcare services they need.

Sincerely,

Christan Parkin
AdventHealth Avista Foundation
Chief Development Officer
O 303.673.1011
M 720.987.7052
Christan.Parkin2@AdventHealth.com

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From: Paul Latimer
To: City Council
Subject: Request to Respect Special Election Vote and Reject Sprawl in Redtail Ridge
Date: Sunday, January 28, 2024 6:22:28 PM

Some people who received this message don't often get email from latimerp@gmail.com. Learn why this is important

Dear Council Members,

I am writing to express my concern about the recent decision to entertain land developers in Redtail Ridge despite the special election vote against sprawl. I am disappointed that we have to continually put effort into upholding actions that were already voted down. I would like to request that the council respect the special election vote and reject sprawl in Redtail Ridge, Louisville.

Thank you for your time and consideration.

Sincerely,

Paul Latimer
343 Lilac Cir

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From:	Doris Fasbender
To:	City Council
Subject:	Redtail Ridge property
Date:	Sunday, January 28, 2024 12:20:32 PM

Some people who received this message don't often get email from doris.fasbender@colorado.edu. Learn why this is important

To City Counsil members,

I have been a Louisville resident for twenty years and have seen many changes as it has grown. Some I've been delighted with, some I've had to adjust to. I have watched the situation with the proposed development of Redtail Ridge go through several iterations, and back when it was first brought to council, I thought there might be some merit for our city. However, Louisville has grown in population over these years and I no longer can support bringing more traffic to the area. Louisville brings many people to our city for good food, entertainment, shopping, etc. and that's a good thing. But add to that the dense housing that has been built over the past few years, our roads are already overcrowded. Hwy. 42 is a two-lane nightmare at rush hours, 96th St. is no longer an easy way to Hwy. 36, and Dillon Rd. has become difficult as well. To add 4 lanes to accommodate the traffic that would be brought in daily by the new proposal of Redtail Ridge will take away even more from whatever small town feeling we've maintained. Having lived in Boulder many years ago and witnessed what has happened there due to overcrowding, I can't help but fear that happening to Louisville.

Please consider something more nature oriented for the old Conoco Phillips land and leave new business & commercial building and development for the Louisville Tech Center!

Thank you,

Doris Fasbender
doris.fasbender@colorado.edu

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From: Diane Shepard
To: City Council
Subject: Fwd: Redtail Ridge
Date: Sunday, January 28, 2024 12:19:37 PM

Some people who received this message don't often get email from dmshepard@comcast.net. Learn why this is important

Correction, this email is regarding the agenda item for Feb. 6th.

-------- Forwarded Message --------
Subject: Redtail Ridge
Date: Sun, 28 Jan 2024 12:16:20 -0700
From: Diane Shepard <dmshepard@comcast.net>
To: City Council <council@louisvilleco.gov>

Hello Mayor and Council Members,

I'm writing today about the agenda topic this week regarding Redtail Ridge. I am opposed to approval to redevelop this property based on the proposal that is currently in place. This proposal application is the same one that we voted down in April 2022. It is the same one that the Louisville planning commission stated *fails to meet the criteria laid out in the city's municipal code,* and were concerned about the plan to grade nearly the entire site, including areas NOT slated for buildings, parking lots, or roads. *Migratory bird and tree studies have not been completed on the site.* It would be a huge loss of valuable open space to our community to move forward with redevelop as currently planned by the developer. This is 'old school' building assuming that we need all this additional office space. Much of the working population is now working from home much of the time. We do not go into offices 9-5 on a regular basis.

I don't believe the traffic studies previously done truly reflect the increased volume that will occur with this proposal. Approving this type of project adjacent to the neighborhoods burned by the Marshall Fire will add more disruption to those of us still living in the aftermath of that disaster. The increased traffic with construction trucks from the fire is already impacting Dillon Road and surrounding neighborhoods.

I could write volumes about my passion around preserving open space. I worked at the StorageTek campus on that property and am an avid nature lover. I seek places with unobstructed views to watch sunrises and sunsets, to walk quietly without constant traffic noise and air pollution and bright lights. This is becoming almost impossible to find within the city. We don't always have the liberty of time to drive to open spaces further away. It is difficult to understand where all the buildings will be placed based on the documents I've seen and I fear we will lose any resemblance of its current natural beauty with the proposal as it stands now. I'll leave you with a couple photos I took recently looking east across that property from the Monarch campus. This unobstructed view will be gone if you approve the current proposal.

Thank you for serving our city in the best interests of its residents. I will be listening to your conversation and vote this week.

Diane Shepard

Louisville, CO

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From: Eldyn TarBush
To: City Council
Subject: Redtail Ridge - YES
Date: Sunday, January 28, 2024 11:02:45 AM

[Some people who received this message don't often get email from e_tarbush@yahoo.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Hello Council,

I am 100% in favor of developing the Redtail Ridge property. I believe it was huge injustice that it was not implemented previously.

Our neighboring communities continue to secure retail and business from the Louisville area with no issues negatively affecting that particular city.
Medtronic is a beautiful building just outside out city limits. Lowes and Kohls are doing just fine in another one of our neighbors.
To access these new business locations takes transportation and the footprint left shows that we should have kept these businesses local.
If we are concerned about the planet then lets actually be concerned. It shouldn't just be lip service by the NO crowd.

With each move away from Louisville our tax base, job growth, and professional services access are diminished. We are left with large empty buildings and land that is vacant for no other reason than the opposition wants to say NO to everything!

Communities don't have a golden goose, they have planning and land that must developed to provide taxes and services.
Redtail Ridge development is vital to the continued vibrancy of our incredible city!!!

Thank you

Eldyn TarBush
720-668-6499
e_tarbush@yahoo.com

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From: Barry Greene
To: City Council
Subject: Redtail Ridge
Date: Friday, January 26, 2024 3:52:47 PM

Some people who received this message don't often get email from 2bgreene@gmail.com. Learn why this is important

Hello Louisville council members, please reject the latest Redtail Ridge proposal. I support a more compact development plan.

Sent from phone

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From: Cook, Ashley
To: City Council
Subject: Redtail Ridge Support
Date: Friday, January 26, 2024 2:31:04 PM

Some people who received this message don't often get email from ashley.r.cook@adventhealth.com. Learn why this is important

Dear Louisville City Council:

I have worked at AdventHealth Avista since 2014 and I am writing in my personal capacity to ask for your support for the Redtail Ridge plat because it will enable Avista to move into a new, modern facility.

More than 60,000 babies have been born at Avista, and we have played a vital role in the health and welfare of both Louisville and across Boulder County. Avista is currently under contract for a 40-acre campus, and its strategic location along Northwest Parkway will enable an additional 100,000 residents within Boulder County to live within 15 minutes of the hospital. The modern infrastructure and advanced medical services it could offer will undoubtedly elevate the quality of healthcare available to our region.

Even before the Marshall Fires, addressing the deficiencies in Avista's single access point was a priority. Now, it's more important than ever. The Redtail Ridge development provides an opportunity to alleviate this issue by offering multiple access points to our hospital. This new access point would enhance the safety and convenience of reaching our facility, a development that we believe our patients and their families will greatly appreciate.

There is no question that this improved accessibility will benefit our patients and their families during emergencies, and enhance overall healthcare outcomes. By relocating Avista, we can help promote improved RTD ridership while reducing overall single occupancy vehicle (SOV) traffic – both of which are critical elements in the Transportation Master Plans in Broomfield, Lafayette, and Louisville.

Avista's future heavily relies on this relocation to a new, state-of-the-art facility so that we can continue to provide the best care in the most sustainable and accessible way.

Sincerely,

Ashley Cook, RN, CPHQ, TLO
AdventHealth Avista
Safety Manager | Plant Operations
O 303-673-1008
M 970-590-9630
ashley.r.cook@adventhealth.com

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Calling all Citizens!

Louisville residents voted in a special election in 2022 to reject the sprawling development proposed for the Redtail Ridge property. Now the developers are back with a proposal for the the same sprawling development, footprint, grading and drainage plan. The city council will have a hearing on February 6 at 6 PM at city hall.

Tell city council to say no to:

- Massive sprawl and extensive site grading
- Road-clogging traffic (21,285 additional daily vehicle trips) and new 4-lane roads
- Premature failure of US 36 interchange at Interlocken with no plans or funding for improvement
- 20 years of dusty, noisy construction
- Needless destruction of habitat
- Unknown ecomomic burden

Ask city council to send the plan back to the drawing board. We want a compact development south of Disk Drive.

Speak Up Now!

Tell city council to say yes to:

- Respect for the special election vote and democratic process
- A complete application that meets city code
- Compact development south of Disk Drive
- Avista Hospital expanding in Louisville where they intend to stay
- Small town character

Redtail Ridge Needs Your Help

What you can do:

- Send an email by noon on Feb. 6 to Council@LouisvilleCO.gov
- Attend the hearing on Tuesday Feb. 6 at 6 PM at City Hall, 749 Main Street
- Speak up on Zoom
- Visit PreserveLouisville.org
- Join our email list

From: McCoy, Sherri
To: City Council
Subject: Support for Avista's move to Redtail Ridge
Date: Monday, January 29, 2024 2:32:03 PM

Some people who received this message don't often get email from sherri.mccoy@adventhealth.com. Learn why this is important

Dear members of the Louisville City Council:

I have had the pleasure of working at AdventHealth Avista since 2018, and I am writing in strong support of City Council approving the Redtail Ridge development plan. Your approval will make it possible for Avista to leave its current land-locked position in a 30+ year-old building, and move to a new, state-of-the-art facility in a more convenient location to better serve our community needs.

As a member of the AdventHealth Avista Foundation and team, I am writing to share my heartfelt thoughts on our proposed move to Redtail Ridge. This hospital is more than a workplace for me; it's the way our providers connect and serve the community we live in, impacting people in enormous ways! We are so proud that more than 60,000 babies have been born at our hospital, and this move will only strengthen that bond, especially with the preemies we care for [as little as 26 week old wee-ones]; thousands of incredible surgeries are performed here each year to meet our promise of Whole Person Care.

Moving to Redtail Ridge means we can continue to provide exceptional care in a facility designed for the future that is dependable and long lasting. It's not just about a new building; it's about enhancing our ability to provide exceptional experiences to every person, every day! The location near mass transit is critical to ensuring healthcare is more accessible to a wider community, ensuring that we reach those who need us most, and making it simple.

This move is an opportunity for growth, not just for Avista but for the Louisville community as a whole. As we expand our services and improve our facilities, we also contribute to the local economy, health, and mental health needs around us.

I hope you vote to approve our building at Redtail Ridge to positively impact the Louisville community we love to serve.

Sincerely,

Sherri McCoy

AdventHealth Avista| Provider Relations| Hospital Foundation Board Member
M 720.341.7976
sherri.mccoy@adventhealth.com

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From: Diana Barney
To: City Council
Subject: NO!!! to Redtail Ridge development
Date: Monday, January 29, 2024 3:03:08 PM

Some people who received this message don't often get email from dkbarney@hotmail.com. Learn why this is important

We voted this project down. Why is it up for debate again?

NO!!!!!! It's a terrible idea, and bringing it back after the citizens of Louisville made our decision tells me something strange is afoot, particularly as the "new" plans are basically the old plans.

Nothing gained is worth the price of what will be lost. That's why this development was voted down in the first place. Really, what are you thinking?? Why are the developers' plans more important than the robust environmental health of our city, not to mention the distrust you're fomenting by bringing this project up again.

Sincerely,

Diana Barney
1100 Jefferson Ave
Louisville

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From: Julia Reyburn
To: City Council
Subject: Public comment: support for Redtail Ridge, Feb 6
Date: Tuesday, January 30, 2024 8:40:39 AM

Some people who received this message don't often get email from julia.beck@gmail.com. Learn why this is important

Dear Council,

I am begging you to put behind you the grievances of the past and embrace the Redtail Ridge redevelopment. It is high time that something good happened for the community, in the face of continuous business closures and the increasing risk of blight in the town.

I'm most looking forward to the economic vitality the project will provide, drawing more patrons for our local restaurants and other small businesses. But I will also enjoy access to the open space with my family, including bike rides through the area.

Both of my children were born at Avista and it will be nice to know that we can retain the important facility in the town as a part of this project.

Please support the project. It may not be perfect, but nothing is. It is the best opportunity we have to improve the future of Louisville for the next generation.

Thank you for your consideration.

Julia Reyburn
535 Orchard Dr, Louisville, CO 80027

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From: Arnie Schmollinger
To: City Council
Subject: Redtail Ridge
Date: Monday, January 29, 2024 4:05:14 PM

Some people who received this message don't often get email from arnieschmo@yahoo.com. Learn why this is important

Hello,
I am writing to ask you please to respect the special election vote from 2022 regarding the development of Redtail Ridge.

The people of Louisville have spoken and said we Do Not Want the massive development that is being proposed.
We the people prefer a compact development south of Disk Drive.

Please respect the democratic process and send the plan back to the drawing board.

Thank you,

Arnold Schmollinger
240 S Carter Ave 80027

Sent from Yahoo Mail on Android

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From: Gordon
To: City Council
Subject: Support for Life Sciences Campus at Redtail Ridge - Economic and Community Benefits
Date: Tuesday, January 30, 2024 11:04:05 AM

You don't often get email from greyburn@gmail.com. Learn why this is important

Dear Council Members,

I urge you to approve the plat for the proposed life sciences campus at Redtail Ridge. This project presents a vital opportunity to diversify Louisville's economy, attract cutting-edge businesses, and enhance our community's overall well-being.

Here's why you should support this development:

- Economic Revitalization: The life sciences sector is a major economic engine, and Redtail Ridge will offer the modern facilities that innovative companies need. This campus will generate new jobs, attract related businesses, and boost Louisville's overall economic growth.
- National Innovation Hub: The Denver-Boulder region is already a top life sciences market. Redtail Ridge strengthens our position as a leader in biotechnology and medical research, bringing cutting-edge advancements and solutions to the world.
- Accessibility and Connectivity: Redtail Ridge's strategic location and commitment to multi-modal transportation aligns with Louisville's progressive planning initiatives. This location offers improved accessibility, reduced traffic congestion, and makes Louisville an even more attractive place for businesses and their employees.

The Redtail Ridge life sciences campus is a forward-thinking project that aligns with Louisville's vision for a vibrant and sustainable future. I respectfully request your approval.

Sincerely,
Gordon Reyburn

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Rob Zuccaro

Subject: FW: Insufficient review by PPLB of Redtail Ridge proposal

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Thursday, September 1, 2022 4:36 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: City Council <Council@louisvilleco.gov>
Subject: Insufficient review by PPLB of Redtail Ridge proposal

Members of the Louisville Planning Commission,

The Louisville Parks and Public Landscaping Board unanimously recommended approval of the Redtail Ridge draft and final plat in May 2022. **This approval was premature and ill-informed.**

Please consider:

The Board recommendation was not based on sound analysis:

— The Board did not ask if the proposal met City code.

— The Board did not evaluate the proposed park, open space, roads, or trails.

— Thirty residents submitted email comments and eight residents spoke at the Board meeting, but the Board did not address public comments.

The Board has not communicated that it is cost prohibitive to develop a park in the NW corner of the site.

— Residents learned of this prohibition during the May 2022 Board meeting. The Board didn't address the issue during the meeting.

— During the meeting a Board Member admitted, "That area wouldn't be developed as a Park for years, if ever.

— Allan Gill, Project Manager for the Parks Department stated that the land in the NW corner of the property is far too hilly and expensive for the City to develop as a park and recreation space.

— Dean Johnson, Parks Superintendent, stated that the Parks Department was considering other sites in the City for a new park.

Brue Baukol has led the public, Planning Commission, and City Council to believe that land designated as a park would be suitable for use as soccer fields, and other public recreation.

— Jordan Swisher, Senior Vice President, Brue Baukol Capital Partners, told City Council on July 27, 2021 "The Parks Board appreciated the proximity of the park to the schools" (42:13) and "I can just imagine taking my daughter to soccer practice on the fields by Monarch on a Saturday."

— During the July 27, 2021 meeting, Geoff Baukol stated, "Imagine the convenience of having sports fields on this site. We have listened and responded to what residents have asked for and have gone above and beyond." (58:32)

The Yes Campaign sold the park as one of the main attractions when marketing the previous proposal in the run-up to the April 2022 special election:

10) What could the 15 acres of recreational fields be used for?

By voting YES, more than 15 acres of this land would be set aside for public use and parks, and would be owned by the City. Allowable uses here would include new ballfields, dog parks, soccer fields, tennis and pickleball facilities, and other uses that can help our citizens stay active and enjoy the outdoors. Since there are no provisions for recreational uses or fields in the ConocoPhillips plan, voting NO would take away these options for public use.

11) Would a dog park be allowed under the Redtail Ridge plan?

Yes! Dog parks are an allowable use under the Redtail plan, but not under the ConocoPhillips plan. The developer would be required to donate this land to the City of Louisville for this and other uses as determined by the city.
(Source: Yes for Louisville website)

From our perspective, it is clear that the Parks Board had not done their due diligence when considering the feasibility or practicality of the City utilizing the public dedication in the NW corner of the site as a park. The Board seemingly has taken the developer at their word that this land is suitable for a park and that the City will use it as such, despite at least one member of the Board and City staff indicating the opposite. In rubber stamping their recommendation for approval, the Board has vacated their responsibility to represent the best interests of the City and its residents. Please consider this oversight as you consider the plan before you.

Sincerely,

Sherry Sommer
Citizens for a Vibrant, Sustainable Louisville

910 South Palisade Court
Louisville

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Rob Zuccaro

Subject: FW: Redtail Rdge proposal

Importance: High

From: Carolyn H Anderson <chageo@aol.com>
Sent: Sunday, September 4, 2022 12:31 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Rdge proposal

To: Louisville Planning Commission members:

From: Carolyn H Anderson, Property at 354 Troon Court

Re: Redtail Ridge proposal

I am writing, again, to express my dismay at and rejection of the proposed development at Redtail Ridge:

- The site is slated to be graded entirely under the current proposal by Brue Baukol, in its entirety. That is against the current requirements of Louisville code, which specifies that the natural beauty and topography of the city will be preserved to the extent possible, preservation of with natural vegetation specifically mentioned. This preservation requirement is especially important as the effects of climate change increase more rapidly than has been predicted (witness this week's prediction of 95-degree days all week long).

1. • The commission should require a 50% public land dedication for this parcel.

- • While the area developed may have been reduced in the current Brue Baukol proposal, the impact on local traffic, noise, air quality, impact on the micro climate, and yet unknown emissions from potential industrial facilities.
- • The original proposal suggested a marijuana growing facility might be a customer. With a K-12 school facility next door? That is unacceptable to me, and I do not even have children at the school.

We lost all in the December Marshall Fire. While we no longer live in Coal Creek Ranch, I still plan to live not far away. This has been our neighborhood for 21 years, longer than we have lived in any other home during our 54 years of marriage. We frequently travel 88th Street, we shop in Louisville, we use medical offices and services in Louisville, we use the library, and likely will rejoin the recreation center. The traffic increase of 20,000 more vehicles per day is not acceptable.

Louisville is our home. I do not want to see any more large parking lots serving vacant commercial and office space. There is a huge amount of vacant office and commercial space all over Louisville, Boulder, Broomfield. Retail space seems not to be surviving much anywhere around us. We still have three large retail (including grocery) stores in Louisville. Flatiron Crossing is in decline and demolition and reconstruction will soon be underway according to a recent Boulder Camera article, with plans to redevelop the empty Nordstroms into office space. We already have vacant office space in Louisville. People continue to work from home.

Please reject this unsatisfactory development plan by Brue Baukol for Redtail Ridge. It doesn't meet our City's code.

Sincerely,

Carolyn H Anderson

200 Summit Blvd, Apt 333

Broomfield CO 80021

Property owner at 354 Troon Court, Louisville

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Rob Zuccaro

Subject: FW: Redtail Ridge and Brue Baukol

Importance: High

From: Norma Anderson <norma22@me.com>
Sent: Sunday, September 4, 2022 12:17 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: Norma Jean Auer Anderson <norma22@me.com>
Subject: Redtail Ridge and Brue Baukol

Dear Steve Brauneis, Ben Diehl, Dietrich Höfner, Keaton Howe, Tamar Kranz, Jeff Moline and Allison Osterman,

I've followed the Redtail Ridge plans put forward by Brue Baukol from the beginning, and have been very consistent in my view that Brue Baukol is not the appropriate developer for the area known as Redtail Ridge, nor are the plans put forward by Brue Baukol suitable or appropriate to Louisville and what we stand for as a city and community. Repeatedly, Brue Baukol has tried to find ways around the objections Louisville residents have put forward when reviewing their (Brue Baukol's) plans, including forcing a special election Louisville had to pay for, to show again our disapproval of the plans put forward by Brue Baukol. With one exception, our City Council has turned down Brue Baukol's plans, that one exception was when one of the City Council members voted to have it put to a public vote (the one I just mentioned, where Brue Baukol was again defeated).

You will be having a meeting about Brue Baukol and whether it meets requirements for subdivisions in Louisville, per Louisville's Municipal Code, and it does not. The meeting will be on September 8th, and I hope you'll turn down Brue Baukol and its plans as Louisville has done in the past.

Here's how the plans put forth by Brue Baukol fail to meet the Louisville Municipal Code (LMC):

1. Grading: The current proposal calls for the entire site to be graded, including the open space and areas that will not contain buildings, roads, and parking lots. All of the natural drainage will be altered, the health of the soil severely degraded, trees and other vegetation destroyed, and wildlife habitat obliterated.

Grading the entire site is contrary to the mandate to preserve as much of the natural environment as possible:

LMC 16.04.202 (N): "To preserve and enhance to the extent reasonably possible the natural beauty and topography of the city and areas of historical or archeological importance and to ensure appropriate development with regard to such natural, historical and archaeological sites and features."

LMC 16.16.010 (D): "Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible."

A question the Planning Commission needs to ask: Does the current plan demonstrate that every effort has been made to "preserve and enhance to the extent reasonably possible" the natural features, including trees, of this property? Grading the entire site doesn't sound like any effort has been made. The proposal for Redtail Ridge

does not contain an inventory of the trees on the site, nor plans to preserve them or a justification for destroying them.

There's a reason for the LMC's mandate here: Vegetation acts as a carbon sink. When land is graded, carbon stored there is released into the atmosphere. Recovery of soil and vegetation is a slow process, and drought makes it even slower. Vegetation and the wildlife it houses also promote biodiversity, which is now more endangered than ever.

Grading the site is contrary to the mandate to preserve natural drainage:

LMC 16.16.020 (B): "Drainage areas, wherever possible, should be left in a natural state and no encroachments shall be made on the natural channel area."

Grading the property will destroy natural channels carved into the land over time. This includes historic Goodhue Ditch, which the developer plans to cover with a four-lane road. Natural vegetation holds water better than artificial channels and naturally mitigates flooding.

2. Open Space: The public land dedication in the current Redtail Ridge does not meet the minimum requirement.

Brue Baukol's proposed public land dedication includes areas that should be excluded from the calculation:

LMC 16.16.060 (B) 1: "A minimum of 12 percent for nonresidential subdivisions and a minimum of 15 percent for residential subdivisions of the total land area of the tract being subdivided shall be dedicated, exclusive of subsection A of this section, for park, school, or other public purposes as determined by the city council and shall be delineated on the final plat. Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."

This (below) lists the features that cannot be counted towards the 12% dedication:

LMC 16.16.060 (A): "Dedications of rights-of-way for public streets, drainage easements, utility easements or other public purposes shall be required and shall be made by the subdivider on the plat unless otherwise directed by the city council."

The proposed public land dedication at Redtail Ridge includes streets, drainage easements, and utility easements.

The LMC explicitly instructs the Planning Commission to determine whether the land granted in the public dedication is suitable for its purpose.

LMC 16.16.060 (B) 1: "… Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."

Because the land at Redtail Ridge is intended for use as open space and to provide a natural buffer mitigating the sense of urban sprawl, the Planning Commission must decide whether the land proposed for dedication is suitable for these purposes.

For open space, the purpose of which is the preservation of biodiverse natural areas and light human recreation, the land north of Disc Drive is the most suitable. This area of the site has never been developed. It is the richest in vegetation, water, and wildlife.

To preserve these "natural features" (LMC 16.04.020 (N) and LMC 16.16.010 (D)), the Planning Commission should require a 50% public land dedication at Redtail Ridge, with a 40% open space dedication north of Disc Drive. This would mean clustering all of the development on the southern half of the property, as it was when StorageTek occupied it.

3. Community Impact. Brue Baukol's current Redtail Ridge plan is less than half the size of the 6.1 million square feet the company proposed for the site in 2020, yet it still occupies the same massive, sprawling footprint. The impact of the development on local traffic, air quality, and quality of life remains enormous.

This is in spite of the LMC's clear instructions that the city should minimize the negative impacts of development:

LMC 16.04.020 (O): This section requires City Council and the Planning Commission "To regulate the use of land within the city on the basis of the impact thereof on the community or surrounding areas."

The development proposed for the area north of Disc Drive would impact nearby neighborhoods and Monarch High School with dust, noise, and fumes from construction; traffic; and the long-term possibility of emissions from industrial facilities. This includes an anticipated 20,000 additional car trips on Louisville roads daily.

At the last meeting, Louisville's city attorney told the Planning Commission the only question they have to address is whether the plan for Redtail Ridge meets the criteria of the Municipal Code or not. Since it does not, please take this into consideration.

Sincerely,

Norma Jean Anderson
1904 Steel Street
Louisville, Colorado 80027
norma22@me.com
(Home phone) 303-954-9373
(Cell phone) 720-537-5901

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Comments on Redtail Ridge Preliminary and Final Plant
Open Space Needs Assessment
by John Leary, 1116 Lafarge Ave

The intent of my comments is not to "weigh" in on the amount of open space needed in the Redtail Ridge to satisfy the requirements of the Louisville Municipal Code (LMC). It is simply to urge you to follow the LMC in making your determination on this matter.

I listened, from afar, to your deliberations on this matter in your last meeting and lost much sleep over a relatively simple issue. Specifically, statements were made to the effect that the amount of public land dedication[1] proposed by the applicant exceeded the amount that was required by the LMC. Such references represent a serious misunderstanding of how the LMC addresses the requirements for open space.[2]

The amount of open space required for a development is whatever the City Council, with input from the Planning Commission, decides is needed. The 12% figure in Section 16.16.060 of the LMC is the minimum amount of land that must be set aside, not necessarily what is needed. The amount of opens space needed is determined by applying the principles, policies and requirements of Sections 16.04.020, 16.12.050, 16.16.060,16.16.010 and 17.28.080[3]. It is important to note the requirements of these sections could, in some cases, be met within the 12%, while in other cases, it could take multiples of the 12%.

As an aside, these requirements occur in different phases of the development process, e.g., in the platting and PUD processes. This makes it important not to allow decisions in one phase to inappropriately eliminate options available in later phases.

While many of the principles, policies and requirements of the above mentioned LMC Sections demand your attention in order to determine the amount of open space needed for the Redtail development, the following is one example[4] of a requirement that was short thrifted at your last meeting.

Subpart D of Section 16.16.010(D) – General design and construction standards states:

"Natural features, historical and archaeological sites and vegetation of the area, including trees, must be preserved to the extent possible."

---

[1] Hereon I will use the term open space as that is the subject of misunderstanding.
[2] It is worth noting the applicant has repeatedly stated this misunderstanding throughout the process.
[3] There may be more sections of the LMC dealing with open space requirements, but these sections are sufficient to give context to the meaning of "minimum" in 16.16.016.
[4] This example is not meant to suggest it is the only issue needing to be be addressed. You will find others if you review all the policies and requirements, as some of you may have done, dealing with open space.

Section 16.12.050(S) requires the preliminary plat to show the "location of significant natural features such as trees, woodlands, lakes, hills, streams, wetlands, and floodplains, and historical and archaeological sites." I see nothing in the public record that satisfies this requirement.

Back to the standard in 16.16.010(D), the preliminary and final plats must show how the "to the extent possible" standard will be met. I ask you – based on the information you have, are you assured the trees on this property are being preserved to "the extent possible?" Do you have any idea how much open space would be necessary to preserve trees?

An aerial view of the site, overlaid on the plat maps of projected open space, is one way of making this assessment. There are aerial views on the County Assessor's Property Search that at least give an idea of some of the natural attributes of the property. During the last GDP process, I did some relatively rough overlays of what needs to be preserved and sent them to the Commission. My work got little discussion, but that was not in the more demanding plat process.

We are all aware this development is very contentious in our community. Determining the amount of open space in the Redtail development involves a lot of judgments that will always have elements of disagreement. Take for example defining "to the extent possible." Given the opportunities for honest disagreement we need to do everything we can to eliminate process disagreements. If you internalize the above-mentioned sections of the LMC it will become evident why the 12% is referred to as a minimum. It simply rationalizes the application of all the criteria in the various parts of the LMC.

In summary, you need to be fair to both the public and the applicant. You can only do this through a good faith effort to understand and follow our municipal code.

Rob Zuccaro

Subject: FW: Redtail Ridge not meeting Municipal Code

Importance: High

From: Scott MacLaughlin <STMacLaughlin@msn.com>
Sent: Sunday, September 4, 2022 12:39 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge not meeting Municipal Code

I am honestly getting tired of writing emails stating that Brue Baukol has one again violated multiple sections of the Municipal Code. He has demonstrated over the years that he is dishonest and cannot be trusted (remember when he said his original plan could not be changed due to economics?). Please send a clear message to Baukol that his dishonest approach will not be tolerated and he needs to meet the intent and spirit of the Code or sell the land to someone who will.

The citizens of Louisville are not going away, so I'd suggest you stand up to Baukol at the upcoming Planning Commission on September 8.

Scott MacLaughlin
948 St. Andrews Lane, Louisville (First Responder firefighter who lost his home and cars was battling the Marshall Wildland Fire in Louisville)

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Rob Zuccaro

Subject: FW: Redtail Ridge

Importance: High

From: Brad Pugh <bpugh1@gmail.com>
Sent: Tuesday, September 6, 2022 3:50 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge

Hello,

I'm writing to express my continued concern about the proposed plan for Redtail Ridge. Specifically:

1. The current Grading plan that would grade the entire site is destructive and doesn't comply with the relevant standards set forth in Louisville's municipal code.
2. The current proposed public land dedication includes areas that should be excluded from the calculation. The proposed land dedication falls short of the spirit of open space and doesn't stand up to scrutiny when compared to what is called for in the Louisville municipal code.
3. The current plan, while reduced, still has a significant impact in terms of local traffic, air quality, and quality of life in general for our small town. The proposed development proposed for the area north of Disc Drive would impact nearby neighborhoods and Monarch High School in profoundly negative ways.

Sincerely,

Brad Pugh

Brad Pugh
303.819.4232

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Rob Zuccaro

Subject: FW: Red Tail Ridge

Importance: High

From: Bev Snyder <bev@wisegator.com>
Sent: Tuesday, September 6, 2022 8:18 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Red Tail Ridge

Good morning,

We are AGAIN writing to you about this subject and I am confused as to why.

The city would not accept the comments and requests given by us citizens of Louisville CO so they required an election - wasting money to get the same response from our town.

Now, we are still having the same discussions about this property.

PLEASE pay attention to the comments below. Please pay attention to the comments and requests you have heard for the last several years. Please pay attention!

2. **OPEN SPACE**. The public land dedication in the current Redtail Ridge does not meet requirements of the code.

A. Brue Baukol's proposed public land dedication includes areas that should be excluded from the calculation:

- **LMC 16.16.060 (B)1**: "A minimum of 12 percent for nonresidential subdivisions and a minimum of 15 percent for residential subdivisions of the total land area of the tract being subdivided shall be dedicated, exclusive of subsection A of this section, for park, school, or other public purposes as determined by the city council and shall be delineated on the final plat.

The problem? Subsection A lists the features that cannot be counted towards the 12% dedication:

- **LMC 16.16.060 (A)**: "Dedications of rights-of-way for public streets, drainage easements, utility easements or other public purposes shall be required and shall be made by the subdivider on the plat unless otherwise directed by the city council."

The proposed land dedication at Redtail Ridge includes streets and trails. Thanks to Commission comments at their previous meeting, drainage easements, steep land, and land previously earmarked as buffer has just been excluded. Proposed land dedication outside of the Plat cannot count toward the 12%.

B. The LMC explicitly instructs the Planning Commission to determine whether the land granted in the public dedication is suitable for its purpose:

- **LMC 16.16.060 (B)1**: "… Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."

Because the land at Redtail Ridge is intended for use as open space and to provide a natural buffer mitigating the sense of urban sprawl, the Planning Commission must decide whether the land proposed for dedication is suitable for these purposes.

For open space, the purpose of which is the preservation of biodiverse natural areas and light human recreation, the land north of Disc Drive is the most suitable. This area of the site has never been developed. It is the richest in vegetation, water, and wildlife.

To preserve the site's most important "natural features" (per **LMC 16.04.020 (N)** and **LMC 16.16.010 (D)**), **the Planning Commission should require a 50% public land dedication at Redtail Ridge, with a 40% open space dedication north of Disc Drive. This would mean clustering all of the development on the southern half of the property, as it was when StorageTek occupied it.**

The development proposed for the area north of Disc Drive would impact nearby neighborhoods and Monarch High School with dust, noise, and fumes from construction; traffic; and the long-term possibility of emissions from industrial facilities. This includes an anticipated 20,000 additional car trips on Louisville roads daily.

At the last meeting, Louisville's city attorney told the Planning Commission that the only question they have to address is whether the plan for Redtail Ridge meets the criteria of the Municipal Code or not. **It does not**.

Thank you for you time,

Bev Snyder and Rolland Fearn
304 Diamond Cir Louisville

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Rob Zuccaro

Subject: FW: Communication from Citizens for a Vibrant, Sustainable Louisville

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Monday, September 5, 2022 5:23 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: City Council <Council@louisvilleco.gov>
Subject: Communication from Citizens for a Vibrant, Sustainable Louisville

Planning Commissioners and Planning Director Zuccaro,

I am forwarding this week's communication from Citizens for a Vibrant, Sustainable Louisville:

Commissioners need to know that this plan does NOT meet the requirements for subdivisions in Louisville's municipal code (LMC). Here's where it falls short:

1. **GRADING**. The current proposal calls for the **entire site to be graded** – including the open space and areas that will not contain buildings, roads, and parking lots. All of the natural drainage will be altered, the health of the soil severely degraded, trees and other vegetation destroyed, and wildlife habitat obliterated.

A. Grading the entire site is contrary to the mandate to preserve as much of the natural environment as possible:

- **LMC 16.04.020 (N)**: "To preserve and enhance to the extent reasonably possible the natural beauty and topography of the city and areas of historical or archeological importance and to ensure appropriate development with regard to such natural, historical and archaeological sites and features."

- **LMC 16.16.010 (D)**: "Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible."

Does the current plan demonstrate that every effort has been made to "preserve and enhance to the extent reasonably possible" the natural features, including trees, of this property? Grading the entire site doesn't sound like any effort has been made at all. The proposal for Redtail Ridge does not even contain an inventory of the trees on the site, much less plans to preserve them – or a justification for destroying them.

There's a reason for the LMC's mandate here: Vegetation acts as a carbon sink. When land is graded, stored carbon is released into the atmosphere. Recovery of soil and vegetation is a slow process, and drought makes it even slower. Vegetation and the wildlife it houses also promote biodiversity – now imperiled more than ever.

B. Grading the site is contrary to the mandate to preserve natural drainage:

- LMC 16.16.020 (B): "Drainage areas, wherever possible, should be left in a natural state and no encroachments shall be made on the natural channel area."

Grading the property will destroy natural channels carved into the land over time. This includes historic Goodhue Ditch, which the developer plans to cover with a four-lane road. Natural vegetation holds water better than artificial channels and naturally mitigates flooding.

2. **OPEN SPACE**. The public land dedication in the current Redtail Ridge does not meet requirements of the code.

A. Brue Baukol's proposed public land dedication includes areas that should be excluded from the calculation:

- LMC 16.16.060 (B)1: "A minimum of 12 percent for nonresidential subdivisions and a minimum of 15 percent for residential subdivisions of the total land area of the tract being subdivided shall be dedicated, exclusive of subsection A of this section, for park, school, or other public purposes as determined by the city council and shall be delineated on the final plat.

The problem? Subsection A lists the features that cannot be counted towards the 12% dedication:

- LMC 16.16.060 (A): "Dedications of rights-of-way for public streets, drainage easements, utility easements or other public purposes shall be required and shall be made by the subdivider on the plat unless otherwise directed by the city council."

The proposed land dedication at Redtail Ridge includes public purposes such as streets and trails. Thanks to Commissioner comments at their previous meeting, drainage easements, steep land, and land previously earmarked as buffer has been excluded. **Note:** Proposed land dedication outside of the Plat cannot count toward the 12%.

B. The LMC explicitly instructs the Planning Commission to determine whether the land granted in the public dedication is suitable for its purpose:

- LMC 16.16.060 (B)1: "… Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."

Because the land at Redtail Ridge is intended for use as open space and to provide a natural buffer mitigating the sense of urban sprawl, the Planning Commission must decide whether the land proposed for dedication is suitable for these purposes.

For open space, the purpose of which is the preservation of biodiverse natural areas and light human recreation, the land north of Disc Drive is the most suitable. This area of the site has never been developed. It is the richest in vegetation, water, and wildlife.

To preserve the site's most important "natural features" (per LMC 16.04.020 (N)and LMC 16.16.010 (D)), **the Planning Commission should require a 50% public land dedication at Redtail Ridge, with a 40% open space dedication north of Disc Drive. This would mean clustering all of the development on the southern half of the property, as it was when StorageTek occupied it.**

3. **COMMUNITY IMPACT**. Brue Baukol's current Redtail Ridge plan is less than half the size of the 6.1 million square feet the company proposed for the site in 2020, yet it still occupies the same massive, sprawling footprint. **The impact of the development on local traffic, air quality, and quality of life remains enormous.**

This is in spite of the LMC's clear instructions that the city should minimize the negative impacts of development:

- **LMC 16.04.020 (O)**: This section requires City Council and the Planning Commission "To regulate the use of land within the city on the basis of the impact thereof on the community or surrounding areas."

The development proposed for the area north of Disc Drive would impact nearby neighborhoods and Monarch High School with dust, noise, and fumes from construction; traffic; and the long-term possibility of emissions from industrial facilities. This includes an anticipated 20,000 additional car trips on Louisville roads daily.

At the last meeting, Louisville's city attorney told the Planning Commission that the only question they have to address is whether the plan for Redtail Ridge meets the criteria of the Municipal Code or not. **It does not**. Please make sure, with your comments and letters, that each Commissioner understands this.

See you all on Thursday.

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Rob Zuccaro

Subject: FW: Correction: Communication from Citizens for a Vibrant, Sustainable Louisville

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 6, 2022 6:33 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: City Council <Council@louisvilleco.gov>
Subject: Correction: Communication from Citizens for a Vibrant, Sustainable Louisville

Note: Section 2 A, final paragraph should include:

80 acres was exempted from the public land dedication requirement because STK provided a recreation facility at the site.

The recreation center no longer exists.This exemption needs to be questioned.

Planning Commissioners and Planning Director Zuccaro,

I am forwarding this week's communication from Citizens for a Vibrant, Sustainable Louisville:

Commissioners need to know that this plan does NOT meet the requirements for subdivisions in Louisville's municipal code (LMC). Here's where it falls short:

1. **GRADING**. The current proposal calls for the **entire site to be graded** – including the open space and areas that will not contain buildings, roads, and parking lots. All of the natural drainage will be altered, the health of the soil severely degraded, trees and other vegetation destroyed, and wildlife habitat obliterated.

A. Grading the entire site is contrary to the mandate to preserve as much of the natural environment as possible:

- **LMC 16.04.020 (N)**: "To preserve and enhance to the extent reasonably possible the natural beauty and topography of the city and areas of historical or archeological importance and to ensure appropriate development with regard to such natural, historical and archaeological sites and features."

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Does the current plan demonstrate that every effort has been made to "preserve and enhance to the extent reasonably possible" the natural features, including trees, of this property? Grading the entire site doesn't sound like any effort has been made at all. The proposal for Redtail Ridge does not even contain an inventory of the trees on the site, much less plans to preserve them – or a justification for destroying them.

There's a reason for the LMC's mandate here: Vegetation acts as a carbon sink. When land is graded, stored carbon is released into the atmosphere. Recovery of soil and vegetation is a slow process, and drought makes it even slower. Vegetation and the wildlife it houses also promote biodiversity – now imperiled more than ever.

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Grading the property will destroy natural channels carved into the land over time. This includes historic Goodhue Ditch, which the developer plans to cover with a four-lane road. Natural vegetation holds water better than artificial channels and naturally mitigates flooding.

2. **OPEN SPACE**. The public land dedication in the current Redtail Ridge does not meet requirements of the code.

A. Brue Baukol's proposed public land dedication includes areas that should be excluded from the calculation:

- **LMC 16.16.060 (B)1**: "A minimum of 12 percent for nonresidential subdivisions and a minimum of 15 percent for residential subdivisions of the total land area of the tract being subdivided shall be dedicated, exclusive of subsection A of this section, for park, school, or other public purposes as determined by the city council and shall be delineated on the final plat.

The problem? Subsection A lists the features that cannot be counted towards the 12% dedication:

- **LMC 16.16.060 (A)**: "Dedications of rights-of-way for public streets, drainage easements, utility easements or other public purposes shall be required and shall be made by the subdivider on the plat unless otherwise directed by the city council."

The proposed land dedication at Redtail Ridge includes public purposes such as streets and trails. Thanks to Commissioner comments at their previous meeting, drainage easements, steep land, and land previously earmarked as buffer has been excluded. **Note:** Proposed land dedication outside of the Plat cannot count toward the 12%.

B. The LMC explicitly instructs the Planning Commission to determine whether the land granted in the public dedication is suitable for its purpose:

- **LMC 16.16.060 (B)1**: "… Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."

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To preserve the site's most important "natural features" (per **LMC 16.04.020 (N)**and **LMC 16.16.010 (D))**, **the Planning Commission should require a 50% public land dedication at Redtail Ridge, with a 40% open space dedication north of Disc Drive. This would mean clustering all of the development on the southern half of the property, as it was when StorageTek occupied it.**

3. **COMMUNITY IMPACT**. Brue Baukol's current Redtail Ridge plan is less than half the size of the 6.1 million square feet the company proposed for the site in 2020, yet it still occupies the same massive, sprawling footprint. **The impact of the development on local traffic, air quality, and quality of life remains enormous.**

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The development proposed for the area north of Disc Drive would impact nearby neighborhoods and Monarch High School with dust, noise, and fumes from construction; traffic; and the long-term possibility of emissions from industrial facilities. This includes an anticipated 20,000 additional car trips on Louisville roads daily.

At the last meeting, Louisville's city attorney told the Planning Commission that the only question they have to address is whether the plan for Redtail Ridge meets the criteria of the Municipal Code or not. **It does not**. Please make sure, with your comments and letters, that each Commissioner understands this.

See you all on Thursday.

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Rob Zuccaro

Subject: FW: Third underpass and buffered trails at RTR

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 6, 2022 11:07 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>; Adam Blackmore <ablackmore@louisvilleco.gov>
Cc: City Council <Council@louisvilleco.gov>
Subject: Third underpass and buffered trails at RTR

Members of the Planning Commission,

Please note that OSAB had four conditions for their approval of the Redtail Ridge Proposal. Condition 4 was continued work on creating safe trails and the possible addition of a third underpass. The Board had listened to resident requests to require buffered trails on bike paths along roads and berms to protect trails adjacent to 96.

At the last Commissioner meeting it was made clear that the applicant and the City do not intend to pursue condition 4.

It is not the right of an applicant to dismiss a recommending board's condition of approval.

Condition 4 is fully compliant with our LMC:

LMC 16.16.010 (B): The residents **must have available to them, within the area, safe and convenient movement t**o points of destination or collection. Modes of travel, including but not limited to motor vehicle, pedestrian, and bicycle travel, to achieve this objective should not conflict with each other or abutting land uses. To the extent possible, there shall exist an internal pedestrian circulation system separate from the vehicular system that allows access to adjacent parcels as well as to parks, open space or recreation facilities within the subdivision. Pedestrian links to trail systems of the city should be made where feasible. **Buffering from collection and arterial streets must be provided by earthen berms, landscaping, leafing patterns, or other appropriate materials.**

It is the responsibility of the Louisville Planning Department and Planning Commission follow through on the conditions given by OSAB in their vote to recommend and to uphold all of the requirements of the LMC.

Please address this issue in your deliberations.

Sincerely,

Sherry Sommer
Citizens for a Vibrant, Sustainable Louisville
910 S Palisade Court
Louisville

For ease of reference--excerpt from Planning Commission Packet, 8/11/2022:

OPEN SPACE ADVISORY BOARD:

The Open Space Advisory Board (OSAB) reviewed the proposal on May 11, 2022 and continued the review to June 8. 2022 (see Attachment Nos 12 and 13 for minutes). **OSAB voted unanimously to approve the proposal with the following conditions:**

1. A legal commitment by the developer to rehabilitate and dedicate the 47.4acres in Boulder County (paradise lane properties) for jointly managed Louisville and Boulder County Open Space.

2. The developers follow the current city standards for underpasses consistent with the McCaslin Underpass at Harper Lake.
3. OSAB participation in the PUD review process.
4. **The developers and city continue to work on creating safe trails and the possible addition of a 3rd underpass.**

Staff has begun work on the structure and management agreement with Boulder County on the acquisition of the Paradise Lane Properties. While final decisions on rehabilitation (e.g. removal of structures) and arrangement of the ownership and conservation easement structure have not been made yet, staff intends to develop provisions in the SIA and have a condition prior to recording the final plat that the property be deeded to the City or County.

For design standards related to the underpass, staff intends to add language to the SIA that at a minimum the underpasses be designed with corten steel fencing, LED lighting, and stone veneer headwall treatment with street name and City logo.

Under LMC Sec. 4.02040, OSAB is tasked with reviewing and providing comments to the Planning Commission on any development proposals immediately adjacent to or materially impacting open space lands.

The recommendation for the third underpass was at the location where the proposed off-street trail crosses Rockcress Drive at the Rockcress Drive and Northwest Parkway intersection. The applicant has notified staff that they do not intend to modify their application to add this third underpass.

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Rob Zuccaro

Subject: FW: Requirements of Federal Law and City Code with reference to construction of Campus Drive

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 6, 2022 10:13 AM
To: Ember Brignull <emberb@Louisvilleco.gov>; Adam Blackmore <ablackmore@louisvilleco.gov>
Subject: Fw: Requirements of Federal Law and City Code with reference to construction of Campus Drive

Members of Planning Commission,

This correspondence is related to Federal Law and our City Code pertaining to construction of Campus Drive over a section of Goodhue Ditch.

Please forward this email to our City Attorney for examination.

Per the Final Drainage Report, the Army Corps of Engineers has issued the required exemption for construction of Campus Drive over the Goodhue Ditch:

As the Ditch crossing will disturb waters of the US, the Project team has engaged the services of ERO Resources Corporation to assist in obtaining the required permitting. A copy of ERO's Preconstruction Notification (hereinafter referred to as "PCN") can be found in Appendix B. Per correspondence with the Army Corps of Engineers, the Goodhue Ditch Crossing, (NWO-2020-00467-DEN) will be issued an exemption for this project. It will be considered construction of an irrigation ditch, which is exempt under, Section 404(f), and does not require a permit, which is referenced in Regulatory Guidance Letter 07-02. P 13

Emails inadvertently left in the packet indicate that a step required in the permitting process was circumvented. The emails are between Heidi Gerstung, ERO Resources, Jordan Swisher of Brue Baukol, and Nicholas Franke of the Army Corp of Engineers:

Mark West

From: Heidi Gerstung <hgerstung@eroresourc
Sent: Friday, March 27, 2020 8:57 AM
To: Jordan Swisher; Mark West
Cc: Moneka Worah; Abigail Sanocki
Subject: FW: Update on Goodhue Ditch Crossing,

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Jordan and Mark,

While I was preparing this email, we just got one from Nick; but here you information on it...

Great news! Please see below for the Corps update on this project.

This has happened to us before on other ditch projects when the consulta agricultural activities in ditches are what is exempt - so if the company tha reconstruct it, they do not need a 404 permit. But technically if it is relate not own the ditch, then it is not exempt.

Please let us know if you have any questions, thanks!

Heidi Gerstung
Ecologist

ERO Resources Corporation
Consultants in Natural Resources and the Environment
1842 Clarkson Street | Denver, CO 80218
303.830.1188 O | 720.468.2103 C | hgerstung@eroresources.com | https

a permit. You can reference Regulatory Guidance Letter 07-02, which goes
and is not considered construction of an irrigation ditch.

Please let me know if you have any questions or concerns on this. And of c

Source: Final Drainage Report

The Drainage Report states that this is a roadway construction, not irrigation, project. The emails indicate that an exemption cannot be granted for construction projects.

Based on the Ditch crossing at the intersection of Via Varra and Northwest Parkway just north of the Broomfield Business center, a 54" RCP has been sized for the Ditch crossing. Preliminary calculations indicate that a 54" RCP conveys 50 cfs, which was used for design on the Site. A maintenance road with a minimum 15-feet wide easement is required, and the roadway crossing will also incorporate the ability for maintenance equipment to cross.

The Drainage Report also indicates that permission from the Ditch Owner is required and has been requested. This permission letter is not included in publicly accessible information on 8/04/2022.

A crossing of the Ditch by Campus Drive is planned, subject to Ditch Company's approval, with the proposed development. The Ditch will continue to outfall per historic conditions at the existing location on northeast property boundary. The Ditch Company has been contacted regarding the requirements of the proposed Ditch revisions. The proposed Ditch crossing has been designed and included in a separate plan set for approval by the Ditch Company according to the Ditch Company requirements. P. 13 Final Drainage Report

The letter from the Ditch owner is also required in the Final Plat per City Code:Sec. 16.12.09:

Final plat contents.
B Other documents required at the time of submission of the final plat shall be:

1. Preliminary engineering drawings and outline specifications for all public facilities to be installed, i.e., water and sewer utilities, streets, and related improvements, bridges, and storm drainage;

2.

.Agreements made with ditch companies when needed

The City of Louisville is required to cooperate with all entities partner to intergovernmental agreement regarding open space lands. Are we also under the same requirements for water flowing through open space?

Section 15-5. Open Space - Effect of Article. (d) With respect to open space lands which are jointly owned by the City with another governmental entity and which are the subject of an intergovernmental agreement or a conservation easement, affect or limit the management of such lands in accordance with the terms of such agreement or easement;

Streams and Open Water

Under existing regulations, waters tributary to navigable waters are subject to the Corps' jurisdiction (jurisdictional). The Goodh topographic quadrangle and on the National Hydrography Datas

stream (Figure 1, Figure 2). The Goodhue Ditch is a tributary of South Platte River. The Goodhue Ditch contains a defined bed a portions of the banks. ERO mapped approximately 0.052 acre o the project area during the 2019 site visit. The Goodhue Ditch h Corps (Corps File No. NWO-2019-00148-DEN, Corps 2019).

Wetlands

Jurisdictional wetlands meet the Corps' definition of wetlands a surface tributary connection to interstate or navigable waters o mapped approximately 0.08 acre of wetlands abutting the Good 1). ERO collected data from two data points (DP) near the Good

Thank you for your attention in this important matter

Sherry Sommer
910 South Palisade Court
Louisville, Colorado

Documents

Army Corps of Engineers regulatory doc 07-02

https://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl07-02.pdf

City Code
Municode Library

Municode Library

MunicodeNEXT, the industry's leading search application with over 3,300 codes and growing!

Final Drainage Report:
https://www.louisvilleco.gov/home/showpublisheddocument/35576/637934895636070000

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Mark West

From: Heidi Gerstung <hgerstung@eroresourc
Sent: Friday, March 27, 2020 8:57 AM
To: Jordan Swisher; Mark West
Cc: Moneka Worah; Abigail Sanocki
Subject: FW: Update on Goodhue Ditch Crossing,

Follow Up Flag: Follow up
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Heidi Gerstung
Ecologist

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Rob Zuccaro

Subject: FW: Redtail Ridge Development Proposal

Importance: High

From: Peter Bandurian <pbandurian@gmail.com>
Sent: Wednesday, September 7, 2022 2:55 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge Development Proposal

I am writing to protest against Brue Baukol's latest proposal for a Redtail Ridge development. The bottom line is that the proposal does not meet the Louisville Municipal Code subdivision requirements. One can get in the weeds, the details, of how the public land dedication includes land that should not be included and the suitability of such land. Also, the proposal is so large as to negatively impact Louisville's quality of life: air quality and excessively increases traffic. But the real punch in the nose to the residents of the city of Louisville is the intention to grade the entire site. This is counter to the desire of maintaining as much as feasible the natural topography, historical archaeological features and beauty of the area. There is no natural open space in this plan and this is completely unacceptable.

The Brue Baukol proposal does not meet the Louisville Municipal Code in detail nor in spirit and should be rejected.

Sincerely, Peter Bandurian
139 Lincoln Cir, Louisville, CO 80027

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Rob Zuccaro

Subject: FW: Redtail Ridge

Importance: High

From: Charlene Bandurian <clbandurian@yahoo.com>
Sent: Wednesday, September 7, 2022 4:49 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge

Planning Commission:

I am struck by the blatant disregard for the desires of the citizens of Louisville by Brue Baukol.

Everything that is wrong is contained in his proposal to grade the entire site as a first step. By grading the site, the wildlife, the natural open space and environment is ruined. This is the exact opposite of what the Louisville citizenry have desired for the entire time this space has been been available.

I strenuously object to this Brue Baukol plan. The Planning Commission should not accept this plan. If accepted, it will then become a matter of time before more buildings and roads will be added because the entire ecosystem has been destroyed.

It is as if a deaf ear has been turned to the Louisville citizenry and all because of monetary gain.

No!

Charlene Bandurian, (resident of Louisville since 1984)
139 Lincoln Circle
Louisville, Co 80027

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Rob Zuccaro

Subject: FW: Redtail Ridge development proposal

Importance: High

From: Peter Bandurian <pbandurian@gmail.com>
Sent: Wednesday, September 7, 2022 1:41 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge development proposal

I am writing to protest against Brue Baukol's latest proposal for a Redtail Ridge development. The bottom line is that the proposal does not meet the Louisville Municipal Code subdivision

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Rob Zuccaro

Subject: FW: Redtail Ridge Agenda Item, September 8, 2022

Importance: High

From: cindy Bedell <cyndilarson@yahoo.com>
Sent: Wednesday, September 7, 2022 3:26 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: Meredyth Muth <meredythm@louisvilleco.gov>
Subject: Redtail Ridge Agenda Item, September 8, 2022

Dear Louisville Planning Commission,

I am writing about the Redtail Ridge Preliminary and Final Plat which is on your agenda for the **9/8/22** Planning Commission meeting.

You are tasked with making a recommendation about the fate of this land, which constitutes about 8% of the land area in the City of Louisville.

This land is full of natural features and previously undeveloped green fields which constitute our visual buffer and entrance to Louisville's south east gateway. You have an opportunity and a moral obligation to make a recommendation to save more of this area for open space.

Municipal Code 16.16.060 states:

*3. In determining which of the above policies to implement, the planning commission and the city council will consider **the size of the development** and its adequacy for accommodating a suitable public use site; the community facility aspects of the comprehensive development plan and the school district's master plan; **existing parks and other public uses in the area**; the topography, geology, and location of land in the subdivision available for dedication; **the needs of the people in the area; and any other appropriate factors**. If land is dedicated to the city, it shall be free of all liens and encumbrances.*

5.C. Retention ponds or other land left open solely for the purpose of the development, such as land under power lines, will not be considered as part of the land dedication required under this section.

During the August 11th Planning Commission meeting the question arose of how to take into account the results of the recent election, where citizens of Louisville overturned City Council's approval of the Redtail Ridge Mater Plan (Ordinance 1811, Series 2021). The main reason most referendum petition signatures gave for signing the referendum was they want more open space at this location. Therefore, obviously the results of the election are relevant to your decision tonight under municipal code 16.16.060.

Also many residents stated we need more open space in this area, both undeveloped buffer land and walking trails. Adding hundreds or thousands of visitors and employees to this area will significantly increase the need for open space and other public uses in the area. (Do we have an estimate of employees and daily visitors, or just the projected additional traffic of 20,600+ more vehicle trips per day to Louisville and surrounding roadways?)

Land left undeveloped or graded for the purpose of new roads should not be calculated in the the public land dedication.

During the May 2022 Open Space Advisory Board meeting, Director Zuccaro referred to these ordinances which allow the recommendation for more open space:

Sec. 16.16.010
***D**.Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible.*

E*.Schools, parks, churches and other community facilities should be planned for as an integral part of the area to the extent possible. Open space, park, and recreation areas must be located in such a manner as to create an area that is usable and accessible to the residents of the subdivision and shall otherwise conform to all applicable city standards and requirements. The need for additional open space, park, and recreation areas shall be based on the following factors: the city's comprehensive plan; topography, drainage, vegetation and other physical conditions; the type and density of the proposed development; the availability of other open space, park and recreation areas; and the overall need within the proposed development for such areas.*

At the Open Space Advisory Board June meeting, several board members stated they were not allowed to recommend more open space. They
did not seem to remember or understand what Director Zuccaro said at the May 2022 meeting. I encourage you to take into consideration this
faulty review process when you hear that the Louisville Open Space Advisory Board approved the open space dedication for this plat.

You can recommend more open space, and you should. It is your moral imperative.

We can and should preserve at least 160 acres of this land as quality, undisturbed, and contiguous open space.
One way to facilitate contiguous open space north of Disc Drive would be to cluster the approved 2.56 mil sq ft development below Disc Drive around the old Storage Technology footprint..
Also if the buildings are sited below grade, this would reduce the visual impact. Underground parking will further reduce the amount of impervious surface and heat island impact of concrete surface parking.

Brue Baukol Capital Partners has offered 47.40 acres, outside of the City of Louisville in unincorporated Boulder County, and which
is already under a restrictive IGA which limits the development which could occur on that land. This area should be protected, and
this is good; however this should not be counted in the total public land dedication. We need more open space within the City of Louisville subdivision plat.

Brue Baukil has also offered a strip of steep 18 acres open space along Highway 36, which is not quality open space.
I believe that this land was previously determined to be undesirable as open space by the City of Louisville.

Finally, I'd like to point out that Louisville Attorney Kelly stated on 8/3/21 (see page 55 of the 8/3/21 city council meeting packet) that there are
5 criteria where council can require additional public land dedication. She said that if you use the code, and do it reasonably, your decision
should be upheld. I have copied that in very large print below because I could not paste it smaller in yahoo mail:

CITY COUNCIL COMMUNICATION

SUBJECT: ORDINANCE NO. 1811, SERIES 2021, REDTAIL RIDGE GDP
DATE: AUGUST 3, 2021 PAGE 5 OF 10

- Louisville Municipal Code Sec. 16. 16.060 further details this requirement, which
is formalized with the final plat but typically the intent is designated within a General Development Plan. This minimum public land dedication requirement is separate from any additional open spaces or public lands that the City Council may require through other Municipal Code sections including, including Sec. 17.28.080, which states the City Council may require additional public use dedications based on five criteria:

1. Comprehensive development plan (including matters of state interest);
2. Topography, drainage, vegetation and other such physical conditions;
3. Anticipated socio-economic conditions;

4. Type and density of development and employment;
5. Overall need for open space and recreational facilities;

Please carefully consider your recommendation and preserve as much as possible of our small town gateway.

Thanks for your consideration,

Cindy Bedell
662 W Willow St
Louisville, CO 80027

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Dear Planning commissioners:

Thank you for asking important and good questions at the August meeting regarding the RedTail Ridge. I encouraged you continue to do by examining the codes and asking the hard and important questions such as "WHY". It is important to find out why this development layout plan was designed this way.

I believe transparency and clarification are essential to our understanding WHY. It will help us to adhere to the Municipal codes.

It is important to have the 40% land dedication above Disc Drive with 50% public land dedication as it mentioned in the Municipal code. My question is for you to ponder on, WHY the developer wants to grade over the property?

Having no development above north of Disc Drive and clustering development south on Tape Drive where Storage Tek was occupied do provide many beneficial outcomes for the city of Louisville.

Financially, Emotionally, Spiritually, Mentality, Physically, Stability, environmentally sustainability, community, and accountability to our future generations

For example, this traffic route in the developer's plan.

These are the reasons why they should not create Campus Drive from 88th to the light signal toward to 96th.

1. FINANCIALLY - Save Electricity and construction cost – it will be on us paying for it which we don't need to do so.
2. MENTALITY – No more Stacking. (Reminder there is a new signal by 7-11 store and in fact, it already started to stack up almost all day now which I drive on Hwy 42/ N 96th often).
3. SPIRTUALLY - Night sky required
4. PHYSCIALLY – No More Carbon Dioxide emitted
5. COMMUNITY - No need to work with Mr. Baukol's plan on Campus Drive. We can create a team to work with the school district, RTD and Federal Transportation Department. It is our motto "ONE COMMUNITY"
6. EMOTIONALLY - The road itself does not to extend to 96th, we can adapt and survive.
7. ENVIROMENTALLY SUSTAINABILTIY - Convert into open space, save the drainage and natural habitat
8. STABILITY – Conserving our land
9. ACCOUNTABILITY TO OUR FUTURE GENERATIONS - Our next-door neighbor Broomfield are redeveloping the Flatirons mall; this will bring more complication into 88th and 96th/Northwest Parkway.

Redtail Ridge plans does not meet the criteria of the Municipal code. I encourage you to continue to ask good and hard questions. Please do not approve Mr. Baukol's plan. Thank you for your service and for all you do.

M. Christiansen
543 Adams Ave.
Louisville CO 80027

Rob Zuccaro

Subject: FW: Comments on Redtail Ridge for 8 September 2022

Importance: High

From: Joshua Cooperman <jhcooperman@gmail.com>
Sent: Thursday, September 8, 2022 1:59 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Comments on Redtail Ridge for 8 September 2022

Dear members of the Planning Commission,

I write you today regarding your consideration of preliminary and final subdivision plats for the Redtail Ridge development. While I do not oppose development at the Phillips 66 Rural Special District, I do oppose the most recent proposal for the Redtail Ridge development. I request that you deny approval of the current application for subdivision plats. After explaining my general objections to the current proposal, I detail the legal reasons for denying approval on the basis of Louisville's municipal code and plans. In case my reasoning does not persuade you, I then make some suggestions for improving the current proposal. Finally, I offer some constructive ideas for the Redtail Ridge development, all of which are absolutely essential for ensuring this development's environmental sustainability.

The current proposal for the Redtail Ridge development has not been sufficiently revised since the special election this past spring; accordingly, virtually all of the issues with the previous proposal for the Redtail Ridge development remain. Of course, you must judge the current proposal on its own merits, but I was disappointed and, quite frankly, insulted that the developer did not make more substantial changes in response to the community's feedback. Most significantly, under the previous and current proposals, Redtail Ridge would be woefully unsustainable. This lack of sustainability is reflected in most, if not all, of the issues that led our community to vote down the previous proposal: for instance, too large of a development footprint, too little open space, and too much traffic. Louisville needs a much more sustainable development. I will explain how to achieve such a development just before concluding my letter.

I now argue that you should not approve the current proposal for the Redtail Ridge development as this proposal fails to conform to Louisville's municipal codes and plans. I must respectfully disagree with City staff's findings on several points, but I wish nonetheless to acknowledge City's staff typically excellent work.

First, Louisville's Comprehensive Plan specifies the policies that a special district must meet. The current proposal fails to meet two of these policies.

Policy 1 states that a special district must have its "specific character expectations" "articulate[d] and define[d]" "in customized general development plans adopted by City Council". The current proposal relies on a general development plan customized for a markedly different development that never came to fruition.

Policy 3 states that a special district must "encourage internal services which meet the daily needs of the people working in the district". The current proposal does not include any residential development, thus failing to meet the daily need of housing for people working in the district. (I fully recognize that this special district is not currently zoned for residential development; the current zoning clearly conflicts with this overarching special district policy.)

Second, section 16.04.020 of Louisville's municipal code specifies the purposes that a subdivision must meet. The current proposal fails to meet several of these purposes.

Purpose A states that a subdivision must "promote the health, safety, convenience, order, prosperity, and welfare of the present and future inhabitants of the City". The current proposal's lack of environmental sustainability jeopardizes the development's ability to promote the health, safety, prosperity, and welfare of Louisville's future inhabitants.

Purpose F states that a subdivision must "avoid congestion of population" and "provide for the proper distribution of population and supportive land uses". The current proposal's lack of residential development fails to provide for the proper distribution of population, which would allow those who work in the Phillips 66 Rural Special District also to live in the Phillips 66 Rural Special District.

Purpose H states that a subdivision must "protect the character and the social and economic stability of all parts of the City". The current proposal's expansive footprint and grading plans fail to protect the character of the Phillips 66 Rural Special District. The current proposal's effects on the City's existing social and economic stability is largely unknown. For instance, would increased traffic in the

City's southeast deter trips to the City's existing businesses? I also suggest that you read my guest opinion in the Daily Camera regarding the economic impact of the previous Redtail Ridge development proposal. (https://www.dailycamera.com/2022/04/10/joshua-cooperman-redtail-ridge-economic-boon-or-bust/)

Purpose K states that a subdivision must "provide for the safe and efficient circulation of traffic throughout the City, the avoidance of congestion in the streets and highways and along pedestrian and bikeways". The current proposal would result in a substantial increase in traffic, jeopardizing its safe and efficient circulation. Bicycle lanes along 96th Street, Dillon Road, and 88th Street would be subject to considerably more congestion.

Purpose M states that a subdivision must "mitigate the pollution of air, streams and ponds, assure the adequacy of drainage facilities, safeguard the water table, and encourage the wise use and management of the natural environment". The current proposal would result in considerable increases in air pollution stemming from the substantial increase in traffic. The current proposal's expansive footprint and grading plans do not represent wise uses or management of the natural environment.

Purpose N states that a subdivision must "preserve and enhance to the extent reasonably possible the natural beauty and topography of the City and areas of historical and archeological importance and to ensure appropriate development with regard to such natural, historical, and archeological sites and features". The current proposal's expansive footprint and grading plans completely fail to preserve and enhance, to the extent possible, the City's natural beauty and topography and to ensure appropriate development with regard to natural features.

Purpose S states that a subdivision must "otherwise plan for and regulate the use of land so as to provide planned and orderly use of land and protection of the environment in a manner consistent with constitutional rights". The current proposal's lack of environmental sustainability as well as its expansive footprint and grading plans fail to adequately protect the environment.

Third, section 16.16 of Louisville's municipal code specifies the design standards that a subdivision must meet. The current proposal fails to meet at least two of these design standards.

Standard D in section 16.16.010 states that a subdivision must ensure that "natural features, historical and archeological sites, and vegetation of the area, including trees must be preserved to the extent possible". The current proposal's expansive footprint and grading plans directly conflict with this standard. Moreover, this section states that "the applicant . . . must demonstrate" that the standards are met.

Standard B in section 16.16.020 states that a subdivision must ensure that "drainage areas, wherever possible, should be left in a natural state and [that] no encroachments shall be made on the natural channel area". The current proposal's grading plans directly conflict with this standard.

While I maintain that the current proposal for the Redtail Ridge development fails to conform to Louisville's municipal codes and plans, I appreciate that many of the policies and standards in these codes and plans are subject to interpretation. Accordingly, I wish to make some suggestions for improving the current proposal.

Throughout the various rounds of development proposals for Redtail Ridge, the community has continually expressed the desire for a smaller development footprint and its concomitant open space. If you decide to approve the current proposal, then I implore you to recommend that the developer dedicate more open space, which would result in a smaller development footprint. In particular, I hope that all of the land north of Disk Drive will be preserved as undisturbed open space. A larger open space dedication could also help to address the current proposal's failings with regards to some of the subdivision purposes and standards.

Louisville's municipal codes and plans provide multiple justifications for a larger open space dedication. Part E of section 16.16.010 states that "the need for additional open space, park, and recreation areas shall be based on the following factors: the City's Comprehensive Plan; topography, drainage, vegetation, and other physical conditions; the type and density of the proposed development; the availability of other open space, park, and recreation areas; and the overall need within the proposed development for such areas".

With regards to the City's Comprehensive Plan, this plan lists "promoting ecological diversity", providing "integrated open space and trail networks", and supporting "sustainable practices" among Louisville's core community values. A larger open space dedication would further promote ecological diversity, provide more integrated open space and trail networks, and further support sustainable practices.

With regards to topography, drainage, vegetation, and other physical conditions, a larger open space dedication could substantially reduce the amount of grading, allowing for preservation of natural topography, drainage, vegetation, and habitat.

With regards to the proposed development's type and density, as demonstrated by the ConocoPhillips plans, a denser development with smaller footprint is most definitely possible, allowing for a larger open space dedication.

With regards to the availability of other open space and the overall need within the proposed development, the Redtail Ridge development would daily bring thousands of people to southeast Louisville. These people would want to and should be able to enjoy the City's open spaces. With little open space currently available for enjoyment in southeast Louisville, a larger open space dedication is necessary to accommodate the people traveling to the Redtail Ridge development.

Furthermore, the exemption of eighty acres annexed by the City in 2009 from the open space dedication requirement should be nullified as the reason for this exemption no longer exists.

Throughout the various rounds of development proposals for Redtail Ridge, the community has continually expressed concerns about the concomitant increases in traffic. Given the current zoning of the Phillips 66 Rural Special District and the currently allowed development square footage, there are unfortunately limited options to mitigate the increased traffic. If you decide to approve the current proposal, then I implore you to recommend that the developer provide for substantial traffic demand management. In particular, in addition to requesting a strengthening of the current traffic demand management plan, you should recommend that development cannot proceed without public transportation to the Phillips 66 Rural Special District. The development of Redtail Ridge presents an opportunity for public transportation also to the Colorado Technology Center, the Monarch campus, and Avista Adventist Hospital.

Finally, I wish to offer a vision for Redtail Ridge that would address all of the community's principal concerns while making the development considerably more sustainable. We desperately need to rezone the Phillips 66 Rural Special District to allow for mixed-use and residential development. I fully realize that such a rezoning is contrary to the Comprehensive Plan, but, quite frankly, the Comprehensive Plan is dead wrong in this case. The current zoning condemns people who would work at Redtail Ridge not only to find housing elsewhere, but also to commute from elsewhere. Rezoning would allow for people who work there also to live there, removing the need to commute to work as these people could walk or bike. Furthermore, we need to significantly improve the pedestrian and bicycle connections to the neighboring residential development in Broomfield so that the people living there can sustainably travel to Redtail Ridge. In combination with my suggestion to require public transportation, there would be substantial reductions in traffic to and from the development. Residential development at Redtail Ridge should be high density in line with a smaller development footprint. (High density development is more environmentally sustainable too.) The developer has previously indicated an interest in residential development, and City Council truly wishes to make progress on affordable housing. The rezoning of the Phillips 66 Rural Special District would likely represent the single most significant advance for affordable housing in Louisville. For these reasons I urge you to do everything in your power to realize this vision for Louisville.

Thank you for considering my thoughts.

Best,
Josh

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Rob Zuccaro

Subject: FW: RTR: Compromise, Ignoring the Muni Code and "Shall" re: Planning: Redtail Ridge 2022 Preliminary and Final

From: Cynthia Corne <ccorne@comcast.net>
Sent: Wednesday, September 7, 2022 7:27 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: Jeff Durbin <jdurbin@louisvilleco.gov>; Rob Zuccaro <rzuccaro@louisvilleco.gov>; Lisa Ritchie <lritchie@louisvilleco.gov>; City Council <Council@louisvilleco.gov>; Cynthia Corne <ccorne@bluesleeves.com>
Subject: RTR: Compromise, Ignoring the Muni Code and "Shall" re: Planning: Redtail Ridge 2022 Preliminary and Final

Dear Planning Commission,
Thank you sincerely for your valuable service to our community.

If you review the Municipal Code mandates ("shall" statements), and the importance of this RedTail Ridge parcel, perhaps you will also see concerns for the process followed and suggest to this applicant that they produce new plans which match the desires for the City of Louisville. Please continue the visible and confident leadership from Planning Commission. The prior Planning Commission meeting was impressive - the questions and approach. A positive solution has been in front of this applicant for several years. "No/less development north of Disc Drive." I digress (since that is not what you are reviewing).

Also, so long as the applicant intends to grade over the majority of the land and natural features, the community will not support this preliminary/final plat. Based on Muni Code, Planning Commission should not approve this overrun of natural resources and resulting intent for the "future inhabitants" of Louisville.

Please consider the following input for your Sept. 8th review of the unchanged Redtail Ridge 2022 Preliminary and Final Plats. Topics included:
1. Planning Commission's Critical Role
2. Parcel Importance: Entrance to Louisville and Boulder County
3. Air Quality and Traffic Concerns: general and vis-a-vis EPA downgrade
4. Code Compliance. "Shall" = Mandatory. See a list at bottom. City Planning Staff could be requested to show how applicant has met. Line by line review is needed by our boards. Too much has been glossed over. Not sure why.
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> Sec. 16.12.070 After reviewing the final plat to assure its acceptability, the city manager shall present the plat to the planning commission for review.

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More detail below:

Re: the Redtail Ridge 2022 Preliminary and Final Plat Review

1. Planning Commission's Critical Role

a. This type of parcel is the reason the Planning Commission exists. To apply your full purpose and look out for the City of Louisville, our community, taxpayers, and future generations. And, to not waste City Council's time on a proposal which attempts to gloss over critical requirements for Louisville.

a1. Please evaluate the applicant's proposal for its match to the Comprehensive Plan and how it complies with Municipal Code - requirements, mandates, and intentions.

a2. Please keep in mind: this applicant has had multiple years to incorporate citizen input, yet has kept the devastating horizontal intent the same.

Compromise has been achievable and still is. How refreshing would it be for the Planning Commission to suggest to them, "Have you considered no development north of Disc Drive? It seems the community and City Council would accept that and grant height exceptions in the other areas. Or something closer to that? Do you (applicant) understand that the community will not accept grading over the entire property and that plan does not meet the requirements of the municipal code?"

**As a result, Planning Commission could keep your September 8th review short. They have not met the requirements of the municipal code and have taken up significant staff time and cost to the City without showing willingness to compromise on any of the most basic and reasonable environmental concerns. Not just concerns. Mandates.

2. **Entrance to Louisville and Boulder County:** To see this unique, even iconic, parcel for what it is: mostly undeveloped land with campus zoning which is the southern entrance to Louisville and to Boulder County. A first impression for people from all over the world to this historically significant area of Colorado.

3. To consider **air quality and traffic concerns** generally, and even mores, with a recent EPA downgrade to Severe status.

- This is new, yet doesn't the Planning Commission have a critical role to even more closely review increased traffic and pollutants?
- For reference:

Sec. 16.04.020. - Purpose.

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A.

To promote the **health, safety, convenience, order,** prosperity and **welfare** of the present and future inhabitants of the city;

E.

To provide for adequate light, air and privacy and to secure safety from fire, flood and other danger;

4. **Code Compliance:** To ensure that the "shall" statements from the Municipal Code have truly been adhered to by the applicant, and reviewed by City staff. It is reasonable to ask the City Attorney to expect the applicant to do the most required instead of the least.

- Specifically in 17.08 Definitions. **Shall = Mandatory.**
- I urge the Planning Commission to have City staff provide a line by line compliance update of the "shall statements" in sections 15, 16, and 17. See the bottom of this email for a listing from Chapter 16.12 of the Municipal Code.

- **Sec. 17.08.005. - General interpretation.**

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a. Why does the Municipal Code have separate sections for Preliminary and Final Plats if not for EXACTLY this type of development? They should not be combined for this complex and potentially disruptive development - e.g. 20 year - construction.

6. OSAB Notice not given. Prior to the second OSAB meeting, the applicant made significant changes to their plans which did not allow the 15 day period for OSAB members to consider those changes.
- Also, while surrounding area impacts are relevant, the information was presented in such a way that was confusing as to the actual Open Space and usability calculations within the City of Louisville. Yet, OSAB went ahead and voted. OSAB's recommendation should have no bearing on discussions.
****Planning Commission - please look at Open Space with your own lens aligned with code requirements.**

7. The Parks Commission review was similar. They did not understand their mission, sections of the Code to consider, nor consider public comments.

8. Unknown Tenants/Community Partners
**Please note: With prior owners, the Community knew who the tenants were (e.g. StorageTek, Conoco Philips) and that they were/to be part of the community. With this owner, we do not know who the tenants will be. Yet, they are asking to grade over the entire ecosystem in their first phase and divide into newly defined parcels.
**We also know the owner is now based in Newport Beach, California. They have some local partners, but let's be clear this is an investment for this land owner, who will likely sell the subdivided areas. It is warranted for the citizens and tax payers to require more information before grading of land and 20 years of congestion to be considered.

Thank you for considering this input. Normally, I summarize more cleanly. I am disappointed to spend time here. The process laid out by Planning Staff for this applicant has skipped critical steps and I'm not sure why. It is disappointing that a plat, with this much unchanged proposed horizontal devastation is even at this stage. It does not preserve as much natural features as reasonable - as mandated in the code.

Also citing 16.04.030

- ## Sec. 16.04.030. - Authority.

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(Ord. No. 423-1973, § 1-103; Code 1977, § 16.04.030)

Some common sense is being missed here. Or brazen overreach.
Finally, you are the experts, and I prefer to spend my volunteer time on other community matters. Yet, this is important to prevent unnecessary chaos and potentially irreversible damage. Thank you.

Sincerely,
Cynthia

Cynthia Corne Musslewhite
438 Jefferson Ave.
Louisville CO

==========

Appendix:
One of many sections which should be reviewed by Planning Commission or City Council, for compliance, line by line, formally, before Council review.

Sec. 16.12.050. - Preliminary plat—Contents.

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C. Contours at two-foot intervals if the slope is less than ten percent (spot elevations may be required if land is too flat for contours) and five feet where the slope is greater than ten percent;

D. Date of preparation, scale, and north sign (designated as true north);

E. Name, address and telephone number of owner and licensed surveyor, licensed engineer or designer of the plat;

F. Total acreage involved;

G. Location and dimensions of all existing streets, alleys, easements, drainage areas, irrigation ditches and laterals, and other significant features within or adjacent to the tract to be subdivided;

H. Approximate location and dimensions of all proposed streets, alleys, easements, lot lines, front building setback lines, and parks and other areas to be dedicated for public use;

I. Delineation of and technical material pertaining to areas of state interest as identified in chapter 17.32 and in other applicable ordinances;

J. Zoning on and adjacent to the tract;

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L. Density of development (number of dwelling units per acre of residential and open space land);

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Location of significant natural features such as trees, woodlands, lakes, hills, streams, wetlands, and floodplains, and historical and archaeological sites;

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Rob Zuccaro

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Importance: High

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Sent: Wednesday, September 7, 2022 7:27 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: Jeff Durbin <jdurbin@louisvilleco.gov>; Rob Zuccaro <rzuccaro@louisvilleco.gov>; Lisa Ritchie <lritchie@louisvilleco.gov>; City Council <Council@louisvilleco.gov>; Cynthia Corne <ccorne@bluesleeves.com>
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Cynthia Corne Musslewhite
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Louisville CO

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D. Date of preparation, scale, and north sign (designated as true north);

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F. Total acreage involved;

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Rob Zuccaro

Subject: FW: Redtail Proposal Doesn't Meet City Code

Importance: High

From: Melissa DuBois <meldubois@gmail.com>
Sent: Thursday, September 8, 2022 1:30 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Proposal Doesn't Meet City Code

Hello,

I would like to encourage the Planning Commission to reject the Redtail Ridge development proposal, because the proposal does not meet city code requirements in the following ways:

- The current proposal calls for the **entire site to be graded** – including the open space and areas that will not contain buildings, roads, and parking lots. All of the natural drainage will be altered, the health of the soil severely degraded, trees and other vegetation destroyed, and wildlife habitat obliterated. Grading the entire site is contrary to the mandate to preserve as much of the natural environment as possible (LMC 16.04.020 (N), LMC 16.16.010 (D)).

- The grading of the site is also contrary to the mandate to preserve natural drainage (LMC 16.16.020 (B)).

- Brue Baukol's proposed public land dedication includes areas that should be excluded from the calculation. According to LMC 16.16.060 (B)1, a minimum of 12% of the land being subdivided for nonresidential subdivisions shall be dedicated, exclusive of subsection A of this section, for park, school, or other public purposes as determined by the city council and shall be delineated on the final plat. Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended." Subsection A of LMC 16.16.060 lists the features that cannot be counted toward the 12% dedication: Dedications of rights-of-way for public streets, drainage easements, utility easements or other public purposes shall be required and shall be made by the subdivider on the plat unless otherwise directed by the city council." **The proposed land dedication of the Redtail Ridge proposal includes streets, drainage easements, and utility easements.**

- **The LMC explicitly instructs the Planning Commission to determine whether the land granted in the public dedication is suitable for its purpose:** **LMC 16.16.060 (B)1**: "… Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."

Because the land at Redtail Ridge is intended for use as open space and to provide a natural buffer mitigating the sense of urban sprawl, the Planning Commission must decide whether the land proposed for dedication is suitable for these purposes.

For open space, the purpose of which is the preservation of biodiverse natural areas and light human recreation, the land north of Disc Drive is the most suitable. This area of the site has never been developed. It is the richest in vegetation, water, and wildlife.

To preserve these "natural features" (**LMC 16.04.020 (N)** and **LMC 16.16.010 (D)**), the Planning Commission should require a 50% public land dedication at Redtail Ridge, with a 40% open space dedication north of Disc Drive. This would mean clustering all of the development on the southern half of the property, as it was when StorageTek occupied it.

- **COMMUNITY IMPACT**. Brue Baukol's current Redtail Ridge plan is less than half the size of the 6.1 million square feet the company proposed for the site in 2020, yet it still occupies the same massive, sprawling footprint. **The impact of the development on local traffic, air quality, and quality of life remains enormous.**

  This is in spite of the LMC's clear instructions that the city should minimize the negative impacts of development:

- **LMC 16.04.020 (O)**: This section requires City Council and the Planning Commission "To regulate the use of land within the city on the basis of the impact thereof on the community or surrounding areas."

The development proposed for the area north of Disc Drive would impact nearby neighborhoods and Monarch High School with dust, noise, and fumes from construction; traffic; and the long-term possibility of emissions from industrial facilities. This includes an anticipated 20,000 additional car trips on Louisville roads daily.

I strongly urge the Planning Commission to reject the Redtail Ridge proposal, as it DOES NOT meet the requirements for subdivisions in Louisville's municipal code.

Thank you for your consideration.

Sincerely,
Melissa DuBois
Louisville Resident
657 Owl Drive

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Rob Zuccaro

Subject: FW: NO on approval for current Redtail Ridge plan

Importance: High

From: A G <agreves13@gmail.com>
Sent: Wednesday, September 7, 2022 4:58 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: NO on approval for current Redtail Ridge plan

Members of the Louisville Planning Commission,

I understand that you will be considering the Redtail Ridge Filing No. 1 Preliminary and Final Subdivision Plat again this week. As a resident of Superior who accesses the proposed area for parenting and work on a daily basis, and as a local volunteer in the realm of open space preservation, I am highly invested in the use of this land. I urge you to vote NO on this current proposal, as it does not meet criteria in Louisville's Municipal Code.

One of the greatest concerns that requires your full attention and effort is the grading plan for this proposal. It is unconscionable that the entire site would be graded, including open space. This is completely counterintuitive to open space and would decimate habitat, wildlife, biodiversity, vegetation & the associated carbon sink, trees, soil, and natural drainage. It preserves nothing. Along with that, what is the plan, if any, for all the prairie dogs throughout this site? The historical range for this keystone species has shrunk by 95%- in large part due to habitat destruction and human encroachment. Every decision that impacts them matters, and thoughtless complicity in their destruction only contributes to the greater problems we are experiencing locally, and on this planet. Stewardship is the lesson we hope to pass along to our kids and students. What a shame it would be to deliver the opposite action and example just right across the street from schools. I urge you to uphold the LMC (16.04.020 (N), 16.16.010 (D)) through the legitimate preservation that is called for. As is, the proposal would create enormous abuse of this land.

Though the grading plan alone necessitates a full stop on this proposal, there are other aspects that also do not meet code. Open space dedication is one such piece. The public land dedication in the current Redtail Ridge plan does not meet requirements of the LMC. Features such as streets and trails do not count in the 12% calculation (LMC 16.16.060 (B)1). The planning commission should require a 50% public land dedication and clustered development to substantially minimize the harm to intended open space, including wildlife, and to provide a natural buffer to mitigate urban sprawl. You can do this. Additionally, the LMC clearly states (16.04.020 (O)) that the city council and planning commission must “regulate the use of land within the city on the basis of the impact thereof on the community or surrounding areas." This current proposal would negatively impact quality of life through its massive footprint and needless destruction. It would affect air quality, noise/light pollution, sustainability, traffic (note: selling out to an environmental nightmare is not the way to create much needed emergency road access!!!), alter drainage, etc. It is also irresponsible and cost prohibitive to suggest that the NW corner of the site be utilized as a park.

Please listen to your residents and affected locals, and do not approve this proposal. It does not meet Louisville Municipal Code, would ravage natural assets, and is geared toward nothing more than greed and profit.

Thank you.

Amber Greves
Superior, CO

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Rob Zuccaro

Subject: FW: Letter in Support of Campus Drive Extension and Completion
Attachments: Letter to Louisville Planning Commission and City Council 9-8.pdf

Importance: High

From: Meghan Mosher <mosher.meghan@gmail.com>
Sent: Thursday, September 8, 2022 10:35 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>; City Council <Council@louisvilleco.gov>; bvs.board@bvsd.org
Subject: Letter in Support of Campus Drive Extension and Completion

To the members of the City of Louisville Planning Commission,

Please find attached a letter from the Monarch High School and Monarch K8 communities in support of approval for the Redtail Ridge - Preliminary and Final Plat, as it appears to be the only feasible and permanent solution to the accessibility of our campuses and safety of our staff, students, and families. Although we recognize the political nature of these decisions, we urge you to look above politics and recognize the longstanding safety issues facing our students and our school communities and approve the application. As far as we understand, there is no alternative beyond approval of the Redtail Ridge plat for development of the property that would result in Campus Drive's improvement in the near future.

Thank you,
/s

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Rob Zuccaro

Subject: FW: Each of the 5 factors in the City Code Supports More Open Space

Importance: High

From: Cathern H Smith <cathernsmith@gmail.com>
Sent: Thursday, September 8, 2022 1:51 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Each of the 5 factors in the City Code Supports More Open Space

Dear Planning Commission:

This comment letter explores some of the ways the 5 factors articulated in Louisville's City Code support the need for more open space. As you deliberate about the need for open space, be mindful that the applicant is requesting an exemption to supersize its lots. Thereby, pitting their desire to maximize the developed space against our need for open space.

By way of reminder, the City Code says that the need for open space "shall be based on the following factors: [1] the city's comprehensive plan; [2] topography, drainage, vegetation and other physical conditions; [3] the type and density of the proposed development; [4] the availability of other open space, park and recreation areas; and [5] the overall need within the proposed development for such areas." LMC Section 16.16.010(E). As set forth below, each of these factors supports more open space.

1. The City's Comprehensive Plan. Promoting Ecological Diversity, providing Integrated Open Space and Trail Networks, and supporting Sustainable Practices are among Louisville's Core Community Values. The Comprehensive Plan envisions that the City will achieve these goals by "ensuring a healthy and resilient natural environment" with "robust plant life and diverse habitats;" "that the needs of today will be met without compromising the needs of future generations;" and that the natural environment will be preserved for community benefit. The articulated community benefits include ecological diversity, interconnected trails, and outstanding views.

   Redtail Ridge is 8% of the land in Louisville. Significant non-fragmented open space is needed so that Redtail's environment, plant life, and habitats will be healthy, resilient, and robust. These qualities require scale and contiguous land.

   To retain its rural character and assessable open space, Louisville needs this 2.5 million square feet development to be buffered with significant open space. Otherwise, there will just be undifferentiated, fully developed suburbia where Louisville and Broomfield merge.

2. Topography, drainage, vegetation and other physical conditions of Redtail Ridge. As a result of climate change, Colorado now suffers from drought punctuated by flooding. Events like the 2013 flood are expected to become more common. Natural vegetation holds water better and naturally mitigates flooding. Impervious surfaces like parking lots carry pollution into the watershed and promote flooding. Additionally, alteration of the current waterflow will alter the ecosystem making accomplishment of the Comprehensive Plan goals more difficult to meet.

   The existing vegetation serves as a carbon sink and habitat. This functionality will be lost where the property is graded or paved. There is no quick fix once the land is graded or otherwise degraded through development. At that point, recovery is a long term process.

Finally, the survival of our species rests on our ability to recognize that we are part of nature. It is in our best interest to preserve as much undeveloped land as possible.

3. Type and density of the proposed development. The proposed non-residential development is sprawling with slivers of open space at the edges. Fragmented, non-contiguous open space is not ecologically functional and will not achieve the goals of the City's Comprehensive Plan. Large blocks of open space are needed. The project is insufficiently dense and will be even less dense should the Commission approve super-sized lots.

4. Availability of other open space, park and recreation areas. The nearby open spaces cannot absorb the pressure that will be caused by thousands of extra visitors coming from Redtail. Extrapolating from the anticipated 20,000 additional car trips daily, assuming just one person per car at full buildout and that each person commutes to and from work and eats lunch, there will be at least 6,666 additional people coming into Louisville . [These assumptions probably understate the number of people coming in as there will be some car-pooling.] These 6,000 plus people will be looking for places to picnic, stroll, and exercise.

In addition, for the safety of Monarch students, Redtail should provide recreational opportunities for its users that will minimize commingling.

Finally, prairie dogs are a keystone species. Preservation of the existing colony requires more open space.

5. Overall need within the proposed development for such areas. Sterling Bar's development plan does not address the open space needs of the people who will be coming to Redtail. Rather than put pressure on other open space like Davidson Mesa, Redtail should provide similar recreational opportunities for people and undisturbed habitat for other life forms.

There are positive benefits from seeing, not just being in open space. Hopefully, Monarch students, hospital patients, other users of Redtail, and people just driving by will benefit from the view shed.

Please spend some time exploring the Code's requirements with your counsel and so that much needed Open Space is created. We should be aiming for Open Space with the same qualitative benefits to our community as we get from Davidson Mesa -- a place to get away from it all, see the sunset, hear the meadowlark, and let go of the stresses of our everyday lives.

Best regards,

Cathern Smith, Ward III

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Rob Zuccaro

Subject: FW: Site-Wide Grading of Redtail Ridge Does Not Comply with the City Code

Importance: High

From: Cathern H Smith <cathernsmith@gmail.com>
Sent: Wednesday, September 7, 2022 4:58 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Site-Wide Grading of Redtail Ridge Does Not Comply with the City Code

Dear Planning Commission,

Because the applicant wants to grade virtually all of Redtail Ridge, questions about soil health are front and center. Boulder County Parks and Open Space just published in its Fall 2022 issue of Images an article titled *Healthy Soil is the Foundation*.

This article defines "Soil health [as] the ability of a soil to perform ecosystem services, such as cycling nutrients, filtering and storing water, providing a physical medium for the growth of plants, and a habitat for organisms." As explained in the article, optimal functioning of the soil happens when we:

1. Maintain soil surface cover;
2. Maximize plant diversity;
3. *Minimize soil disturbance (emphasis added);*
4. *Maintain continuous growing plant life*, (emphasis added); and
5. Incorporate livestock.

The entire article is available at https://bouldercountyopenspace.org/i/agriculture/healthy-soil-is-the-foundation/

Site-wide grading is not just environmentally unsound, it violates the purposes of Louisville's municipal code. Site-wide grading will harm rather than "safeguard the water table"; discourage rather than "encourage the wise use and management of the natural environment"; and destroy rather than "preserve and enhance to the extent reasonably possible the natural beauty and topography." § 16.040.010(M), (N), LMC.

Approval of the plats would also be inconsistent with other applicable city law - in violation of 16.12.075(A)(2). Louisville's Municipal Code requires Sterling Bay to demonstrate that "natural features, historical and archeological sites" as well as vegetation, including trees are being preserved to the extent possible." Section 16.16.010 (Stating that "The applicant …. must demonstrate" that the standards articulated therein are met.) The application includes no information demonstrating either (1) that these valuable resources are "being preserved" or (2) the extent of preservation that is possible. Instead, the application proposes widespread destruction.

The Code squarely places the burden on the developer to show why development cannot be clustered on the southern half of the property as Storage Tek did. With clustering and underground parking, a Public Land dedication of 50% and an Open Space Dedication in the land north of Disc Drive of 40% is feasible. Let's do it!

Best,

Cathern Smith
Ward III

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Rob Zuccaro

Subject: FW: Redtail Ridge

Importance: High

From: Justin Solomon <jsolly90@gmail.com>
Sent: Thursday, September 8, 2022 9:12 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge

Dear Planning Commission,

Thank you for your service to the City. As you consider the Redtail Ridge plan before you, I ask that you consider City code with respect to open space. City code requires that the historical and natural features of the parcel be preserved to the "extent possible". The plan before you falls woefully short of that requirement. The footprint (area of ground disturbance) for the current plan (2.56 million sf) is unchanged from when the applicant first proposed over 6 million sf of building space for the site. Clearly the applicant has made no effort to limit the development's impact to the natural and historical features to the "extent possible" as required by City code.

Clustering of development would allow for full build-out of 2.56 million sf. This is consistent with both ConocoPhillips development plan and the former StorageTek campus, which both limited development to south of Disc Drive. Consolidating development south of Disc Drive would allow the most ecologically intact and biodiverse habitat north of Disc Drive to be preserved to everyone's benefit.

I would also call to your attention that the current plan would have nearly the entire site graded, including areas currently designated for public open space. Per City code, any area used by or supporting the development, such as retention ponds and utility corridors cannot be counted towards the public land dedication. The applicant is currently claiming such areas as open space. Once an area is graded the natural biodiversity, soil composition, and drainage pattern is lost and can never be fully restored. Its value as open space at that point is questionable at best. Accepting graded areas as open space is in violation of the requirement under City code to preserve natural features to the extent possible.

This plan has been moving through the review process as a draft and final with little real scrutiny or understanding of what it proposes in relation to City code and the long-term impacts (environmental, traffic, pollution, etc) to our City. The current plan violates City code on multiple fronts and is fundamentally unchanged from the plan that was rejected by City residents in April 2022. I humbly and respectfully ask that this commission take the time to carefully consider if this plan is meeting all the requirements of City code and to give it proper scrutiny. There is too much at stake to move forward with anything less than full understanding and compliance.

Sincerely,

Justin Solomon
477 Lincoln Ct

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Rob Zuccaro

Subject: FW: Preliminary Plat/Redtail Ridge

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Wednesday, September 7, 2022 12:50 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: City Council <Council@louisvilleco.gov>; Adam Blackmore <ablackmore@louisvilleco.gov>
Subject: Preliminary Plat/Redtail Ridge

- **Planning Commissioners, It is up to you to determine:**

LMC 16.12.075 (1): Whether the preliminary plat conforms **to all of the requirements** of this title

LMC 16.12.075 (2) Whether approval of the plat will be consistent with the city's **comprehensive plan, applicable zoning requirements** and other applicable federal, state and city laws

Please consider these issue and questions as you make your determination

1) LMC 16.12.050(P) Preliminary drainage plan is required

The issue: Drainage analysis was done by ERO Consulting in 2019 for the first iteration of this proposal.

The question: Can this document be used for the current proposal? The disclaimer from ERO consulting indicates otherwise.

"The natural resources and associated regulations described in this memo are **valid as of the date of this memo** and may be relied upon for the specific use for which it was prepared by ERO under contract to Brue Baukol Capital Partners. Because of their dynamic natures, **site conditions and regulations should be reconfirmed by a qualified consultant before relying on this memo for a use other than that for which ERO was contracted."**

2) LMC 16.12.050(S) Location of significant natural features such as trees, woodlands, lakes, hills, streams, wetlands, and floodplains, and historical and archaeological sites are required

The issue: The proposal does not inventory trees.

The question: Have the preliminary Plat requirements been met?

3) LMC 16.12.050 (U) Buffering proposed from collector and arterial streets and, where appropriate, adjacent uses is required

The issue: The applicant has not demonstrated responsiveness to OSAB recommendations to provide buffering for bike lanes along roadways, including 96.

The question: Have the preliminary Plat requirements been met?

4) 16.16.010 (C)

The layout of lots, blocks, and buildings and other structures must provide desirable settings for buildings and other structures, **make appropriate use of natural contours, protect the view,** provide for adequate light and air, and afford privacy and protection from adverse noise and traffic for the residents and neighbors.

16.16.040(B) Blocks shall be at least 400 feet in length and not more than 1,320 feet in length between street intersections **unless adjacent to a railroad right-of-way, a freeway or arterial street, or unless topographical conditions justify a variation of the requirement.**

The issue: The applicant is proposing super blocks.

The question: Do any/all of the proposed super blocks conform to the requirements of our code?

5) The property is PCZD with a commercial PU-C/Commercial overlay. While industrial uses are allowed this is not zoned PU/I Industrial

The issue: The letter of request submitted with the current proposal is dated April 2021 and is no longer applicable. Proposed biotech uses include a variety of industrial applications.

The question

: **How does the applicant intend to conform to the PU-C overlay?**

Reference Materials

September 23, 2019

To: Mrs. Jordan Swisher, Brue Baukol Capital Partners
From: Heidi Gerstung, ERO Resources Corporation
Re: Phillips 66 Site – Delineation of the Goodhue Ditch and Rock Creek

Background

Brue Baukol Capital Partners retained ERO Resources Corporation (ERO) to conduct a wetland delineation along the Goodhue Ditch and Rock Creek within portions of the Phillips 66 Site (property) in Boulder and Broomfield Counties, Colorado (project area; Figure 1). ERO reviewed the entirety of the property on January 17 and 21, 2019 to determine if any areas within the property had characteristics of a water of the U.S. (WUS) and had a defined surface connection to the South Platte River, the closest traditionally navigable water. An approved Jurisdictional Determination was subsequently completed for the property, and the U.S. Army Corps of Engineers (Corps) determined that portions of the property (the Goodhue Ditch and its abutting wetlands and Rock Creek and its abutting wetlands) were jurisdictional (Corps File No. NWO-2019-00148-DEN, attached).

On August 23, 2019, Heidi Gerstung and Anna Wistrom with ERO surveyed the project area for wetlands, streambeds, and open water (2019 site visit).

The natural resources and associated regulations described in this memo are valid as of the date of this memo and may be relied upon for the specific use for which it was prepared by ERO under contract to Brue Baukol Capital Partners. Because of their dynamic natures, site conditions and regulations should be reconfirmed by a qualified consultant before relying on this memo for a use other than that for which ERO was contracted. ERO assumes the landowner or municipality is responsible for obtaining all federal, state, and local permits for construction of the projec

Monday, April 05, 2021

VIA: EMAIL AND COURIER

Mr. Rob Zuccaro Planning Director City of Louisville 749 Main Street Louisville, CO 80027

RE: Redtail Ridge Preliminary Master Plat and Subdivision Filing No. 1

Dear Mr. Zuccaro,

On behalf of Brue Baukol Capital Partners ("Developer" or "Applicant"), thank you for the opportunity to present a preliminary master plat and final plat for Redtail Ridge. For this submittal, we are providing an 80%-90% set of construction documents. This letter shall serve as part of our written request as may be required or anticipated under the Louisville Municipal Code.

Master Preliminary Plat and Final Plat - Description of Request & Intent of Development

Brue Baukol Capital Partners aims to create a master-planned community on the former Storage Tek / ConocoPhillips site.

Consistent with the zoning submittals provided to date (the ConocoPhillips Campus GDP 1st Amendment), the proposed master preliminary plat divides the entire property into unique development areas which will each be home to: 1) Flex industrial, 2) Office, 3) support retail for the tenants and community.

The objective of the Redtail Ridge Preliminary Plat is to delineate the master development rights-of-way and super blocks. Additionally, the Preliminary Plat will demonstrate how site roadway access and public utilities are designed to interface with existing public infrastructure to adequately serve the development of the site.

Revisions and subsequent final subdivision plats to dedicate the remainder of the right-of-way indicated in the Preliminary Plat and to establish the remaining development lots will be submitted at a later date.

1555 Blake Street, Suite 210, Denver, CO 80202-1866 | 303.500.8959 | W BrueBaukol.com

Description of Each Modification Request

- Street cross-sections shall be modified from Section 16.16.030 to such standards as set forth in the packet and as agreed upon in coordination with City Staff.
- A final plat for a portion of the overall property is being submitted for review and processing prior to Developer receiving approval of the preliminary plat for the overall property. Applicant understands that the approval of the final plat is dependent on the approval of the preliminary plat for the overall site.
- Proposed right of way landscaping shall differ from standards set forth in Section 16.16.20 to as set forth in the packet in order to conserve water and enhance the overall natural design aesthetic for Redtail Ridge. A Landscape Design Narrative and Case Studies are included for additional support/rationale for this modification request.
- Additional modifications may be included in future planned unit development applications and will be noted in such applications.

Other Comments/Remarks

Please note that some of the submittal items outlined in the "Public Hearing Application Packet" for Preliminary and Final Subdivision Plat are not contained with the submittal, including the following:

- Certification of Mineral Interest Notifications. These will be provided 30 days prior to hearings and have been sent in anticipation of hearing given in connection with the GDP application.
- Certified Real Estimate Appraisal. A current appraisal has not been performed to date. Any derived land values are determined by current land pricing or relevant comparable land sales.
- Agreements made with Ditch Companies. These will be finalized throughout the subdivision process.

Sincerely,

Jay Hardy
Senior Vice President
Brue Baukol Capital Partners

No Backdoor Conversion to Industrial - Make Redtail Ridge Conform to the City Code

The Planning Commission must act to ensure that Redtail Ridge fully complies with the City Code now and in the future. Brue Baukol , the developer, recently, announced a pivot to biotechnology. The City Code requires developments to "promote the health, safety, convenience, order, prosperity and welfare of the present and future inhabitants of the city." § 16.04.020(A); § 16.12.075(A). Questions need to be asked and answered.

Biotechnology can mean many things. An online dictionary defines biotech as "the exploitation of biological processes for industrial and other purposes, especially the genetic manipulation of microorganisms for the production of antibiotics, hormones, etc." https://www.google.com/search?client=firefox-b-1-d&q=definition+biotechnology. At the University of Colorado, Biotech includes Computational Biology and the following types of engineering: Aerospace—Bioastronautics; Chemical & Biological—Biomaterials, Biopharmaceuticals and Tissue; Electrical, Computer and Energy—Optics, Nanostructures and Bioengineering; and Mechanical- Biomedical. We need to know what Brue Baukol means by biotechnology.

The property is currently a Planned Community Zoned District with a commercial PUD-C overlay. Generally, industrial activity requires an industrial PUD-I overlay. Here, however the permitted uses probably allow for some industrial activity. But in my opinion, the applicant cannot convert a PUD-C/Commercial Overlay to a PUD-I/Industrial Overlay through the backdoor (i.e., by using one of the 13 permitted uses to completely change the character of Redtail so that it is exclusively or primarily industrial). If this were permissible, no developer would ever apply for a PUD-I/Industrial Overlay. This section of the Code would become meaningless, leaving concerns about pollution, congestion, and public utilities unaddressed.

It is the job of the Planning Commission to ask enough questions to determine whether the planned biotechnology center is truly commercial. If it is not, the general development plan must be amended so that the current commercial PUD-C/Commercial overlay is replaced by an industrial PUD-I/Industrial overlay.

Cathern Smith
608 West Street
Louisville, CO 80027
(202) 841-4016

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Rob Zuccaro

To: Elizabeth Kay Marchetti
Subject: RE: Safety for students and teachers at Monarch Schools

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 6, 2022 6:09 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: rob.price@bvsd.org; City Council <Council@louisvilleco.gov>; Glen Segrue <glen.segrue@bvsd.org>; Mark Sibley <mark.sibley@bvsd.org>
Subject: Fw: Safety for students and teachers at Monarch Schools

Planning Commissioners,

Safety of students and teachers at Monarch schools is of paramount concern.

For this reason, I am asking that you inquire into status of an emergency access road for the Monarch campuses.

Last March The City of Louisville posted an update on emergency access at the school but we have not gotten any further information.

Please note: Construction of this access road does not depend on approval of the Redtail Ridge proposal.

Could you please inquire into the status of this critical project?

Sincerely,

Sherry Sommer
910 South Palisade Court
Louisville, CO

Monarch Emergency Access Update

Post Date:03/08/2022 2:52 PM
The City of Louisville is committed to improving resiliency across the community. The Marshall Fire highlighted the importance of better emergency notification systems and evacuation routes. Emergency access at the Monarch Campus remains a concern. City staff have met with Boulder Valley School District and Boulder County staff to help facilitate short-term improvements. While this is a school district project and would likely require permitting from Boulder County, City staff will continue to offer support.

Access and transportation improvements associated with any future development on neighboring properties may be a potential long-term solution; however, this current effort is focused on providing short-term solutions specific to emergency access. The City will continue to pursue overall improvements to evacuation planning and emergency notification systems.

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Rob Zuccaro

Subject: FW: RedTail Ridge letter for commission

Importance: High

From: Tim Stalker <tstalker28@gmail.com>
Sent: Thursday, September 8, 2022 2:48 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: RedTail Ridge letter for commission

To the Louisville Planning Commission:

As a planning commission you're faced with the difficult task of either supporting or not supporting the current development proposal before you. If you're looking to city staff, the Parks and Open Space Advisory Boards, and the general public, support is difficult to find. While city staff have admirably worked with this developer and on your and the community's behalf to come up with a meaningful response as for how best to proceed in your decision making, the layout and language of the city's municipal policy that this plan must adhere to make it very difficult to find in city code legal acceptance of this plan. Politically city membership on the boards is in favor of the plan, but not legally. There wasn't any attempt to analyze city code, with any effort, to discover what in the development plan is legally feasible for the city.

The OSAB, for example, made the mistake of believing there's no justification to condition a greater percentage of public land dedication, deciding instead to accept additional acres that aren't even in the plat before you, opting instead to find a distraction in ground that's not even within the subdivision, let alone city limits. As a commission you have to find this mistake especially egregious because it doesn't meet city code for the plat review - **Sec. 16.08.020. - Definitions** ***"Plat means a subdivision as it is represented as a formal document by drawings and writing."***

The Parks and OSAB omitted or neglected to perform an examination of the plat's grading contours and existing over-lot grading and cut-and-fill maps to discover the manner in which the subdivision doesn't adhere to code **Sec. 16.16.010 for subdivisions. - General design and construction standards** - *"D. Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible"* and *"E. .... Open space, park, and recreation areas must be located in such a manner as to create an area that is usable and accessible to the residents of the subdivision and shall otherwise conform to all applicable city standards and requirements. The need for additional open space, park, and recreation areas shall be based on the following factors: the city's comprehensive plan; topography, drainage, vegetation and other physical conditions; the type and density of the proposed development; the availability of other open space, park and recreation areas; and the overall need within the proposed development for such areas."*

Even city staff have a difficult time finding justification for the development in city code. It's difficult to match the parameters of the plat with city code to be sure, especially around the percentage of public land dedication that can be broken down as follows with the city staff's evaluation and adjustments in your packet:

> **69.3 acres or a percentage of 22.4%**

City staff only evaluate a portion of this dedication based on city code **Sec 16.60.060** to say it meets the **"minimum" of 12%**. In last month's packet and meeting commentary, they applied code **Sec. 16.04.020 N and**

16.60.060 only to tracts A, B, H, and I in the northwest corner of the site to say it was favored for ***"the location of the park and open space public land dedication intended to cover previously undeveloped areas of the property and natural drainage ways that include the most valuate habitat on the property."*** Per city code and the staff's evaluation of it, this is the only land in the site that meets city code **16.60.060 N.** There is no mention of an evaluation of the land dedications in the site's other tracts and that's because it will all be developed and graded for the needs of the development and dedicated only after the criteria under code sec 16.04.020 N have been destroyed and not preserved and enhanced.

> **50.77 acres in tracts A, B, H, I or a percentage of 16.4% is the amount of code compliant land dedication.**

The Problem with the Land Dedication in Tract C

This dedication will only be part-and-parcel of several functions the tract will serve for the development first and that do not meet city code for public land dedications, including:

- **Easement Access**
- **Drainage grading and development**
- **Buffer zone per Boulder county**
- **Roadway grading and slope**
- **Trail and public access**

Public access is tied up with functions for the tract that compete for unencumbered access and contiguous land dedication site-wide.

The Problems with Drainage in Tract C and How it Diminishes Public Access

The final drainage report for the plat identifies dual box underpasses under campus drive that are to be **built for 10-year flood events**. The entire drainage report is based in part on **outdated FEMA floodplain insurance rate maps from 2012**. These maps were identified in 2017 as being woefully outdated and appeared recently in the news again related to the country's numerous 1000-year floods this summer.

"FEMA's maps do not account for climate change, according to two studies released [in 2017]. Rising sea levels and more intense rain can lead to greater storm surges, and therefore more flooding, but current maps don't factor in those risks. 'FEMA's flood maps look backward in time and determine the size of the 100-year and 500-year floodplain based on past events,' says the NRDC." ->
https://www.sofarocean.com/posts/flood-maps-are-outdated-heres-how-to-fix-them

Also see -> **https://www.nrdc.org/experts/joel-scata/femas-outdated-and-backward-looking-flood-maps**

The developer's final drainage report offers its criteria for minor and major flood events at the 5-year and 100-year rain amounts per hour:

> ***"For this report, the 5-year and 100-year storm events have been analyzed. The 5-year storm is considered the minor event and the 100-year storm is considered the major event. One-hour rainfall P 1 values were taken from NOAA Atlas 14, Volume 8, and Version 2 for the Site. The P 1 values for the 5-year and 100-year storms are 1.08 inches and 2.49 inches, respectively."*** Final drainage report page 6.

According to this, RedTail Ridge and Louisville saw two 100-year flood events this summer alone when over 2 inches of rain fell in one hour twice. In tract C of the subdivision this would have taken out the trail system under campus drive and no doubt north of it as well. To accept it in the percentage of the public land dedication

is not only against code, it's dangerous as currently aligned.

The Problem with Land Dedicated after Development

There was discussion in last month's meeting that tract C and D in the plat compare in some way to how Coyote Run, another public land dedication that was made to Louisville in the past, was accepted. There's no comparison because Coyote Run is situated between two housing developments and, while it was dedicated after development/grading, it does not serve the same functional needs of that development as those compare to tract C at Redtail Ridge. Tract C is proposed to be situated next to a 370 acre commercial/industrial complex with a number of needs to provide functions for that development that Coyote Run in Louisville does not begin to match in scope and alignment.

It seems the city has a couple of options to augment the amount of land in the public dedication that does not meet municipal code. It can ask for compensation of some amount of acreage monetarily **per code Sec. 16.16.060 B.2**:

> ***"If the city council so determines, the subdivider shall pay to the city in cash an amount equal to the applicable percentage established in subsection B.1 of this section of the total appraised value of the land to be subdivided in lieu of the dedication of land required in this section. Any appraisal required to establish the value of land in this section shall be done at the expense of the subdivider."***

Of course to go this route the city would have to determine if in fact it plans to develop tracts A, B, H and I in the future, in which case if does plan to develop it, then it would have to a ask for compensation of the value of those tracts, plus the acreage in tract C and probably tract D that don't meet code for public dedication.

Another option is to require the developer to dedicate a greater amount of acres to the city. There's currently no land north of the campus drive alignment offered, even though the public has weighed in numerous times for the city to ask for a dedication of land north of campus drive to disc drive perhaps at an amount that can feasibly meet city code, honor the comprehensive plan, and that fits in contextually with the manner in which large tracts of land have been dedicated in the past. This will augment the dedication of tracts C and D, allowing that dedication to proceed while offsetting its use for the development by providing unencumbered land that's truly contiguous with the rest of the site's public land dedication. Ask for 40-50% public land dedication that includes tracts C and D in that percentage. This will also allow for later development of tracts A, B, H, and I.

The Problem with Tracts A, B, H, and I

These tracts are identified by the developer as a likely place for the city to build a park, possible soccer fields, and a fire station. In time this will take the public land dedication/preservation per code down to well below the 12% required minimum. These tracks' natural features and topography will also have to be destroyed for such development as well.

You have work to do as a planning commission to fill in the lack of judgement and diligence on the part of your advisory boards. On the part of city staff you have been provided analysis and evaluations on either a need-to-know basis or an ask-to-know basis, rather than a full inventory of concerns and analyses from which to develop an informed decision. Listen to the community feedback on the project as it's well informed and well researched. The city municipal code isn't difficult to apply to this plat. What makes it difficult is using political frames of mind to evaluate a legal interpretation of the code.

I ask you as a commission to carefully consider the manner in which land is to be dedicated from this developer. **Don't be distracted by land dedications outside of the plat and outside the city limits**. In terms of our

municipal code it's very difficult for staff, the advisory boards, and the public to find the current plat acceptable as proposed. We can't have a development go on in the city that doesn't meet code.

Thank you,

Tim Stalker
806 W Dahlia Ct - Louisville

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Rob Zuccaro

Subject: FW: Please have parks and recreation address concerns of public

Importance: High

From: joy brook <joyalbrook@hotmail.com>
Sent: Thursday, September 8, 2022 2:13 PM
To: Planning <planning@Louisvilleco.gov>
Subject: Please have parks and recreation address concerns of public

Members of the Louisville Planning Commission,

The Louisville Parks and Public Landscaping Board unanimously recommended approval of the Redtail Ridge draft and final plat in May 2022. **This approval was premature and ill-informed.**

Please consider:

The Board recommendation was not based on sound analysis:

— The Board did not ask if the proposal met City code.

— The Board did not evaluate the proposed park, open space, roads, or trails.

— Thirty residents submitted email comments and eight residents spoke at the Board meeting, but the Board did not address public comments.

The Board has not communicated that it is cost prohibitive to develop a park in the NW corner of the site.

— Residents learned of this prohibition during the May 2022 Board meeting. The Board didn't address the issue during the meeting.

— During the meeting a Board Member admitted, "That area wouldn't be developed as a Park for years, if ever.

— Allan Gill, Project Manager for the Parks Department stated that the land in the NW corner of the property is far too hilly and expensive for the City to develop as a park and recreation space.

— Dean Johnson, Parks Superintendent, stated that the Parks Department was considering other sites in the City for a new park.

Brue Baukol has led the public, Planning Commission, and City Council to believe that land designated as a park would be suitable for use as soccer fields, and other public recreation.

— Jordan Swisher, Senior Vice President, Brue Baukol Capital Partners, told City Council on July 27, 2021 "The Parks Board appreciated the proximity of the park to the schools" (42:13) and "I can just imagine taking my daughter to soccer practice on the fields by Monarch on a Saturday."

— During the July 27, 2021 meeting, Geoff Baukol stated, "Imagine the convenience of having sports fields on this site. We have listened and responded to what residents have asked for and have gone above and beyond." (58:32)

The Yes Campaign sold the park as one of the main attractions when marketing the previous proposal in the run-up to the April 2022 special election:

10) What could the 15 acres of recreational fields be used for?

By voting YES, more than 15 acres of this land would be set aside for public use and parks, and would be owned by the City. Allowable uses here would include new ballfields, dog parks, soccer fields, tennis and pickleball facilities, and other uses that can help our citizens stay active and enjoy the outdoors. Since there are no provisions for recreational uses or fields in the ConocoPhillips plan, voting NO would take away these options for public use.

11) Would a dog park be allowed under the Redtail Ridge plan?

Yes! Dog parks are an allowable use under the Redtail plan, but not under the ConocoPhillips plan. The developer would be required to donate this land to the City of Louisville for this and other uses as determined by the city.
(Source: Yes for Louisville website)

From our perspective, it is clear that the Parks Board had not done their due diligence when considering the feasibility or practicality of the City utilizing the public dedication in the NW corner of the site as a park. The Board seemingly has taken the developer at their word that this land is suitable for a park and that the City will use it as such, despite at least one member of the Board and City staff indicating the opposite. In rubber stamping their recommendation for approval, the Board has vacated their responsibility to represent the best interests of the City and its residents. Please consider this oversight as you consider the plan before you.

Joy Brook

🌲Tane Mahuta E Tu! 🌲
🌍Blessings to the Creator, trees! Stand Tall!🐻‍❄️⛰️🌞

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Rob Zuccaro

Subject: FW: Redtail Ridge Subdivision Plat, September 22, 2022

From: cindy Bedell <cyndilarson@yahoo.com>
Sent: Wednesday, September 21, 2022 12:17 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>; Rob Zuccaro <rzuccaro@louisvilleco.gov>; Meredyth Muth <meredythm@louisvilleco.gov>
Subject: Redtail Ridge Subdivision Plat, September 22, 2022

Dear Planning Commission,

Re: Redtail Ridge Subdivision Plat, continued to September 22, 2022

As you consider this development application, I urge you to recommend more open space. It is your moral imperative to do so! The citizens of Louisville have spoken loud and clear that they want more of our southeast Gateway preserved.

As a reminder, here are sections of the Louisville Municipal Code that gives you the authority to recommend more open space:

Sec. 17.28.080. - Open space.

A.Open space, in addition to the public use dedications specified in title 16, may be required by the city council **upon recommendation by the planning commission**.

The requirement for additional open space will be based on the following factors:
1.Comprehensive development plan (including matters of state interest);
2.Topography, drainage, vegetation and other such physical conditions;
3.Anticipated socio-economic conditions;
4.Type and density of development and employment;
5.Overall need for open space and recreational facilities.

-
- **Sec. 16.16.010**

D. Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible.

E. Schools, parks, churches and other community facilities should be planned for as an integral part of the area to the extent possible. Open space, park, and recreation areas must be located in such a manner as to create an area that is usable and accessible to the residents of the subdivision and shall otherwise conform to all applicable city standards and requirements. **The need for additional open space, park, and recreation areas shall be based on the following factors: the city's comprehensive plan; topography, drainage, vegetation and other physical conditions; the type and density of the proposed development; the availability of other open space, park and recreation areas; and the overall need within the proposed development for such areas.**

This part of the city needs more open space and parks, especially with thousands of more visitors and employees coming to Redtail Ridge. A development of this magnitude requires far more than the minimum public land dedication. Utility easements and land not in the City of Louisville should not count towards the public land dedication.

I was very dismayed to hear that the applicant plans to destroy all of the natural features of this land - to grade most of the 389 acres - including mass destruction of vegetation, wildlife habitat, wildlife such as thousands of prairie dogs, and removal of most, if not all of the mature trees that provide habitat for raptors and protection against a complete concrete heat island. This is in direct noncompliance with 16.16.010 D. You should deny this plat application for this reason, (among many other reasons such as plans to cover almost the entire plat with buildings and parking lots, 20,600+ more vehicle trips per day, etc.).

Requiring more quality contiguous open space could assist with compliance of preservation of natural features, especially Open Space Preservation land and Open Space Preserve land sections. For your easy reference, I have copied the classifications of open space below.

Thank you for your careful consideration of the future for this incredibly important large parcel of land at our southeast gateway which represents
8% of our total Louisville land!

Sincerely
Cindy Bedell
662 W. Willow St
Louisville

The four classifications of Open Space:

https://library.municode.com/co/louisville/codes/code_of_ordinances

Sec. 4.03.010. - Classification and management.

Open space shall be managed in a manner consistent with good stewardship and sound ecological principles that benefits citizens of Louisville by promoting native plants, wildlife, wildlife and plant habitat, cultural resources, agriculture and scenic vistas and appropriate passive recreation. It is intended that the differing classifications of open space will require different management policies to provide reasonable levels of protection consistent with the intended uses of the land. The city shall manage its open space according to the following classifications:

A.Open space—Preserve.

1. Land under this classification is characterized by a moderate to high level of relative ecological importance with lower levels of habitat fragmentation. Where open space—preserve land is adjacent to other open space or other city-owned land, the adjacent land shall include, where possible, a sufficient buffer area to permit the successful management of the open space—preserve land.

2. This land shall be managed in a manner that preserves and promotes the long-term viability of native plants and native wildlife, restoration, restoration potential and ecologically sound agricultural use. Management of city-owned lands surrounding open space—preserve lands shall, to the extent possible under and consistent with the management criteria for the classification of such surrounding land, not be in conflict with the management required under this section.

3. Visitation for research purposes and formal supervised educational visitation may be permitted in this classification. No or very low levels of passive recreational activities shall be permitted.

4. When there is a real conflict between human use and any area or item of ecological importance in this classification, preference shall be given to sustaining the area or item of ecological importance.

B. Open space—Protected land.

1.Land under this classification shall be characterized by a moderate to high level of relative ecological importance with higher levels of habitat fragmentation.

2. This land shall be managed in the same manner as open space—preserve land, except that management may permit passive recreational activities so long as:

a. The passive recreation activities are designed to encourage resource protection, long-term ecological viability of native plants and native wildlife, restoration, ecologically sensitive agricultural use, research, and education; and

b. The recreational impacts are contained in order to prevent any adverse effect on open space—preserve land.

3. Moderate to moderately high visitation levels may be permitted in this classification.

4. When there is a real conflict between human use and any area or item of ecological importance in this classification, preference shall be given to sustaining the area or item of ecological importance.

C. Open space—Visitor land.

1. Land under this classification shall be characterized by a lower level of relative ecological importance with higher levels of habitat fragmentation.

2. Open space—visitor land shall be managed so that recreational opportunities are designed to encourage resource protection with minimal landscaping using native plants and limited irrigation.

3. Moderate to high levels of visitation may be permitted in this classification.

D. Open space—Other lands.

1. Open space—other lands shall be managed to include construction of entryway features and trail rests, planting of trees, and other buffer plantings. Reasonable attempts shall be made to minimize the impact of entryway features and trail rests on the land, and to use native trees and plants.

2. High levels of visitation and passive recreation activities consistent with existing patterns may be permitted in this classification.

E. Notwithstanding the foregoing, all current uses and all uses contemplated in any intergovernmental agreement or other contractual obligation of the city in existence before the enactment of this chapter will be allowed unless and until the city council recommends a change and takes all necessary legal steps to implement such a change. The board may recommend such a change to council at anytime.

F. City decisions regarding open space identification, classification and management shall consider the best information available.

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Rob Zuccaro

Subject: FW: RedTail Ridge

Importance: High

From: Terrerushton <terrerushton@gmail.com>
Sent: Tuesday, September 20, 2022 5:25 PM
To: Planning <planning@Louisvilleco.gov>
Subject: RedTail Ridge

Members of the Louisville Planning Commission,

During this April's election, it seemed that both sides of the electorate could agree on one thing: it's imperative that we keep Avista Hospital in Louisville.

With the preliminary and final plat for Redtail Ridge before you, we urge you to uphold the community's priority interests in moving Avista to a new home by approving the plat. As you all know, Avista was interested in looking for a safer, more accessible location even before the Marshall Fire — and the urgency to move into a better location has only intensified since then.

Avista's new build-out would be included in Phase 1 of the redevelopment at Redtail Ridge. Think how wonderful it can be to move Avista into a brand new facility, with state-of-the-art medical equipment, more beds, and much easier access. And by moving Avista to Redtail Ridge, we can provide immediate relief to the residential streets in the area.

If you support Avista and its role in keeping our community safe and healthy, please approve the preliminary and final plat for Redtail Ridge without delay.

Sincerely,

Terre Rushton, former Avista Board Member
Louisville resident since 1984
671 W. Ash Street
303-665-6889 home

Please excuse any typos. This is sent from my mobile device.

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Rob Zuccaro

Subject: FW: Key Code Provisions for Redtail Ridge

Importance: High

From: Cathern H Smith <cathernsmith@gmail.com>
Sent: Wednesday, September 21, 2022 7:51 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Key Code Provisions for Redtail Ridge

Dear Members of the Planning Commission,

Louisville's City Code sets out different standards for actions on (1) Preliminary Plats; (2) Final Plats; (3) Additional Open Space; (4) Public Land Dedications; and (4) Modifications. The chart below contains hyperlinks to the key LMC provisions and a brief summary. If you follow a hyperlink, you will find embedded hyperlinks for code provisions incorporated by reference.

As I have not seen anything in your packets discussing modifications as such, more information is presented about them. Essentially, a modification functions as an exemption to a requirement in the City Code. There is a higher bar for approval of modifications – as there should be. The information in your packets does not clearly identify the substance and number of modifications requested or analysis of compliance with the Code's requirements. An example of a modification is the applicant's request to supersize lots on Redtail Ridge. Please ask Staff to identify all modifications and explain why each requested modification complies with the Code.

	Key LMC Provisions	
Preliminary Plat	§ 16.12.075 § 16.12.050	Standards for approval, approval with modifications, or denial with express references to 16.04.020, 16.16, the City's Comprehensive Plan, and other law. Enumerates what the contents of the preliminary plat "shall be."
Final Plat	§ 16.12.075 § 16.12.090	Standards for approval, approval with modifications, or denial with express references to 16.04.020, 16.16, the City's Comprehensive Plan, and other law. Enumerates what the contents of the final plat "shall be."

Additional Open Space	§ 16.16.010(E)	"The need for additional open space, park, and recreation areas shall be based on the following factors: the city's comprehensive plan; topography, drainage, vegetation and other physical conditions; the type and density of the proposed development; the availability of other open space, park and recreation areas; and the overall need within the proposed development for such areas."
Public Land Dedication	§ 16.16.060(B)	"Land dedicated for public use must be suitable, as determined by the planning commission, for the type of development and/or the use for which it is intended."
Modifications of Louisville's City Code	§ 16.24.010	"No modification shall be granted if it would be detrimental to the public good or impair the basic intent and purposes of this title or title 17. Any modification granted shall be in keeping with the intent of the comprehensive development plan of the city." City Council acts on *advice of* Planning Commission.
	§ 16.24.030	Requires compliance with 16.24.020, 16.24.010, and the specified review criteria. Includes a requirement that the modification is necessary due to "unique physical circumstances or conditions" such that "the property cannot reasonably be developed in conformity … with titles 16 and 17 resulting in a hardship." The applicant did not create the hardship. The modification does not "alter the essential character" of the district or impair use or development of adjacent property. There are no reasonable alternatives and "no additional dwelling units shall result from approval of the modification."

Thanks for all that you do.

Cathern Smith
Ward III

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Rob Zuccaro

Subject: FW: Further info—campus drive alignment.

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 20, 2022 12:12 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Further info—campus drive alignment.

Your current packet includes side by side comparison of current and previously approved versions of Campus Drive.

This comparison is counterproductive and deceptive—that this was a previously approved alignment is totally irrelevant.

We are in a totally new public review process and evidence must be considered with fresh eyes.

Sherry Sommer

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Comparison of Previously-Approved v

Sherry

Rob Zuccaro

Subject: FW: Do you have time to read this one? Campus Drive Alignment

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 20, 2022 11:46 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Fw: Do you have time to read this one? Campus Drive Alignment

Planning Commissioners,

Commissioner Howe's questions 9/8/22 regarding Campus Drive were excellent. Please continue gathering information and discussing Campus Drive.

Here are some items to consider:

1) Throughout the election, campaign materials of Yes for Louisville--which was 95% funded by Brue Baukol-- stated that a No vote would lead to adopting the 2010 GDP--and that the Campus Drive alignment was part and parcel of that GDP.

Campaign materials stated "all of special requirements and community benefits, such as more Open Space and safer Campus Drive access, would go away since they are not attached to the Conoco plan."

Now you are being presented with the same plan for Campus Drive that has been part of Brue Bakol's presentations since 2020 and are being asked to accept as is.

-- Would a Campus Drive alignment--which is different from that in the 2010 plan- require a modification to the GDP to be used? Would it require an amendment?

--If so, shouldn't we be discussing if the currently proposed alignment qualifies for a modification or amdendment?

--Would the proposed alignment-- which will definitely lead to congestion-- even qualify for a modification?

LMC 16.24.010. - Modifications

The city council, upon advice of the planning commission, may authorize modifications where a subdivider proposes a plat that does not fully comply with the regulations in this title or title 17. **No modification shall be granted if it would be detrimental to the public good or impair the basic intent and purposes of this title** or title 17. Any modification granted shall be in keeping with the intent of the comprehensive development plan of the city.

2) So far we have seen two possible alignments for Campus Drive.

There is the alignment tied to the GDP--The County Commissioners will not allow an exit through Paradise Lane. So the version that comes with the 2010 plan cannot be adopted.

There is the alignment being proposed by Brue Baukol. This proposal will impede traffic flow along 96th which is not acceptable according to our code. Our code clearly states that we must plan to avoid congestion:

LMC 16.04.020 A, B, C, K:

A.**To promote the health, safety, convenience, order, prosperity and** welfare of the present and future inhabitants of the city;.

B.To provide for the proper arrangement of streets in relation to existing or planned streets and to provide for the **safe and efficient circulation of traffic throughout the city, the avoidance of congestion in the streets** and highways and along pedestrian and bikeways;

C.

To provide for **adequate and convenient open spaces** for motor vehicle, pedestrian and bicycle traffic, utilities, **access of firefighting apparatus**, civil defense, recreation, and sites for schools, educational facilities, and related structures;

K To provide for the **safe and efficient circulation of traffic** throughout the city, **the avoidance of congestion i**n the streets and highways and along pedestrian and bikeways;

--What are other possible alignments of Campus Drive? Are there truly only two possible routes that this road could travel?

--Is the claim of the Yes Campaign--that the Campus Drive alignment currently being proposed is the very best and only reasonable option in the universe of choices-- actually true? LMC 16.24.010, 5 requires

That there are **no reasonable alternatives** that would remove the need for the requested modification or would reduce the amount of the modification.

3) **Currently, Campus Drive has been proposed as a four lane road.** This appears to be too large for a development of this type. Roads in a similar development, Centennial Valley, have been reduced down to two lanes. The Tech Center has two lane roads. The City is committed to road diets.

--Are four lanes needed in this development? Why or why not?

--Does a two or four lane Campus Drive better match current City policy of establishing road diiets?

Brue Baukol is clearly using whatever means possible to get a proposal passed that suits their interests, without regard for the implications for our community.

We can see from the Campaign materials that quick construction of Campus Drive was used to scare residents into voting yes. Fear for the safety of children is a powerful tool and one that should not have been to manipulate residents and get votes.

Now that the election has passed, we are being asked to adopt the alignment that was supposed to go away with the No vote--and that alignment clearly does not meet our code.

Do not let Brue Baukol cherry pick from the 2010 GDP to suit their purposes. And please do not approve an alignment of Campus Drive that does not meet the standards of our code.

Thank you so very much for your work,

Sherry Sommer
910 South Palisade Court

For ease of reference:

Commissioner's meeting. 9/8/22 (1:52:08)

Commissioner Howe: Can you think of any way to improve...It seems that the Campus Drive to 96th St is going to be really congested driving those streets..I'm sure we all understand that. Have you considered any other layouts for Campus Drive, any other paths that could be taken to elongate the junction between it and 96th and the East West corridor?

Jay Hardy, Senior VP, Brue Baukol: I'm being a little sarcastic here, but I think this is well into the second full year of having the same question answered. We could obviously take it all the way up to the North, we can't do that because of Boulder County or because of the set back. This plan was reviewed by City Staff, it was reviewed by the Boulder Valley School District, it was reviewed by our traffic engineers, by the Fire Department, then validated by the City's traffic engineers so the only other one was where the road goes up and ties into Paradise Lane, that was discussed but then you run into the buffer issue on the North. This was the one that four collective jurisdictions jurisdictions felt was the best route.

Source: Yes for Louisville Website

YES FOR LOUISVILLE

The April 19 special election is a forced choice between two general development plans that have both been approved by City Council. Voting YES upholds City Council's approval to redevelop the old StorageTek site according to the 2021 Redtail general development plan (GDP), and **voting NO reverts back to the GDP that was approved in 2010 when ConocoPhillips owned the land.**

1) Why is there a special election on April 19?

The special election asks voters to reaffirm City Council's approval of the 2021 Redtail Ridge redevelopment plan, which would replace the existing 2010 ConocoPhillips plan. If voters reject Council's approval and support development according to the ConocoPhillips plan, then **all of special requirements and community benefits, such as more Open Space and safer Campus Drive access, would go away since they are not attached to the Conoco plan.**

16) Can Campus Drive be expanded under the ConocoPhillips plan?

Yes, but the roadway would begin much later due to a more complex land use pattern **that would require** it to cut through an existing easement from BVSD, privately owned land, AND Boulder County land. It would also most likely require an eminent domain claim that would further add costs and delays to this much-needed extension.

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Rob Zuccaro

Subject: FW: Engineer's concerns/RTR

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, September 20, 2022 3:18 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Engineer's concerns/RTR

Planning Commissioners,

Could you please ask if all the concerns on this list which is found in the packet of 9/8 have been accounted for?

I do not see any follow up memo confirming that the items have been dealt with. I do not recall any public discussion of the items on this list.

Thank you,

Sherry Sommer
910 South Palisade Court

Memorandum Department of Public Works **To:** Rob Zuccaro, Planning Director

From: Craig M. Duffin, City Engineer

CC: Kurt Kowar, Director of Public Works Kevin Trott, Civil Engineer III

Justin Ferron, Civil Engineer III **Date:** April 20, 2021

Re: Redtail Ridge (Conoco Phillips Campus) GDP- 1st Amendment (7th Submittal) Public Works completed a review of the subject Development Referral Application received by

the Engineering Division on March 29, 2021. Staff comments are:

GENERAL DEVELOPMENT PLAN – 1st Amendment Page 2 of 3

1. The City of Louisville "City Limit" is not shown accurately on the plan. The City of Louisville boundary is not the southerly extension of the easterly right of way line, north of the Broomfield Fire Station. S. 96th St. adjacent the property was annexed by STC in 1978. The annexation included a 50' right of way centered on east line of Section 20.
2. On the eastside of S. 88th St. there is an existing 5' walk between Tape Dr. and Campus Dr. The Redtail Ridge project is proposing a multiuse path in the same area. There is an undeveloped lot a southeast

corner of Campus Dr. and S. 88th St. Will the multiuse path be extended northerly adjacent the undeveloped lot to Campus Dr. or will the multiuse path end and transition to the existing 5'walk?

3. Please confirm that all existing easements that cross proposed dedicated City property/easements are shown.
4. Noted use of the perimeter symbol around development and inclusion of property adjacent Paradise Lane. Are these properties included in the development? They do not appear annexed to Louisville. Revise.
5. City of Louisville boundary is not shown along westerly property line of unincorporated Boulder County or along S. 88th St. Revise.

CIRCULATION PLAN

Sheet 3 of 3

1. General Notes, 2, The "Right In" on Sorrell Ave. and Rockcress Dr. are not shown.
2. Plan indicates a Multi-use Path and On Street Bicycle Lanes on southside of Campus Dr.

   and connecting to S. 88th St. Is there adequate right of way at southeast corner of S. 88th St. intersection to complete the trail extension?

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3. At northeast corner of Parcel C, noted the hardscape trail extension easterly to the Northwest Parkway and continuation on the westside of S. 96th St. up to and thru Campus Dr. intersection. Was the trail extension easterly to the NW Parkway a request City and County of Broomfield? PW previous comment mentioned pedestrian traffic may use old S. 96th St. as an alternative access to the Campus Dr.
4. Trail connections/extensions beyond the boundary of the development will require further discussion and clarification to determine how, when and the party's responsible for the construction.

PHASING EXHIBIT - Sheet 1 of 3

1. Due to scale of the drawing, the wet utilities are difficult to understand. Appears water, sanitary and storm will be installed in Campus Dr., Sorrell Ave., the easterly portion of Rockcress Dr. and along the east property line of Parcel C.
2. Confirm that the developer will provide an acceptable access to the proposed sanitary sewer lift station during interim and final development. Construction/maintenance of the sanitary sewer lift station access shall be clearly stipulated in the Subdivision Agreement/Plat.
3. Offsite improvements are not shown (e.g. sanitary sewer force main), however are understood for this development. The offsite work shall be clearly discussed and clarified prior to approval of Plat.
4. Please add a note mentioning that the Phased Work in the Park/Open Space areas are shown on Public Lands, Sheet 3 of 3.

Sheet 2 of 3
1. Add the Multi-use Path on Campus Dr. west of Sorrell Ave. and along S. 88th St. Not

sure if this is the correct phase for construction. PUBLIC LANDS - Sheet 3 of 3

1. Please clarify the types of "Public Lands" (i.e. Open Space, Parks, Public Safety Parcel, Trails, etc.) that will be dedicated to the City. Currently the Legend indicates only Open Space as Public Land.

TRAFFIC AND MOBILITY STUDY

1. Staff will provide detailed crash data to address staff comment regarding "Current Study Area Traffic Safety Concerns".
2. 96th and Dillon Commercial Development, staff will provide traffic report and request response about impact of current St. Louis Parish and Innovation Campus Development as compared to data used in study.
3. Pedestrian crossing at Campus Dr. Staff will evaluate the impact of a raised crosswalk with rectangular rapid flashing beacon on Campus Dr adjacent the Monarch School

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Campus that serves BVSD, Avista Hospital, cut thru and development traffic, emergency

vehicles, snow removal equipment, etc.
4. There are recommendations for offsite improvements that require further discussion and

clarification in the Subdivision Agreement. FINAL MASTER UTILITY REPORT

1. The Operations Division is concerned about water quality on Paradise Lane and current flushes (bi weekly – monthly) to bring up the chlorine level in the line. The water line on Paradise Lane is 6" ductile iron installed in mid to late 80's and "private" (no to low maintenance). The 96th Street 8" ductile iron water main was installed in late 70's for STK. The condition mentioned is currently a maintenance issue. Will the development improve water quality in the area?
2. City will monitor water and sanitary sewer flows from the development to confirm utility report assumptions were reasonable/conservative. Will inform district/developer if there are any issues during future development.

Justin Ferron comments: Tech Memo 1 Water Flows:

1. Page 15: It is stated that peak flow events will not occur during multiple day
periods. However, this has occurred in 2020 where we had >97% peak day usage and 4 days following the peak event had >90% peak day usage. The same can be seen for >90% usage trend in 2019. We will send you 2020 data to include in the report which is reflective of recent demand trends. We feel the discussion should adjust the filter firm capacity to 10.5 MGD (our filter firm capacity 10.5/13 = 0.8). In this case it would put the Low-

High max day demand calculations all above the filter firm capacity. Please add the 2020 data, add a 90% percentile to the charts, and adjust the discussion conclusions as needed. A few general typos to fix as well.

Tech Memo 2 Water Infrastructure:

1. Page 1: It states "*Increased demand from Redtail Ridge will likely require the WTPs to operate at elevated filter flow rates (up to 5 gpm/sf rather than the current 2-2.5 gpm/sf) which will likely result in shorter filter run times. During max months, backwashing may be necessary every day depending on raw water quality. Increased backwashing has the potential to result in increased maintenance due to increased usage of backwash pumps and associated equipment*"

Based on the CDPHE design criteria section 4.3.1.2 the filter rates which be running at its max design to meet demand. This would have a major impact on operations and may not be possible in the summer. The memo also does not address the declining rate calculations needed to run the filters under these conditions, if needed. In addition to the

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regulatory requirement, can we add discussion regarding what the recommended max filter flow rates should be?

2. Page 1-2: The City considers filter firm capacity to be 10.5 MGD not 11 MGD. We feel it is important to note specifically spell out that the filter firm capacity is calculated by taking total combined plant flow North at 8 MGD and South at 5 MGD for a total of 13 MGD and taking out one filter out of the two at the south plant which is a reduction of 2.5 MGD (13 MGD -2.5 =10.5 MGD). In addition, this paragraph implies that our filter firm capacity is only in place when the "worse case" of having a filter down for "1-2 hours" for backwashing. This doesn't take into account filter to waste time, or if any of our 6 filters are down for any reason other than backwashing. Although rare, a filter could go down early or be out of service for any given reason other than backwashing which could drastically adjust our filter firm capacity. Also, we were thinking that it would be beneficial to add some discussion on the scenario of having a filter out at each plant which would reduce the total capacity to 13 MGD – 2.5 MGD -2.0 MGD = 8.5 MGD.
3. Page 2 (Last Paragraph): States "*The Mid zone, where Redtail Ridge is located, has a 3.5 MG tank which provides storage volume to meet emergency and fire flow needs, as well as, operational volume for daily flow variations. In the event of a fire during max day demand, the City's WTPs would be capable of providing max day demand, while the Mid Zone tank would provide the fire flow demand. Fire flow requirements stipulate the minimum fire flow and duration required of 4,000 gpm for 4 hours, or 960,000 gallons, would be provided by the tank. Similarly, in the event of a water line break, the tank's emergency storage volume would provide the necessary shortage to the Mid Zone. In general, a tank is sized to provide one-third of the tank's volume to each need: emergency, fire flow and*

operational storage. In practice, considerations are made to provide the optimal balance between providing a robust system, controlling capital costs, and managing water quality."

Calculated demands in the Mid-Zone for 2020 showed an average of 1.40 MGD for the year and a Max of 3.58 MGD. This will result in an average demand of 1.40 + 1.19 + .96 fire flow = 3.55 MGD which is over the max tank capacity. Using Max figures it would be a demand of 3.58+1.71(Max irrigation and indoor) + 0.96 +fire flow = 6.25. This is not achievable and would require that the North Plant solely supply the low and high zones, with no operational flexibility as well as helping support the Mid-Zone to meet demands. Operational levels of the tank are currently 10 -17 ft. or 1,902,460 – 3,234,182 gallons in order to achieve proper storage, turnover for WQ, and a buffer to help with demand changes. There is not capacity in the tank to supply Redtail during peak months from the 3.5 Tank at full buildout. Can we add some discussion like: "The City understands that storage expansion may not be needed for Phase 1 of the project however additional storage may be needed at the completion of future Phases."

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PROPOSED OVERLOT GRADING

1. The applicant's quantities of earthwork for the entire site include 1.9 million cubic yards of fill dirt.

1. Trucking routes shall be approved by the jurisdiction having authorization over the road network. Provide routing information with the Overlot Grading permit application.
2. Soil material brought to the site and used below pavements shall be as recommended by the Geotechnical Engineer and approved by the City. Material testing for road subgrade shall be provided at depth and spacing meeting City Design and Construction Standards. Test results shall be submitted to the City with appropriate mapping so that staff can confirm quantity/depth and results of testing are consistent with road construction procedures and City Standards. Noted earthwork depths at street locations ranges from 5' cut to 14' fill.

REDTAIL RIDGE TOTAL SITE – CUT & FILL MAP

1. Noted cuts of 0.5' to 21' and fills from 0' to over 35' at locations on the site. Applicant shall notify utility companies that traverse the site about the level of earthwork to determine if relocation of their facility is necessary when considering the earthwork.

REDTAIL RIDGE LIFT STATION ACCESS EXHIBIT

1. Public Works will provide additional comments with submission of the Plat concerning the 1400' L x 26' W Temporary Lift Station access.
2. Please provide auto turn vehicle tracking templates for vehicles that will access the site for maintenance/repair (e.g. Vacuum Truck, Tandem, Grader, Truck/Trailer, etc.).

3. Access lane shall connect to round-about at a 90 degree angle for approximately 50’ similar to a street connection at an intersection.
4. Is the Temporary Lift Station access road located in an easement or will this be by agreement/permission?
5. Materials required to provide the temporary access (e.g. hard surface materials, signs, delineators, gates, etc.) will be considered during the Plat review process. Maintenance of the access shall be provided by the applicant.
6. The temporary access as shown is conceptual and will require further input/review prior approval and inclusion on the public improvement civil plans.
7. When will a formal paved access be provided through the lot?

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Rob Zuccaro

Subject: FW: Just how large is the Redtail Ridge Subdivision to deny?

Importance: High

From: Tim Stalker <tstalker28@gmail.com>
Sent: Tuesday, September 20, 2022 1:16 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Just how large is the Redtail Ridge Subdivision to deny?

All in the service of another suburb the city envisions avoiding in its comprehensive plan:

Stormwater Management Plan - https://www.louisvilleco.gov/home/showdocument?id=35874&t=637953165037276959

The size of the subdivision at Redtail Ridge is massive in scale and area both. According to the stormwater management plan there will be an excess of 250,000 cubic yard soil surplus (excess) that the developer plans to store on site. **This amount of soil is the equivalent to an area 900 feet long X 300 feet wide X 25 feet deep.**

But more importantly, the total amount of earth to be moved via cut and fill **combined will be 2,211,945 cubic yards. That is an amount of soil that would fill a 1/4 mile (1320 feet) square space 20 feet deep.**

This would require 15-20 land levelers operating around the clock in the site through the time in "Filing 1" in the stormwater management plan submitted with the developer's final plat.

The developer never changed their dates from 2021: roughly July 2021 to July 2023. Who knows when the actual start dates would be??

Filing 2 earthwork isn't yet identified in the stormwater management plan but would require additional earthwork.

For comparison, the I-70 project through Denver only displaced 1.7 million cubic yards of soil by digging the corridor out for about 2 years of work. The redtail ridge project would be larger than that and certainly one of the largest projects in Boulder County ever.

The developer isn't a builder. They are a leveler for people who build on top of the ground. This pattern was used to develop Louisville between 1961-2007 with suburbs the city is now having to redevelop as urban centers," **Louisville Comprehensive Plan PP. 10.**

Deny this plan. It's massive, destructive, and outdated and would set the city back decades from moving forward with community supported development.

Thank you,

Tim Stalker - 806 W Dahlia Ct. Louisville

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Rob Zuccaro

Subject: FW: Redtail Ridge Plat is Non-Compliant with LMC Title 16 and Comprehensive Plan

Importance: High

From: Tim Stalker <tstalker28@gmail.com>
Sent: Tuesday, September 20, 2022 11:18 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Redtail Ridge Plat is Non-Compliant with LMC Title 16 and Comprehensive Plan

To the Louisville Planning Commission:

This letter explains how the Redtail Ridge plats are inconsistent with the Louisville Comprehensive Plan and fail to comply with title 16 regulations for subdivisions in the Louisville Municipal Code (LMC). This is a deep dive into code sections 16.16.010, 16.24, and 16.04.020 and the specifics of the non-compliance. This is also a close reading of the comprehensive plan and the nature of how the plats are inconsistent with it. I urge you to read this in its entirety because there isn't enough time to present this material and discuss it with my available time of 3 minutes at the planning commission on 9/22/2022 this week. Above all know that there is very little public support for approving Redtail Ridge plats as reflected in the city-wide referendum and the continued non support you are receiving from the public.

It would be helpful to you to have the public land dedication map available to you as the tracts are referenced throughout the letter - https://www.louisvilleco.gov/home/showdocument?id=35878&t=637953165046964770 and also the comprehensive plan available here -> https://www.louisvilleco.gov/home/showpublisheddocument/358/635575239200370000

Sec. 16.16.010 A. *Subdivision design must conform to the purposes of this title and be consistent with the city's comprehensive plan.*

- The plat's shortcomings and inconsistencies with the comprehensive plan pertain to the manner in which it proposes another suburban subdivision in the city, which would essentially put another "inflexible suburban block pattern" (comp plan pp. 10) on the city's south side, the last large area in the city that's not developed.
-

- The history of this developer's proposals over the last few years have received very little public support for its intended land uses that are so typical of suburban patterns that prevent walkability, interconnectedness, and that minimize and place on the fringe public land dedications and infrastructure while only emphasizing single purpose properties.

- **The comprehensive plan addresses this in one of its most specific visions regarding block patterns:**

  "It is important for the Comprehensive Plan to enable the development of more urban block patterns, building stock and ***community supported land uses.*** *Urban block patterns, like that in Old Town and Downtown Louisville, have high resiliency and flexibility in accommodating development and redevelopment over time.* ***Typical suburban block patterns have not demonstrated similar resiliency****."* **Comprehensive Plan PP. 10**

- **In the Comprehensive Plan's focus on the McCaslin Boulevard suburban district, for example, the issues pertaining to the need to redevelop the suburb as an urban center are clear:**

  "Future public and private investment is needed to transform this area from an auto oriented suburban retail center, to a walkable mixed-use transit supportive urban center. As properties redevelop over time, attention will be given to ***enabling a more inter-connected block structure that introduces a walkable street network, and the possibility of a mixture of uses, to an area that currently consists of large single purpose properties.****"* **Comprehensive Plan PP. 27 - See also the McCaslin Blvd Small Area Plan pp. 15,** *"Project Principles and Measures of Success"*

- Does the city really want to accept another suburban subdivision at Redtail Ridge, this time for an immense corporate, regional suburb,

to be forever tied to its inflexible pattern as well, while at the same time trying to transform the problems with suburban areas of the city where these patterns have failed or are failing?

-
- The comp plan explains clearly that the city has to address its suburbs while **cautioning against additional suburban pattern developments in favor of urban type developments.** It's not the vacancy of mostly retail and commercial office space that's so much the problem in the city's suburbs; it's the development pattern of suburbs that is the problem in the city the comprehensive plan so clearly describes, i.e single purpose retail, commercial and industrial.
-
- Why approve the suburban development pattern in these plats now that are the same patterns with much larger scale as those approved and "built between 1961-2007," as identified in the comp plan, pp. 10, while spending considerable time and money on redevelopment proposals and a re-envisioning of these older suburbs to recast them as urban centers? **Approving this plat would be the direct opposite of the visions defined in the comprehensive plan and would be destructive for the city.**

- Furthermore, the current plat even contains plans for blocks that exceed 1320 feet in length under **16.16.040**, a modification the planning commission can deny, given the problems suburban blocks this size would pose for the city in the future as it attempts to grapple with redeveloping smaller suburban blocks now where they have failed.

Sec. 16.24.010. - Modifications - states in part: ***"Any modification granted shall be in keeping with the intent of the comprehensive development plan of the city."*** Indeed, denial of this modification would be completely in line with Louisville's comprehensive plan!

This plat is also inconsistent with the comprehensive plan because it does not meet the city's title 16 laws for subdivisions, especially its general design and construction standards.

Sec. 16.16.010 B. *The residents must have available to them, within the area, safe and convenient movement to points of destination or collection. Modes of travel, including but not limited to motor vehicle, pedestrian, and bicycle travel, to achieve this objective should not conflict with each other or abutting land uses. To the extent possible, there shall exist an internal pedestrian circulation system separate from the vehicular system that allows access to adjacent parcels as well as to parks, open space or recreation facilities within the subdivision. Pedestrian links to trail systems of the city should be made where feasible. Buffering from collection and arterial streets must be provided by earthen berms, landscaping, leafing patterns, or other appropriate materials.*

- Bike and pedestrian trails within tracts C and D are in too severe of conflicts with land uses for drainage, easement access, and roadway placement that will cause conflicts between bike and pedestrian traffic on the site's single trail through these areas.
- Tracts D and I are disconnected with no open space, trail access, and connections between them, putting too much pressure for competing bike and pedestrian traffic on the single planned trail.
- The site isn't walkable because there is such little pedestrian interconnectedness that will have to compete too much over too great of distances with vehicular traffic both within and commuting traffic to and from the site from areas outside of the city.
- The subdivision is simply too large and meant for single use properties for which even PUD proposals will have a difficult time meeting pedestrian requirements for walkability and connectedness.

Sec. 16.16.010 D. *Natural features, historical and archaeological sites, and vegetation of the area, including trees, must be preserved to the extent possible.*

- City staff only evaluate tracts A, B, H, and I as meeting this regulation even though building a proposed park in this area will take the open space preservation to below the 12% in time.

- Where natural features could be preserved to the extent possible in tracts C and D, especially, natural features are destroyed for the development with grading and fill to bring them into compliance for the appropriate roadway slope as aligned, easement access and drainage to the detriment of its public use dedication and integrated connectedness per the comprehensive plan.
- The planning commission may deny this sort of modification under **Sec. 16.24.030. - Modification review criteria:**

> **Sec. 16.24.030 A.** *In granting any modification for a subdivision plat that is not processed concurrently with a planned unit development, city council shall find that the application complies with section 16.04.020 and section 16.24.010 and all of the following requirements, insofar as applicable, have been satisfied:*
>
> > *1. That there are unique physical circumstances or conditions such as irregularity, narrowness or shallowness of the property, or exceptional topographical conditions, or other physical conditions peculiar to the affected property;*
> >
> > *2. That because of such physical circumstances or conditions, the property cannot be reasonably developed in conformity with the provisions of title 16 and title 17 resulting in a hardship;*
> >
> > *3. That such hardship has not been created by the applicant;*
>
> **The planning commission would have to deny this modification**

- **because of a hardship the developer has caused themselves** by placing too much of a burden on these tracts to be modified for the development;
- **because of its platted footprint size**, especially north to south, but also east to west without a connection between tracts D and I;

- **because of the developer's campus drive alignment** with no indication of the buffer size required by boulder county in the IGA for this tract;
- **and because of the unique drainage needs for such a large suburban layout** and its natural drainage way in the Rock Creek Tributary that prevents, again from the developer's own doing, integration into the tributary's own public land dedication between tracts I and C and I and D.

Sec. 16.16.010 E. The planning commission could also require more open space to alleviate these problems in its northern tracts: *"**The need for additional open space, park, and recreation areas shall be based on the following factors:"***

- **the city's comprehensive plan** - its vision for walkable development with integrated open space and much public support vs. additional suburb block patterns and fringe open space with competing uses that garner little public support (referendum, repeated public commentary at planning and board meetings, etc).
- **topography and drainage** - because of the property's close proximity to natural drainage and topography that the developer chooses to modify for the development with the addition of underpasses, grades to the natural drainage way, and grades for the 4-lane campus roadway, as well as easement access in such competing use scenarios with its constrained public land dedication in tracts C and D. These tracts are to be dedicated only after they are significantly altered for the development. While tracts E,F,G,J, and K are also to be dedicated after modification, these tracts are narrowly confined to the site's trail system for that particular land use. In these tracts there isn't the extent of conflicts in land uses posing issues requiring more open space in the same constricted way tracts C and D do.

- **vegetation and other physical conditions** - a single trail with no secondary trail to offset the competing uses in tracts C and D without additional open space between tracts C and I and D and I.
- t**he availability of other open space, park and recreation areas** - presumed city-wide. The comprehensive plan identifies that 26% of land in Louisville is open space and open space with public infrastructure, and yet in this plat, there is only about 16% and less in time of the open space dedication that is code compliant in tracts A, B, H and I. With such a large subdivision proposed at Redtail Ridege, an equally significant amount of land needs to be dedicated, bringing it into consistency with other areas of the city that have such widespread public support, i.e. Davidson Mesa, Coal Creek, and others.
- **the overall need within the proposed development for such areas** - Although the plat proposes no modifications to excavate tracts A,B,H and I, and, although these areas meet title 16 requirements in and of themselves currently at least for public land dedication, they do not, however, meet title 16 requirements in conjunction with all the tracts not meeting the specification. The land dedication in its entirety must meet title 16 provisions for the plat, not merely certain tracts within the plat.

- By requiring more open space between tracts C and I and D and I, the issues of competing uses, constrained public use, and disconnectedness could be offset and alleviated with a land dedication also in a tract with a secondary trail across the site from tract D to I. A logical area to do that would be by extending tract D across the subdivision with an additional underpass under Sorel Avenue.
- There was discussion in the 9/8/2022 planning commission meeting that tract C and D in the plat compare in some way to how Coyote

Run, another public land dedication that was made to Louisville in the past, was accepted.

- There's no comparison because Coyote Run is situated between two housing developments and, while it was dedicated after development/grading, it does not serve the same functional needs of that development as those compare to the complexity of tracts C and D at Redtail Ridge.
- Tracts C and D are proposed to be situated next to a 370 acre commercial/industrial complex and 4 lane roadway with a number of purposes in too small of an area to provide functions for the Redtail Ridge development that Coyote Run in Louisville does not begin to match in scope, alignment, and non-compliance to LMC title 16.

According to the purposes of the subdivision the plat fails on several points as well, outlined below:

Sec. 16.04.020 - Purpose

Sec. 16.04.020 A. *To promote the health, safety, convenience, order, prosperity and welfare of the present and future inhabitants of the city;*

- The proposal is inconvenient along the north central and northeastern connections between tract I and tracts C and D.
- There's no connection between tracts I and D.
- There's no open space between the development and the trail, easement and Rock Creek Tributary drainage way, the main watercourse that drains the site outside of the development to its lowest point in tract C.
- Underpasses are only built to 10-year flood specifications.

Sec. 16.04.020 C. *To provide for adequate and convenient open spaces for motor vehicle, pedestrian and bicycle traffic, utilities, access of firefighting apparatus, civil defense, recreation, and sites for schools, educational facilities, and related structures;*

- No open space south along Rock Creek Tributary, trail, and easement, causing these uses to be too constricted along a major drainage way with immediate proximity to graded and sloped land in the development.
- Trail between tracts I and C isn't fully positioned within an open space dedication, only the trail within tracts C and D is identified within a land dedication.
- In washouts, access will be disrupted for repairs of the single trail and underpasses during what are becoming rather routine 100-year flood events.
- No additional and alternative open space trail connection and trail between tracts I and D.

Sec. 16.04.020 E. *To provide for adequate light, air and privacy and to secure safety from fire, flood and other danger;*

- Modificatons to the property within its areas of open space dedication in tracts C and D and the trail connection between C and I, while not in a floodplain, pose continued risk of flooding, especially at what are becoming rather routine 100-year flood events.
- The nature of how such a colossal development with public land dedications confined to the site's fringe natural drainage basin in tract C do pose a safety risk.
- There are no alternative/secondary trail routes across the subdivision from east to west in the site's northern area that would be useful in times of trail disrepair.

Sec. 16.04.020 G. *To ensure that public facilities and services are available and will have sufficient capacity to serve the development;*

- Combined with overflow from the property's development and water not captured by the development's drainage system, the subdivision's natural drainage system is not adequate in capacity for

the property **because the development is aligned in too close proximity to it's major drainage way in the Rock Creek tributary.**
- There's not enough open space in tracts C and D and around the tributary between tracts C and I to absorb runoff from up to 100-year flood events or greater.

Sec. 16.04.020 I. *To conserve and enhance the value of land throughout the city and the value of buildings and improvements upon the land;*

- **The proposed development subordinates the value of its open space to the city by minimizing the size of the public land dedication** with no improvements and infrastructure other than trails site-wide.
- The proposed development creates **problematic land value and use conflicts in tracts that are too small and constrained**, functioning with too many purposes.
- The **open spaces are poorly connected within the subdivsion and not connected to the rest of the city to the west**, making them of less value and use to both the city and the subdivsion.

Sec. 16.04.020 J. *To minimize the conflicts among the uses of land and buildings placed on the land;*

- **Too many uses, none of which are primarily for public access in tracts C and D and the connecting trail to tract I.**
- These tracts pose significant issues with conflicting uses, making them non compliant.
- Their primary uses for drainage, roadway grade and slope, and easement access diminish and subordinate these areas' percentage of the overall public land dedication in these tracts and the subdivision as a whole.
- **Tracts C and D are too small, narrow, and constricted to functionally serve as open space for the city in such a competing context of uses.**

Sec. 16.04.020 K. *To provide for the safe and efficient circulation of traffic throughout the city, the avoidance of congestion in the streets and highways and along pedestrian and bikeways;*

- The site's single trail system and connection between tracts I and C only will cause bicycle and pedestrian congestion within the subdivision.
- There's no connection between the trail system and areas adjacent to the subdivision's northwest tracts.
- Bike and pedestrian traffic cannot circulate into neighborhoods and areas northwest of the subdivision.

Sec. 16.04.020 M. *To mitigate the pollution of air, streams and ponds, assure the adequacy of drainage facilities, safeguard the water table, and encourage the wise use and management of the natural environment;*

- The site's drainage report is based on FEMA insurance rate **maps that evaluate flood potential by looking backward** in time rather than with models for future flood concerns and rapidly changing climate and landscape vegetation that affect precipitation amounts, duration, and intensity.
- The development provides no provision and accounting for drainage overflow when the internal drainage system reaches capacity in 100-year or greater flood events.
- Dual culvert and trail underpasses co-mingling under campus drive.

Sec. 16.04.020 N. *To preserve and enhance to the extent reasonably possible the natural beauty and topography of the city and areas of historical or archeological importance and to ensure appropriate development with regard to such natural, historical and archaeological sites and features;*

- Only a portion of previously undeveloped areas of the subdivision in tracts A, B, H and I are preserved to the extent reasonably possible at the time of this plat proposal, but these tracts are identified for additional development (grading and fill) for a park and fire station that will eventually take the percentage of open space preservation

below the 12% minimum while confining this public infrastructure to the pedestrian inaccessible tracts B and H from all areas of the subdivision.

- Valuable spaces in the property the developer proposes to develop are not preserved.
- Site-wide the open space dedication fails this provision because the spaces in tracts C, D, E, F, G, J, and K are not preserved but rather destroyed to be dedicated after grading for the intent of the development. The PC must inquire further about the intended use of the identified 250,000 cubic yard soil excess the developer intends to store on site. From this overall excess of soil, topsoil should be separated out from subsoil and building debris from the former storage tek site removed. Subsoil cannot be distributed as new topsoil fill for restoration of public lands. All excess subsoil should be removed.
- There was discussion in the 9/8/2022 planning commission meeting that tract C and D in the plat, for example, compare in some way to how Coyote Run, another public land dedication that was made to Louisville in the past, was accepted. There's no comparison because Coyote Run is situated between two housing developments and, while it was dedicated after development/grading, it does not serve the same functional needs of that development as those compare to the complexity of tracts C and D in this property.
- Tracts C and D are proposed to be situated in the site's main drainage basin next to a 370 acre commercial/industrial complex and 4 lane roadway.
- Coyote Run in Louisville does not begin to match in scope, alignment, and non-compliance to the lack of preservation to any extent reasonably possible.

Sec. 16.04.020 S. *To otherwise plan for and regulate the use of land so as to provide planned and orderly use of land and protection of the environment in a manner consistent with constitutional rights.*

- Land uses are too disordered and concentrated/ constrained in competing ways to the detriment of environmental protection for the Louisville community in the site's open space tracts, especially in tracts C and D of the property and the single trail connection without a dedicated open space for it between tracts C and I.
- Most of the open space tracts as well as the development itself are to undergo significant environmental degradation because of a lack of development precision at scale.
- The developer is proposing to develop 14.74 million square feet as a footprint for others to build only 2.55 million square feet. The excess 12.19 million square feet are imprecise sprawl in a suburban pattern, one of the principal components of environmental degradation worldwide.

Thank you so much for your attention to this complex development proposal. It is the job now for the planning commission to represent the community and to send a loud and clear message that we cannot accept plats that are inconsistent with the city's comprehensive plan and the laws in title 16 governing subdivisions. Listen to the community and understand the urgency and importance of not approving these plans.

Thank you so much,

Tim Stalker - 806 W Dahlia Ct Louisville

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Rob Zuccaro

Subject: FW: Questions for City Staff and Developer - RTR

Importance: High

From: Tim Stalker <tstalker28@gmail.com>
Sent: Tuesday, September 20, 2022 4:05 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Questions for City Staff and Developer - RTR

To the Planning Commission:

There are a number of very important questions pertaining to grading that need to be asked and cleared up as you continue to evaluate the grading in the RTR property:

1) There are 3 cut-and-fill maps showing the grading numbers within the site, all of which were created about 10 days apart from March 21-March 31, 2021. The most recent map in the stormwater mgmt plan shows a soil excess in the site of 249,000 cubic yards. The map created on 3/21/2021 shows a soil deficit in the site of 1.9M cubic yards. How did BB come up with such drastically different cut and fill numbers over this time?

In an April 20, 2021 meeting city engineering staff noted the 1.9M cubic yard deficit. Which are the correct numbers and how come these versions are so massively different? Is there a staff memo from city engineers that shows the matter has been cleared up?

2) There appears to be only one over-lot grading map in existence that uses and notes the 1.9M cubic yard soil deficit?

3) Grading contours in the plat reflect this over-lot map but the one with the 1.9M cubic yard soil deficit that BB would have to truck in (158,000

dump truck loads)? Can they explain why the contours in the plat are reflective of the over-lot map that shows the 1.9M cubic yard deficit?

4) How does the developer intend to store 250,000 cubic yards of soil on the site with only one small stockpile location shown on the stormwater mgmt plan that isn't big enough to contain this amount of excess soil? Note that this is the equivalent of a 300 yard X 100 yard space filled with 25 feet of soil. But the stockpile location is only 120 feet long apparently, way too small to store soil.

5) How long will BB store the soil? Where will its location be in relationship to the publicly dedicated tracts?

6) Will they be separating out former building debris from storage tek, as well as topsoil from subsoil?

7) Will they be distributing subsoil into public land dedication tracts as new subsoil with which to restore vegetation on?

Thank you so much,

Tim Stalker - 806 W Dahila Ct Louisville

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TO: CITY OF LOUISVILLE – PLANNING COMMITTEE

AS RESIDENTS OF PARADISE LANE FOR NEARLY 50 YEARS WE FULLY SUPPORT THE APPROVAL OF THE CURRENT PLAN FOR REDTAIL RIDGE. HOWEVER, IN ORDER TO MAINTAIN THE BEAUTY, TRANQUILITY AND REAL ESTATE VALUE OF OUR RESIDENTAL/AGRICULTURAL PROPERTY, WE WOULD LIKE THE FOLLOWING ITEMS TO BE A PART OF THE COMMITMENT ONCE THE LAND IS DEDICATED TO OPEN SPACE.

- ALL DWELLINGS & OUTBUILDINGS ON THE PROPOSED OPEN SPACE NEED TO BE DEMOLISHED IN ORDER TO NEGATE THE FIRE HAZARD THEY NOW REPRESENT, AS WELL AS THE POSSIBILITY OF SQUATTERS, AS WE HAVE HAD IN THE PAST. DWELLINGS HAVE NOT BEEN OCCUPIED FOR OVER 10 YRS.
- WATER RIGHTS SHOULD STAY WITH THE PROPERTIES IN ORDER FOR THE LAND TO BE MAINTAINED PROPERLY.
- IF LAND IS LEASED TO AN OUTSIDE PARTY, ALL HOLDING PENS FOR LIVESTOCK SHOULD BE KEPT TO THE NORTH/WEST SIDE OF THE OPEN SPACE LAND SO THAT THE WEINING NOISE OF THE CALVES DOES NOT DISTURB US HOMEOWNERS AND THE MANURE ODORS ARE FILTERED BEFORE REACHING OUR HOMES. ALL LEASES NEED TO BE APPROVED BY PARADISE LANE OWNER/RESIDENTS. NOT WITHHOLDING UNDUE APPROVAL OF LEASE.
- A CLEANUP OF THE OPEN SPACE PROPERTIES, INCLUDING THE FENCING, PASTURES, DOWN AND DEAD TREES AND REMOVAL OF ALL OF THE DEAD WOOD STACKED OVER VARIOUS AREAS OF THE LAND. ALL OF THIS IS NECESSARY, FIRST AND FOREMOST BECAUSE IN IT'S PRESENT CONDITION, IT PRESENTS AN EXTREME FIRE HAZARD!!

WE APPRECIATE YOUR CONSIDERATION IN THIS ISSUE THAT IS VITAL TO US AS WE ARE DIRECTLY IMPACTED ON A DAILY BASIS AS LONGTERM HOMEOWNERS.

LARRY & KAREN THOMPSON
9250 PARADISE LANE
BROOMFIELD, CO 80020
PHONE: 303-775-1996-LARRY 303-775-2013
E:MAIL: kkt9250@gmail.com

Dear Planning Commissioners:

I just wanted to express my thanks to you all for your thoughts and willingness to understand the complexity of RedTail Ridge proposal.
I commended one of you asked about any other options on Campus Drive. I believe it is important to see what the other options are and compare to the current plan. The other options may not be great however we can use the weak options to make it better than the current plan on the Campus Drive. It will be a great benefit such as having "Great Mind think alike" by working with the residents of Louisville. It is vital to continue to ask to see the physical options that was previously worked on.
For example: It is important to have the Campus Drive as a one-way road. How? Entering 88th and exiting 96th on right turn only lane. In this design, can have one round a about giving the drivers options to exit either to 88th and 96th. No traffic signal on 96th will give the environment sustainability and supporting Net zero policy. The State of Colorado just enacted new rules to reduce greenhouse gas emissions with the goal of improving air quality by taking the equivalent of 300,00 cars off the road each year.
With the new construction will be happening on the Flatiron Mall district, we need a new traffic study from the Flatiron location to be implemented with the 88th and 96th traffic study.

Secondly, here is my concern, I have noticed on the proposal map plan, there are two small green areas southwest of Tape Drive which it will be given or convert to open space. I much rather have the southwest of Tape Drive area to be exchanged to the second pond/lake area as an open space and have them to develop on the southwest of the Tape Drive. I would like to see more open space around both pond/lakes to preserve the natural surroundings.
Without a visual aid, it is difficult for me to describe the layout in words, and I hope this gives you a basic idea.

Thank you for your service. Please continue to reject the current plan and encourage them to revise according to the codes and by laws.

M. Christiansen
543 Adams Ave
Louisville, CO 80027

Rob Zuccaro

Subject: FW: RTR: Denial

From: Cynthia Corne <ccorne@comcast.net>
Sent: Wednesday, September 21, 2022 4:41 PM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Cc: City Council <Council@louisvilleco.gov>; Jeff Durbin <jdurbin@louisvilleco.gov>; Rob Zuccaro <rzuccaro@louisvilleco.gov>; Lisa Ritchie <lritchie@louisvilleco.gov>
Subject: RTR: Denial

Dear Planning Commission:

The citizens of Louisville are reasonable people who care about a healthy community, thriving economy, improving climate, sharing our ecology with wildlife, and specifically, clean air. And, I believe fairness in government matters including development and economic development.

Do you see Louisville citizens opposing CTC expansions in large numbers (e.g. the new Bolder Innovation Campus)?
No. In general, we elect our leaders, and go about our lives.

And then, there is Storage Tek/ConocoPhillips/Nawatny Ridge/RTR/RTR/RTR.

1) And the same horizontal plat since Brue Baukol got involved, with goals for outdated concrete and parking lots.
***By now, the **impacts to carbon emissions** should be well-understood, and, if not, the Planning Commission has every right to request a f**ull climate impact study** re: the impact to the soil, wildlife, and air quality - from grading, concrete parking lots, buildings, and 20K cars per day. And the construction traffic as well. We need to be going the other way. **What are the proposed carbon offsets?**

2) Construction Chaos: How many construction vehicles per day? How many road closures and/or narrowed lanes?
Have you seen how much traffic there already is at this site during busy times of day?
*What agreements are in place with CDOT/Boulder Turnpike/36 and E-470? and CDOT/42/95th?
3) No tenants named. "Trust us." Let us grade over the whole Campus development.
4) At buildout, an additional 20,000 TWENTY THOUSAND cars per day.
This completely ignores the recent EPA Air quality downgrade to severe status for the Front Range.
5) Combining Preliminary and Final Plat steps.
***Why do these separate steps exist in the Municipal Code if not for this VERY type of situation.
6) For the record, Council specifically excluded heavy industrial from the CP PUD. Brue Baukol should be required to indicate the planned commercial uses, especially since they want to grade over the property.

So, please create a motion to Deny this applicant's preliminary and final plat on the basis that the pros and detail provided do not outweigh the risks and unknowns, and overreaching plans. The applicant needs to propose a phased approach with less disruption e.g. grading, at a minimum, and much fewer cars forecast given the air quality and heavy traffic already in existence. These other reasons for denial as well - one of these reasons would be enough:

- 1) Does not adequately meet the requirements of 16.04.020 and the authority granted for the purpose:
    1. A. To promote the health, safety, convenience, order, prosperity and welfare of the present and future inhabitants of the city.

2. It only serves to meet the unbending business case, and cost models for a now-Newport Beach owned applicant, who looks to subdivide this land like a suburb, in order to resell it or lease it.

- This GDP needs separate preliminary and final plats - the applicant has failed to provide the needed detail for each definition, and continues to add Code-required information during the process without adequate review time - for the public, boards, and planning commission. The distinctions between preliminary and final exist for this very situation.
- Permission to grade the entire property before the PUD would violate item 1, and the Comprehensive Plan/Campus setting.
- Construction traffic chaos - City Staff needs to be able to focus on Marshall Fire recovery/traffic design and more. To oversee plans for construction traffic for this development is not an obligation nor a priority for the City. As demonstrated from the referendum vote, Louisville citizens have other priorities and want to ensure the Code is followed.
    1. Many are not opposed to this development in general. Many of us are opposed to this application.
- 20K additional cars at full buildout - with no partnerships or agreements with CDOT or E-470
-
-
- Common sense is failing here. With increased traffic at 287 and E470 and at 36/Interlocken and McCaslin and 36, better planning is needed. We already have traffic jams on 42, especially before and after Dillon Road, all the way to South Boulder Road.

I believe City Council suggested max of 1.6MM sq. feet at one point, perhaps the applicant could re-start there, with a phased, success-based plan, where tenants and commercial uses are known before plats are subdivided like a residential area.

Too many risks, too much overreach. Ignoring the community. Predictable air quality and traffic chaos.

Thank you.

Cynthia Corne
438 Jefferson Ave.
Louisville, CO

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Rob Zuccaro

Subject: FW: Redtail Ridge Testimony

(cannot accept texts)

From: Clif Harald <clif.harald@firstflatironconsulting.com>
Sent: Wednesday, September 21, 2022 2:52 PM
To: Planning <planning@Louisvilleco.gov>
Subject: Redtail Ridge Testimony

Planning Commission Members,

The stature of Colorado's Front Range continues to evolve as one of the country's most dynamic ecosystems for innovation in biosciences and advances in health care.

Yet in biosciences alone, real estate brokers report tenant demand for 1.3M to 1.6M square feet of lab space in the Denver/Boulder market, with a 0% vacancy rate in Boulder lab real estate. And we've all seen how urgently health care systems and hospitals must expand to meet the accelerating demand from Louisville and other north metro area residents for their services.

The proposed life sciences campus at Redtail Ridge would help meet these needs and significantly address the life-critical missions served by bioscience companies and health care organizations.

As a Louisville resident with years of experience in Boulder County community economic development, I also value the local economic benefits of Redtail Ridge which include an estimated $1M annually in *net* new city revenue averaged over the first 20 years of the project. This additional revenue couldn't be more timely as we work to recover and rebuild from the Marshall Fire. And the jobs associated with redevelopment of Redtail Ridge would help revitalize our struggling retail centers.

Thank you for your dedication to the orderly and deliberate evolution of Louisville's built environment. I encourage the Planning Commission to look favorably upon the life-critical and local economic benefits of Redtail Ridge and to approve the project's preliminary and final plat.

Clif Harald
First Flatiron Consulting, LLC
LinkedIn
Mobile: 303-908-2333

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Rob Zuccaro

Subject: FW: Redtail Ridge

From: Beth McQuie <bmcquie@gmail.com>
Sent: Thursday, September 22, 2022 9:50 AM
To: Planning <planning@Louisvilleco.gov>
Subject: Redtail Ridge

Dear Louisville Planning Commission,

I am writing about the latest version of Redtail Ridge.

I am not opposed to having a life and bioscience campus in Louisville. However, there are some factors that I hope you will consider.

The traffic plan seems problematic to me. Having Campus Drive come out on 96th, near the fire station, could create traffic jams, in my opinion. There is already a traffic light at 96th and the tollway. Campus Drive would join 96th just a few hundred feet from that. In addition, if Avista Hospital builds along 96th, they might want their own traffic light, too, for easy of entry of emergency vehicles. This hasn't been taken into account, from what I can tell.

Please do not widen 88th Street. That is just behind my home and the additional traffic would add to noise and pollution. Our neighborhood was destroyed in the Marshall Fire. Please don't add to our misery.

I would prefer that the plan have a smaller footprint. It could cover just the area that the StorageTek facility did. That way, open space could be maintained north of the former Disc Drive and our small-town feeling could continue. We could have a buffer of open space between Redtail Ridge and the main part of town.

This area is designed as a RURAL District in the 2013 Comprehensive Plan. Does the current Redtail Ridge plan seem rural? Not to me. It appears that it will cover the majority of the land with buildings and concrete parking lots. Although the limit is 3 stories, per the Comp Plan, in the past, the developer has pushed for higher buildings. Please do not allow that.

The Louisville Vision Statement, as stated in the 2013 Comprehensive Plan, includes a core value of maintaining Our Livable Small Town Feel. Redtail Ridge should demonstrate this.

Thank you for considering these points.

Beth McQuie

972 Saint Andrews Lane, Louisville

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Rob Zuccaro

Subject: FW: Drainage Plans
Attachments: 2n_Redtail Ridge Filing No. 1 - Existing Onsite Easement Exhibit.pdf

Importance: High

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Wednesday, September 21, 2022 8:51 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Fwd: Drainage Plans

Planning Commissioners,

I needed clarification on grading in the public land dedication at RTR and got these maps.

Maybe they will be of use to you as well.

Sherry Sommer

Hi Sherry,

Per our discussion this afternoon, here are the best grading plans we have that cove the public land dedication tracts that are slated for open space.

Thanks,
Rob

Rob Zuccaro, AICP
Planning and Building Safety Director
303-335-4590 (D)
303-335-4592 (O)

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City of Louisville

COLORADO • SINCE 1878

Rob Zuccaro

From: sherry sommer <hellosherry2@yahoo.com>
Sent: Tuesday, November 28, 2023 2:47 PM
To: City Council
Cc: Jeff Durbin; Rob Zuccaro
Subject: Incomplete Redtail Ridge preliminary application/Council agenda December 5.

Mayor Leh and members of council,

Please remove Redtail Ridge from your December 5, 2023 agenda. The application is not complete. Only complete applications can be reviewed by council.

—Northwest Parkway has not approved this application. According to Joel Meggers, managing administrator for the parkway, the parkway will not support the preliminary plat until negotiations are finalized. This should happen within the next few weeks.

—Brue Baukol has not updated their application submitted in April 2021. That application incomplete. When submitted and it remains incomplete.

—The City posted notice for this agenda item November 19, 2022. However, information on the current developments on city website has not been updated since April 2021. While the city may have followed the letter of the law in providing public notice, this certainly has not been a transparent process.

This is a very serious matter. Voters rejected the sprawling development proposed by Brue Baukol in our special election. This item must not appear on the council agenda before it is complete.

Sherry Sommer

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Rob Zuccaro

Subject: FW: Please deny the proposal by Brue Baukol for Redtail Ridge at your meeting on November 10th

Importance: High

-----Original Message-----
From: Norma Anderson <norma22@icloud.com>
Sent: Sunday, November 6, 2022 10:47 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Please deny the proposal by Brue Baukol for Redtail Ridge at your meeting on November 10th

Dear Planning Commission,

I've written any number of letters, expressing my concern about the kind of planning Brue Baukol has made for the Redtail Ridge property.

Rather than reiterating what I've written so many times before, I'm going to implore you to please reject, once and for all, the plans Brue Baukol has continued to submit — each time without enough variation to reflect what the residents and citizens in Louisville have shown is necessary to have this area be developed.

Brue Baukol has been turned down by the City Council, put up for a general vote of Louisville residents and been soundly rejected, yet still Brue Baukol keeps bringing in all "the big guns" they can to get the project approved as they want it to be developed.

Please deny approval of Brue Baukol's plans for Redtail Ridge, for once and for all.

Thank you.

Sincerely,

Norma Jean Anderson
1904 Steel Street
Louisville, Colorado 80027
norma22@me.com
(Landline) 303-954-9373
(Cell) 720-537-5901

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Rob Zuccaro

Subject: FW: Deny Current Redtail Ridge Proposal

Importance: High

From: Laura Pederson <lppederson@comcast.net>
Sent: Sunday, November 6, 2022 11:11 AM
To: Planning Commission <PlanningCommission@louisvilleco.gov>
Subject: Deny Current Redtail Ridge Proposal

Hello,

I am writing once again to implore you to deny the current Redtail Ridge proposal.

The Redtail Ridge proposal doesn't address the concerns that led to the referendum. The updated plan is sprawling and needlessly destructive. The traffic and air quality impacts are even worse, and the previous sustainability measures have been removed.

The residents of Louisville are counting on the Planning Commission to rigorously enforce the City Code, and to ensure that the Redtail Ridge plan that moves forward is in full compliance with it.

Thanks and Regards,

Laura Pederson

2297 Cliffrose Lane

Louisville, Co.80027

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Rob Zuccaro

Subject: FW: Louisville Municipal Code and RTR

From: sherry sommer <hellosherry2@yahoo.com>
Date: October 27, 2023 at 8:19:13 AM MDT
To: City Council <Council@louisvilleco.gov>
Subject: Louisville Municipal Code and RTR

Candidates discussed the pending Redtail Ridge application at Wednesday's panel discussion. There was confusion about the status of the application.

Our Planning Commission has recommended denial of the application because it does not meet the requirements of our municipal code. Read the commission's decision here:

https://www.louisvilleco.gov/home/showdocument?id=36760...](https://www.louisvilleco.gov/home/showdocument?id=36760&t=638031701898065640&fbclid=IwAR2tfvUC1fafqFckllX43e-TZClK_Q6LJa5VvpaQZQZAjw6IlmOlk3d3tRw)

Thanks to the League of Women Voters, the Chamber of Commerce, the DBA, and sponsors for supporting civic engagement.

Sherry Sommer

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Meredyth Muth

From: Lucia Paramita <lucia.harrop@gmail.com>
Sent: Tuesday, January 30, 2024 4:01 PM
To: City Council
Subject: No to Redtail Ridge Development

Some people who received this message don't often get email from lucia.harrop@gmail.com. Learn why this is important

Dear City Council,

I hope this letter finds you well. I am writing to express my strong opposition to the proposed Redtail Ridge development project within the City of Louisville. I understand that this matter has been discussed in the past, and citizens have voiced their concerns during a special election in 2022. I urge you to consider the detrimental impact this development would have on our community and to steadfastly deny the proposal once again.

One of the primary concerns surrounding the Redtail Ridge project is its enormous footprint. The expansive nature of the development raises significant issues related to grading and drainage, which could result in long-term problems for the community. The potential for increased traffic and pollution is a pressing concern, threatening the overall quality of life for Louisville residents.

The proposed development's construction phase is projected to be disruptive and loud, lasting for several years. Such a prolonged period of disturbance would undoubtedly have a negative impact on the tranquility of our community and the well-being of its residents. It is essential for the City Council to prioritize the peace and harmony of Louisville over the short-term gains that may be promised by the developers.

Moreover, the proposed development poses a serious threat to the natural habitat of the area. Preserving our environment and protecting the local ecosystem should be paramount. Destroying natural habitats not only affects the flora and fauna but also has long-lasting consequences for the overall ecological balance.

Economically, approving the Redtail Ridge development could place an unnecessary burden on our town. Large-scale developments often lead to increased demands on public services and infrastructure, which can strain the local budget. It is crucial for the City Council to consider the economic implications and potential long-term costs associated with such projects.

Furthermore, it is disheartening to witness the persistence of the developers in repackaging what appears to be a problematic proposal for the city. The citizens have already spoken through the special election in 2022, and it is my sincere hope that the City Council will stand firm in representing the wishes and best interests of the community.

In conclusion, I respectfully request that you carefully consider the negative impact this development could have on Louisville and its residents. Small communities thrive when their unique character and well-being are preserved. I implore the City Council to reject the Redtail Ridge development proposal decisively and conclusively, prioritizing the long-term sustainability and harmony of our beloved city.

Thank you for your time and dedication to serving our community.

Sincerely,

Lucia

=>^.^<=

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From: Clif Harald
To: City Council
Subject: Redtail Ridge Support
Date: Wednesday, January 31, 2024 7:00:43 AM

Some people who received this message don't often get email from clif.harald@firstflatironconsulting.com. Learn why this is important

Mayor Leh and Members of Council,

I'm writing in support of the Redtail Ridge preliminary subdivision plat and to encourage you to approve Resolution No. 80, Series 2022.

City staff completed a thorough analysis of the project application before recommending your approval of the preliminary plat. As you deliberate on the application and input from the community, the following staff findings strike me as especially pertinent to concerns raised by some city residents.

- The application is in compliance with applicable Comprehensive Plan policies related to density, height and land uses and the purpose and intent of the Comp Plan.
- The application is in conformance with LMC Section 16.12.075 outlining three standards for approval of preliminary and final plats.
- The proposed internal road network, trails, and off-site road improvements ensure adequate vehicular and multi-modal circulation, and meet the City's Transportation Master Plan policies to support multi-modal development.
- The proposal would complete the Campus Drive extension to 96th Street, significantly reducing congestion during school days and improving emergency safety and access to the Monarch school campus.
- The minimum public land dedication requirement under the municipal code and the 2010 ConocoPhillips Campus GDP is 37.1 acres. The applicant's public land dedication, at 123 acres when considering the Paradise Lane dedication, exceeds the minimum by over three times.
- Public land dedications create a buffer of open space and parks for the project. Both the Open Space Advisory Board and the Parks and Public Landscaping Advisory Board voted unanimously to approve the proposal, the former with conditions that City staff and the developer have begun to address.

Arguments made by some residents opposed to Redtail Ridge contradict these and other findings of the city's professional staff. I'd encourage the City Council and staff to address these contradictions and make it clearer to the community how the proposal complies with city regulations. That could improve the quality and civility of dialog about the project.

One of the conditions of staff's recommended support for the preliminary plat is that the applicant secure approval from the NW Parkway Authority on the Campus Drive alignment prior to your hearing on the final plat. I'd suggest that Council direct staff to discover what concerns the Parkway Authority seems to have about the proposed alignment, and to investigate the reasons for the Authority's delay in acting on it. I'd also suggest that Council direct staff to report back on its Parkway Authority findings with ample time to resolve the Authority's concerns before your hearing on the final plat.

Thank you in advance for giving this important project your careful consideration. I encourage you to approve Resolution No. 80, Series 2022.

Clif Harald

Ward 2 resident

==CAUTION: EXTERNAL EMAIL==

From: Justin Deister
To: City Council
Subject: Redtail Ridge
Date: Tuesday, January 30, 2024 7:17:23 PM

Please scrap all plans for Redtail Ridge.
We don't need it and don't want it.
I am in favor of leaving the land alone.
If we need to do anything it's to fill the voids we have.
Thanks,
Justin Deister
-resident since 1987

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From: Karen Cooper
To: City Council
Subject: Flier on my door - red tail ridge project
Date: Tuesday, January 30, 2024 4:54:39 PM

Some people who received this message don't often get email from karen11cooper@gmail.com. Learn why this is important

Hi!
This flier was left on my door today. I'm sure you're going to get opposition again for this project. I thought I would be an email that supports the Red Tail ridge project.

The noisy concerned citizens are only a small portion of those who distrust the city council. I'm happy with the direction the council is going and support your decisions on moving forward on the Red Tail Ridge project.

Get it started!!

Thanks,

Karen Cooper
--

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From: Jeanne Bellomy
To: City Council
Subject: NO to Redtail Ridge
Date: Tuesday, January 30, 2024 4:41:38 PM

Some people who received this message don't often get email from jalterbellomy@gmail.com. Learn why this is important

In 2022 I voted no to the Redtail Ridge development. My opinion has not changed. No again to Redtail Ridge

Jeanne Bellomy
194 Mesa Ct.
Louisville, CO 80027

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From: Beverly Johnson
To: City Council
Subject: Saying no to Redtail Ridge property development
Date: Wednesday, January 31, 2024 11:36:26 AM

[Some people who received this message don't often get email from bevbraugjohnson@hotmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Our family is encouraging the city council to honor the 2022 special election to reject the sprawling development proposed for the Redtail Ridge property. If development is to take place in that area, it needs to be a compact one south of Disc Drive that definitely considers the traffic impact for everyone living in this area… that being said, we are still reeling from the Marshall fire and moving forward with the development in the proposed area, that that is right next-door to a part of our city that was literally torched and destroyed and still continues to rebuild and probably won't be totally rebuilt for the next five years…with respect please please give us all a break!
Sent from my iPhone

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From: Sal Skog
To: City Council
Subject: Redtail Ridge
Date: Wednesday, January 31, 2024 3:02:19 PM

Some people who received this message don't often get email from sal.celebratetrans@gmail.com. Learn why this is important

Dear Council Members,

I would like to remind you that since we live in a democracy, city council members need to listen to their constituents. You guys are not kings and queens; you are on the council to meet *our* needs! The citizens that you represent voted down the sprawling Redtail Ridge development. Are you listening, or do you intend to tune us out and make decisions that suit your own desires?

While it's true that the developers only lost by 5%, one must consider that they outspent their opposition 32 to 1. Had the citizens of Louisville outspent the developers 32 to 1, I can assure you that the citizens would have won by a margin far, far greater than 5%.

So please, make us proud by listening to us and sending this current plan back to the drawing board.

Sincerely,
Sally Bruggeman
Louisville

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From: Stephane G. B.
To: City Council
Subject: please approve redtail ridge
Date: Wednesday, January 31, 2024 5:01:21 PM

Some people who received this message don't often get email from sbelmon@gmail.com. Learn why this is important

I'll cut to the chase: We need this development in Louisville. We need Avista, we need the revenues, etc. etc. The plan is sound.

Right now, it's just empty land. We can't have a few folks next to it, who just want it *never developed,* to block it. And if we keep dragging our feet, the owners will eventually sue the city. We'll spend good money on lawyers, we'll lose, and in the end we'll have less control than we have now, when they're still playing ball.

Just approve it already. Thank you.

--
Stephane Belmon <sbelmon@gmail.com>
724 Peach Ct, Louisville, CO 80027
858 232 6461

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From: Adam
To: City Council
Subject: Redtail Ridge Development plan - PLEASE SAY NO!
Date: Wednesday, January 31, 2024 7:45:39 PM

Some people who received this message don't often get email from adamcherevka@gmail.com. Learn why this is important

Hello,

I would like to voice my concerns for the proposed development plan in the Louisville "Redtail" area formerly known as the Storagetek campus. I do not support the proposed plan and have major concerns over the impact that it will have on our community. For me specifically I am very concerned about:

1. Traffic will stress an already inadequate road system in the area that will cause delays, noise, aggression, pollution.

2. Wildlife will be negatively impacted by development on previously untouched lands and will bifurcate some of their contiguous habitats that will further reduce their numbers and health.

3. Community character and the Environment will be impacted by additional congestion, and worsened sight lines from tall buildings. Not to mention we have plenty of unused/vacant land west of McCaslin.

I URGE you to prevent these massive negative impacts to our community and require that any future plans include compacted development, with minimal environmental/habitat impact, and budget to improve adjacent infrastructure at developer cost. Additionally, Please include any future plans under special election vote process such that the people of the community can determine their own fate.

Thanks and Regards,
Adam Cherevka
824 Pinehurst Ct.
Louisville, CO

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From: KentRNB
To: City Council
Subject: Please reject the Redtail Ridge development proposal
Date: Wednesday, January 31, 2024 7:50:23 PM

Some people who received this message don't often get email from kentrnb@gmail.com. Learn why this is important

Hi,

In reviewing the new Redtail Ridge proposal, please respect the Louisville special election vote of the people of Louisville. We are asking for a development that is compact and that fits with our town's character. We are worried about sprawl, traffic, not enough funding for upgrades for streets and freeways by the developers, and are voting for support of wildlife by less habitat destruction.

Please send the proposed plan back to the drawing board.
Thanks,

Ravitte Kentwortz
857 W Mulberry St, Louisville, CO

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From: Gregory Maring
To: City Council
Subject: RTR Project
Date: Wednesday, January 31, 2024 8:47:07 PM

Some people who received this message don't often get email from gregmaring@yahoo.com. Learn why this is important

Dear Louisville City Council members,

I'm writing to you as both a long term resident of Louisville and former business owner in downtown. I became increasingly frustrated by the anti-business over the last few years and the "NO" vote on the previous iteration of RTR was the final straw in my decision to halt investment in the city. However, I'm hopeful that our mayor and city council can now send a message to the community, that the city is now "Open for Business".

I believe this project embodies our community's goals for sustainable development, open space and public lands, and economic revitalization. It is imperative that we keep Avista, the city's largest employer in town. Finding a permanent solution for Campus drive for the students, parents, and faculty at Monarch is also vital. Having a world class life science campus that adds open space, tax revenue, and workers/companies that support or local businesses is a huge plus.

Many of you were elected under the mandate of curbing declining economic vitality in our town. I can't think of a better way to send a message that you support the business community than supporting this project.

Cheers,

Gregory Maring

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From: Jeffrey Gass
To: City Council
Subject: Red Tail Rdge Support
Date: Friday, February 2, 2024 7:10:12 AM

I am writing o you today in support of the Red Tail Ridge project.

After many delays and changes to the prospective development, this project should move forward. The owners of the land, have listened to all residents, made changes rightly or wrongly, that were asked for,

The community at large has been concerned about increased property taxes, so what better way to help with this concern then by building a development for our community that will generate more property taxes than a vacant piece of land. Since our city relies on sale tax revenue for a large portion of our budget, new employers bring in more employees, who will support our local businesses and bring in more sales tax revenue to Louisville. The business community along McCaslin Road and our great downtown I would think would, would not turn away new potential customers at lunch time or after work. I am sure our School District and County would not mind the extra revenue either, which should help our residential property tax rates, also.

Moving the hospital to this property, closer to the Highway 36 Interchange, gives Avisita a more convenient location for all, plus how exciting it would be for our community to have a new and modern facility. As an aside, looking to the future, the potential use for the land at the existing site of the hospital, gives Louisville the opportunity to plan for usage at that sight, from affordable housing, senior housing to help both young and old, stay or move to Louisville.

Not sure what the exact numbers would be, but traffic concerns in my opinion would not have a major impact. Most employees will exit to the south, for the quickest way to get onto Highway 36 or the toll road. I do not see a big influx of traffic on Dillion Road, but you can ask for a widening on 88th Street to the Dillion Road Intersection if you feel that is a concern.

Last but not least on traffic, is the exciting new road leading out from Monarch High School to 96th Street to the East. This will alleviate traffic along 88th Street, and employees coming and going to work will not interfere with local traffic in the City of Louisville. The Marshall Fire is unfortunately a great reminder for the need of this egress. What would have been the panic of parents and community, if school was in session that day, since we all know there is only one way in and out from the K-12 complex now.

The city has stalled for so many years on this property, time and new businesses have passed us by. We need to think of Louisville's future, this project with a new modern state of the art hospital and life sciences businesses really helps lead Louisville to the future and with this new revenue source, help maintain and improve the charm of our historic downtown.

Jeffrey Gass
784 Meadowlark Lane
Louisville, CO 80027
914-656-7918

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From: MaureenLawry
To: City Council
Subject: Redtail Ridge
Date: Thursday, February 1, 2024 7:12:32 PM

Some people who received this message don't often get email from maureenlawry303@gmail.com. Learn why this is important

I am deeply concerned that the Democratic process is being ignored and the development of this special piece of property is being pushed through. The size of the project is inappropriate for the site .it will destroy habitat for wildlife and add to the already congested traffic. Please send this issue back to the drawing board!!
Sincerely,
Maureen Lawry

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From: ME Hastings
To: City Council
Subject: Avista Hospital
Date: Thursday, February 1, 2024 6:20:49 PM

Some people who received this message don't often get email from mehastings429@gmail.com. Learn why this is important

Hello,

Thank you for your time and effort helping our community. I wanted to ask you to please do whatever it takes to get the Avista Hospital expansion to go through. Louisville needs a great hospital and Avista is it. Please vote for the expansion so we can keep a hospital in our town.

Regarding Red Tail Ridge-we need a development in the old Storage Tek space, but city codes should not be violated and therefore grading the land should not be allowed-let the developer work with the land as it is. As far as trying to stop a development from going in there-I believe that is wrong-we need development and it is the perfect place for it. Louisville needs to get with the times and stop the obstruction of this city's growth.

Thank you,

Mary Hastings
Louisville Resident

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From: Danielle Zamudio
To: City Council
Subject: Avista's Proposed New Location
Date: Thursday, February 1, 2024 4:57:53 PM

[Some people who received this message don't often get email from zamudiocare@gmail.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

To whom it may concern:

I am writing to you in favor of Avista moving to the former StorageTek location. I have had many wonderful experiences at Avista. To expand into a larger space would have a tremendous impact on Louisville and the surrounding communities so they can expand the exceptional work they do there.

Danielle Zamudio

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From: tamar krantz
To: City Council
Subject: Do not accept a "worse plan" for RTR
Date: Thursday, February 1, 2024 12:10:09 PM

Dear City council members,

There seems to be a misunderstanding (arising again on social media) that we are stuck with a “worse plan” because the developer has the right to do anything they want under the vague and antiquated 2010 ConocoPhillips GDP.

First, I hope you will confirm during your hearing on Tuesday that you understand that the 2010 GDP is not a vested rights agreement. As you know, the 2010 GDP is legally tied to the PCZD agreement that is on page 664/969 of the December 5, 2023 city council meeting packet. This is clarified under section 4.3, “Remedies and Vested Rights”, which states:

> “The Owner acknowledges that certain actions, such as the review of subdivision plats and site specific development plans are matters of quasi-judicial discretion, and ***no promises or assurances of favorable exercise of such discretion have been made to or relied upon by the Owner***. The Owner further acknowledges that this Agreement ***does not constitute a vested rights agreement***. (emphasis mine)

Second, I hope that you will also confirm your understanding during the hearing on Tuesday that you have the discretion to ensure that this is not a “worse plan”. As stated in the agreement, you can require a plan that protects residents from economic burdens, traffic burdens, and provides adequate open space buffers and wildlife protection.

You can do that by rejecting this preliminary subdivision plat under the code as recommended by the planning commission.

Thanks for considering this.

Tamar Krantz
Louisville

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From: Charles Sisk
To: City Council
Subject: Thank you for your service and Red Tail Ridge
Date: Thursday, February 1, 2024 11:42:10 AM

Some people who received this message don't often get email from charlesisk1945@gmail.com. Learn why this is important

Good Morning Mayor Leh and Council Members

This email will be intentionally brief as you have been and will be bombarded with emails from our many fine citizens on this matter.

On February 6th, I urge you to approve the Red Tail Ridge application, which has been contentious and divisive for our community for many years. Since STK abandoned the campus and was the City of Louisville's largest employer, there has been this enticing and alluring property. Many people have tried to find an alternative(s) for this magnificent property. I am sorry that we weren't able to bring in the ConocoPhillips a decade ago, but time hasn't changed the importance of the property and truly has caused bitter alienations within our beloved community.

BUT the time has come for our leaders (YOU) to make that difficult decision and while there are a number of positives for Louisville and yes some negatives. My primary concern throughout has been to retain Avista Hospital in Louisville, which as you know is our largest employer. The newest site plan allows for transportation egress/ingress for patients/staff and I understand will be the state of the art in not only meeting current energy codes, but exceeding those. Please allow this wonderful community institution to find a new home in Louisville, where they belong. It is more critical now than ever with the hospitals in competition and changing ownerships.

Thank you again for making a difference in Louisville

Respectfully
Chuck Sisk
303-956-8336

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From: Mary Ann Littler
To: City Council
Subject: RED TAIL RIDGE
Date: Thursday, February 1, 2024 11:11:24 AM

Some people who received this message don't often get email from mlittler16@gmail.com. Learn why this is important

Dear members of the Louisville City Council:

I have been a board of directors member at AdventHealth Avista since 2022, and am writing in strong support of City Council approving the Redtail Ridge development plat. Your approval will make it possible for Avista to leave its current land-locked position in a 30+ year old building, and move to a new, state-of-the-art facility in a more convenient location.

As a member of the AdventHealth Avista Board, I am writing to share my heartfelt thoughts on our proposed move to Redtail Ridge. This hospital is more than a hospital for me and my family; it's the community's hospital. We are so proud that more than 60,000 babies have been born at our hospital, and this move will only strengthen that bond.

Moving to Redtail Ridge means we can continue to provide exceptional care in a facility designed for the future. It's not just about a new building; it's about enhancing our ability to serve Louisville with advanced medical care. The location near mass transit makes healthcare more accessible to a wider community, ensuring that we reach those who need us most.

This move is an opportunity for growth, not just for Avista but for Louisville as a whole. As we expand our services and improve our facilities, we also contribute to the local economy and community well-being.

I hope you will consider the positive impact our move to Redtail Ridge will have on both our hospital and the Louisville community we serve.

Sincerely,

Mary Ann Littler
Advent Health Avista Board of Directors
CEO
Peak to Peak Business Strategies
303-748-3783
mlittler16@gmail.com

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From: Chris Schreck
To: City Council
Subject: Approve Redtail for Avista
Date: Thursday, February 1, 2024 10:19:54 AM

Some people who received this message don't often get email from chrislucyschreck@gmail.com. Learn why this is important

Dear Louisville Council Members:

I have lived in Louisville since 1998 and have worked at AdventHealth Avista since 1999, where I am still employed part-time during semi-retirement. My husband and I raised our children in Louisville, where they attended Monarch campus schools. Today they are both doctors and continue to frequently visit and stay in contact with so many of their childhood friends. The small-town close-knit vibe of Louisville has brought our family much joy over the years, and this same energy absolutely pervades Avista Hospital. AHA staff are among the warmest, friendliest, and indeed competent healthcare providers that I have observed over my lifetime.

Today I write as a Louisville citizen to ask for your support for the Redtail Ridge plat because it will enable a gem of our city – Avista Hospital – to move into a newer, more modern facility. Over 25 years, I have seen countless community members stream through Avista's doors for everything from routine screens and imaging to treatment for serious illnesses. Tens of thousands of babies have been born inside its walls. Folks travel from out-of-state to avail themselves of Avista's orthopedic surgeons and peri-operative care.

We lost our home in the Marshall fire and recently moved back into our rebuilt home. Today I volunteer for Avista beyond my one-day- per-week regularly scheduled shift, because I enjoy giving back to Louisville and surrounding communities.

The new location proposed for Avista along Northwest Parkway will draw from an additional 100,000 residents in Boulder County that live within 15 minutes of the hospital. Modern infrastructure and advanced medical services at Redtail Ridge will enhance already great healthcare in our region.

Redtail Ridge also offers multiple access points to the hospital instead of the current single access point. This improved accessibility is safer during disasters and also offers EMS easier daily access. The new site can further be woven into RTD routes that would serve to decrease car traffic in the area.

Great schools and hospitals add value to communities worldwide. Avista in Louisville is no exception. Building a new, modernized facility will solidify Avista's future in our community, offering nearby residents safe and continued access to wonderful healthcare.

Kind regards,

Chris Schreck

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From: Ravi Kumar
To: City Council
Subject: Please DO NOT approve the RTR subdivision plat.
Date: Thursday, February 1, 2024 7:55:42 AM

Some people who received this message don't often get email from rkumar.ravi@gmail.com. Learn why this is important

Dear council,

For all the known documented reasons, hereby I request you to not approved RTR subdivision plat

--
Regards
Ravi

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From: Gina Lesch
To: City Council
Subject: Redtail Ridge
Date: Friday, February 2, 2024 9:22:29 AM

> Some people who received this message don't often get email from ginat1@comcast.net. Learn why this is important

Dear Members of the Louisville City Council,

My name is Gina Lesch. I am a real estate professional and a member of the AdventHealth Avista Foundation. I also lived in the 80027 for 18 years and continue to do a lot of work in the area. Our sister office, RE/MAX Elevate is located in Louisville and is the #1 office serving Louisville.

I want to encourage your support for the Redtail Ridge project. I strongly support the project and think that having a new, state-of-the-art hospital in the Louisville area is such a wonderful benefit to the community. It will bring even better care to the members of the community, but the support of quality jobs helps and a new hospital will help maintain Louisville's status as an ideal community to live in, not only in the state, but nationally.

The current building and it's locked in location is old and no longer works for a growing area. The planned state-of-the-art hospital at Redtail Ridge will be a driving force to the area and help maintain property values. It will also provide new areas of care so locals don't have to go outside of their community. I know I was so pleased to give birth at Avista because it was in my own community and is one of the top birthing hospitals in the state. Over the years they have continued to improve on premature baby care so families can stay right here in Louisville vs going to Denver, making a stressful time for the families a bit easier.

Louisville has lost so many major businesses, Lowe's and Kohl's to name a few. I think it is important for Louisville to support businesses, particularly one as important to the community as a local hospital, to keep them in our community and all the benefits they provide to all its citizens.

Thank you for your time,

Gina Lesch

Gina Lesch, CLHMS, CNE, Ninja Trained, Broker Associate
303.554.6106 (Direct)
303.579.6858 (Cell)
--
RE/MAX of Boulder
2425 Canyon Blvd. #110
Boulder, CO 80302
--
www.RealEstateWithGina.com
App.BoulderCo.com/GinaLesch

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From: rtist456@yahoo.com
To: City Council
Cc: preservelouisville@gmail.com
Subject: NO TO REDTAIL RIDGE - We want a compact development south of Disk Drive!
Date: Friday, February 2, 2024 9:12:00 AM

Some people who received this message don't often get email from rtist456@yahoo.com. Learn why this is important

To Louisville City Council - No to the Redtail Ridge development plan! We want a compact development south of Disk Drive! Why did we have a special election if it doesn't mean anything? Stop putting the residents of Louisville through the same nightmare on repeat! No means no!

We do want:
-Respect for the special election vote and democratic process
-A complete application that meets city code
-A compact development south of Disk Drive
-Expansion of Avista Hospital should they choose
-Small town character

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City Council

February 6, 202

Redtail Ridge

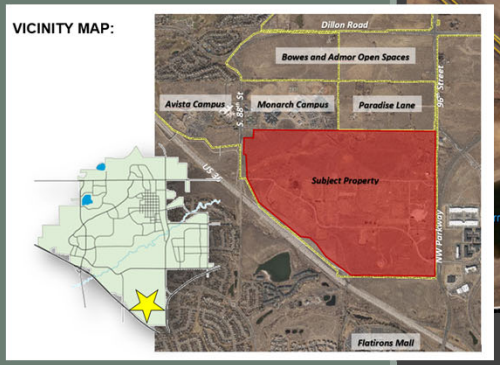
Resolution No. 80, Series 2023, Recommending Approving a Preliminary Subdivision Plat for Redtail Ridge Filing No. 1

Public Notice Certification:

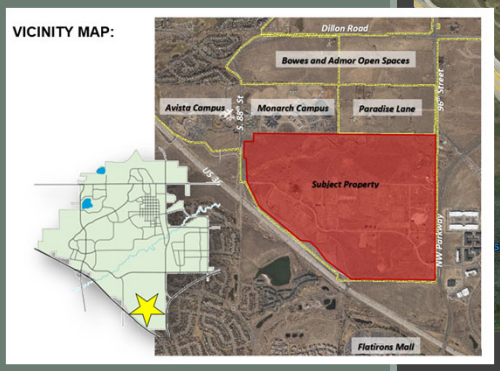
Published in the Boulder Daily Camera – Sunday, November 19, 2023
Posted at City Facilities, Property Posted and Mailed Notice – Monday, November 20, 2023
Continued from December 5, 2023

Redtail Ridge

Background

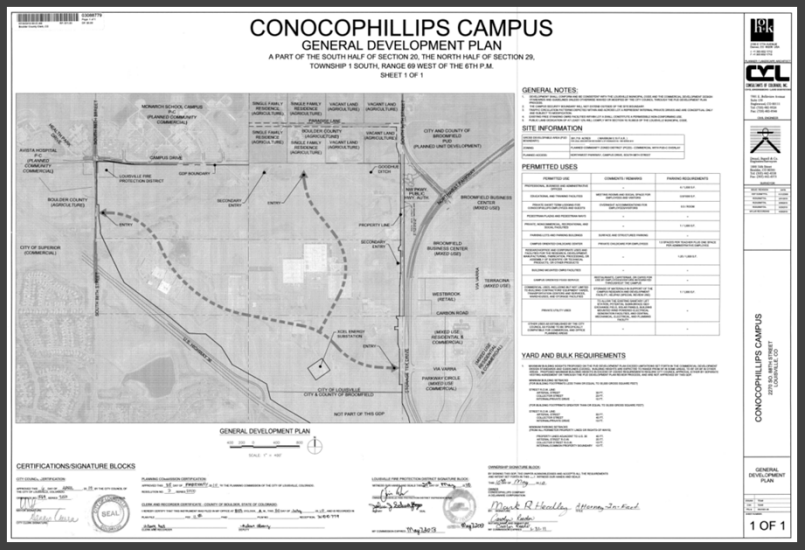


Redtail Ridge
Background



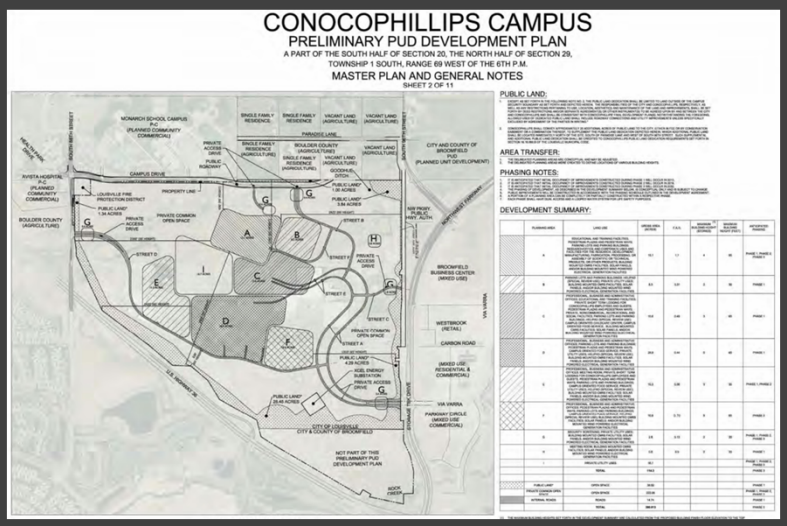
Redtail Ridge
Background

- 2010: Approval of ConocoPhillips Campus GDP; Preliminary PUD and Plat
- GDP and Zoning Agreement Govern; Preliminary PUD and Plat are Expired


CONOCOPHILLIPS CAMPUS
GENERAL DEVELOPMENT PLAN
A PART OF THE SOUTH HALF OF SECTION 20, THE NORTH HALF OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 69 WEST OF THE 6TH P.M.
SHEET 1 OF 1
GENERAL NOTES:
SITE INFORMATION
PERMITTED USES
YARD AND BULK REQUIREMENTS
GENERAL DEVELOPMENT PLAN
CERTIFICATIONS/SIGNATURE BLOCKS
1 OF 1

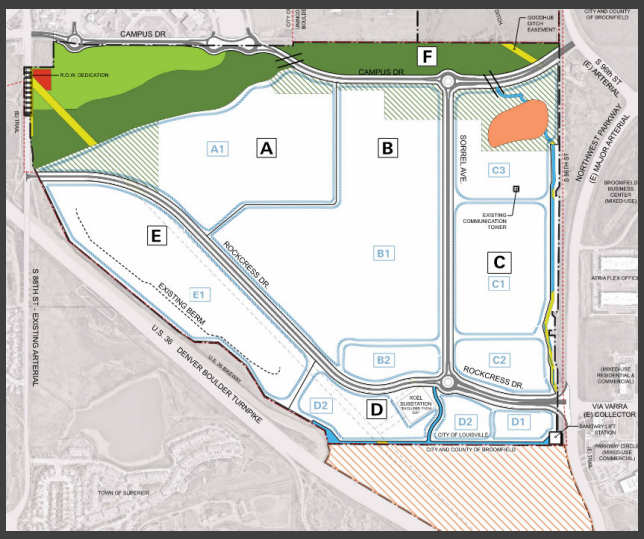
Redtail Ridge
Background

- 2010: Approval of ConocoPhillips Campus GDP; Preliminary PUD and Plat
- GDP and Zoning Agreement Govern; Preliminary PUD and Plat are Expired



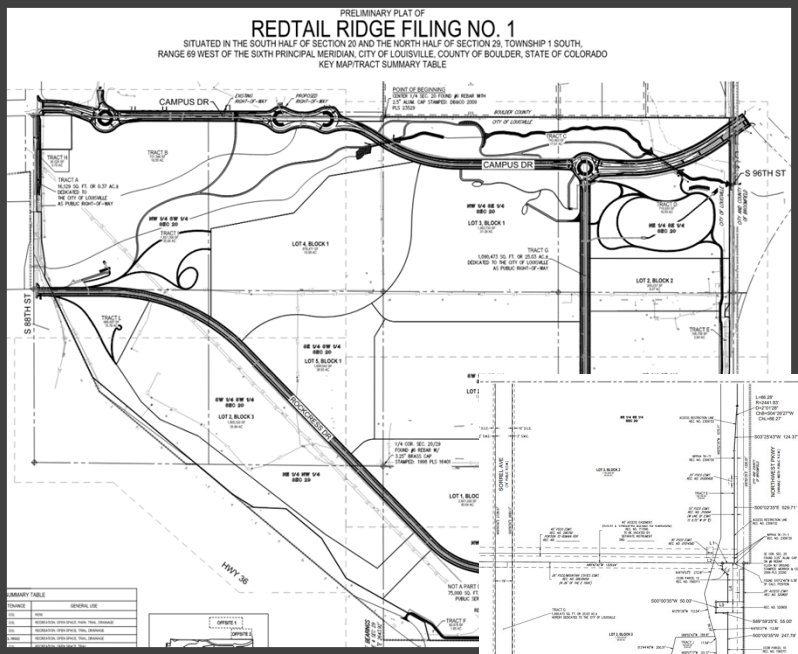
Redtail Ridge
Background

- 2021: Redtail Ridge General Development Plan; 3M Sq. Ft. Development Cap
- 2021: Metro District Service Plan Approval



Subdivision Plat

- Establishes Lots, Blocks and Tracts of Land for Development
- Establishes Rights of Way and Easements
- Includes Public Purpose Land Dedications
- Subdivision Improvement Agreement for installation of public infrastructure (roads, water, sewer)
- Final Plat Will Include Subdivision Improvement Agreement (SIA) and Metro District Service Plan Amendment



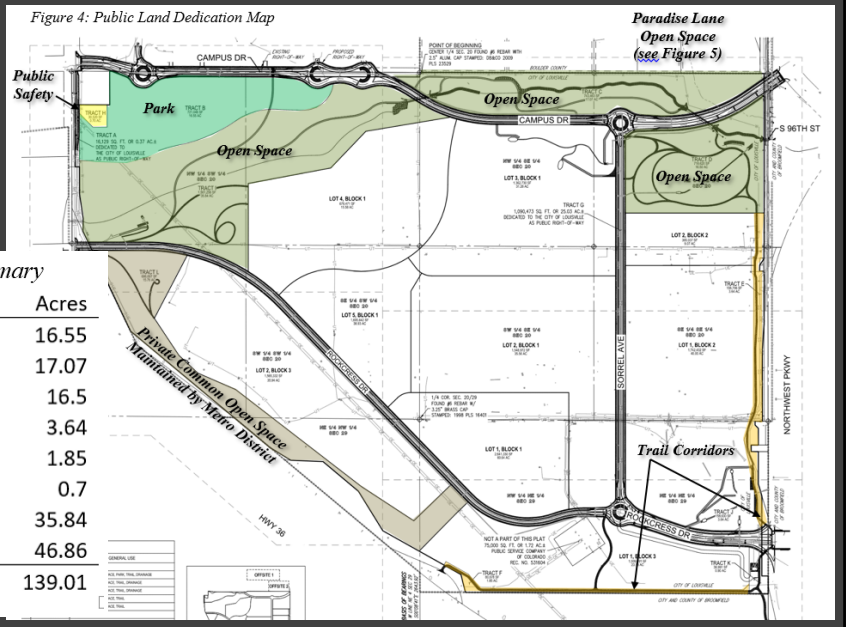
Public Land Dedication

- Code Requires Min. 12%
- 81 Ac of 390 Ac Exempt
- Minimum Required = 37.1 Ac
- Proposing 139 Ac
- OSAB/PPLAB Support

Figure 3: Public Land Dedication Summary

	Purpose	Acres
Tract B	Park	16.55
Tract C	Open Space	17.07
Tract D	Open Space	16.5
Tract E	Trail	3.64
Tract F	Trail	1.85
Tract H	Public Safety	0.7
Tract I	Open Space	35.84
Paradise Ln	Open Space	46.86
Grant Total		139.01

Figure 4: Public Land Dedication Map



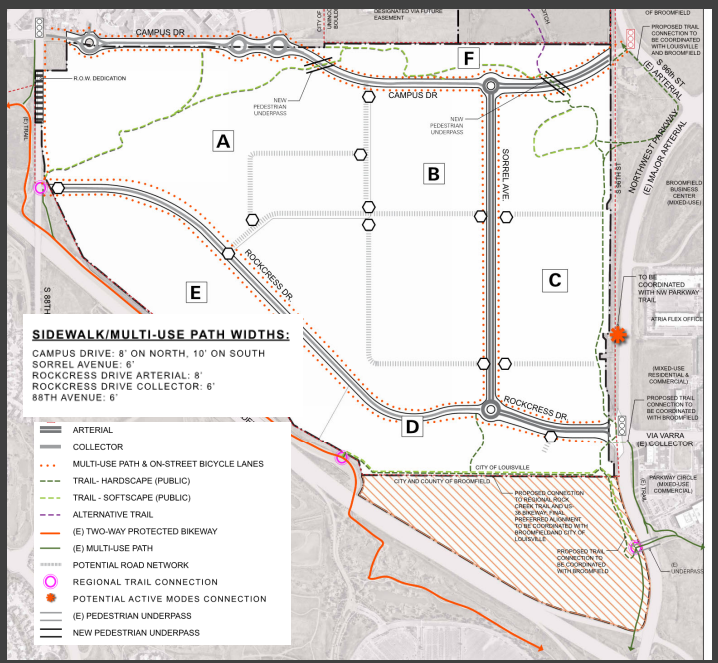
Public Land Dedication

- Code Requires Min. 12%
- 80 Ac of 390 Ac Exempt
- Minimum Required = 37.1 Ac
- Proposing 123 Ac
- OSAB/PPLAB Support

Figure 5: Paradise Lane Public Land Dedication

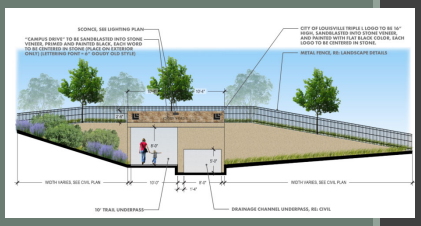
Road & Trail Plan

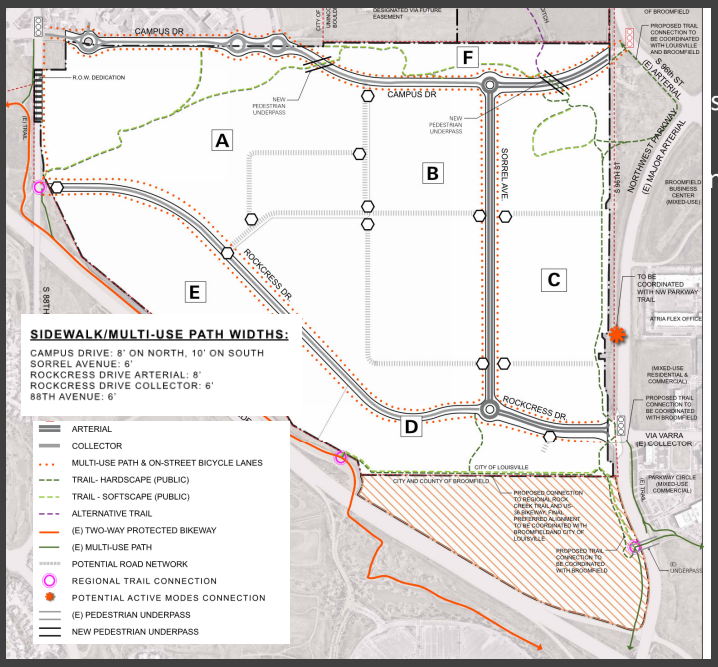
- Extend Campus to 96th St. with Roundabout Access to Schools
- Rockcress Drive (Former Tape Drive), Combination of 4-Lane Arterial and 2-Lane Collector
- Sorrel Avenue, North-South 4-Lane Arterial Connecting Campus Drive to Rockcress Drive



Road & Trail Plan

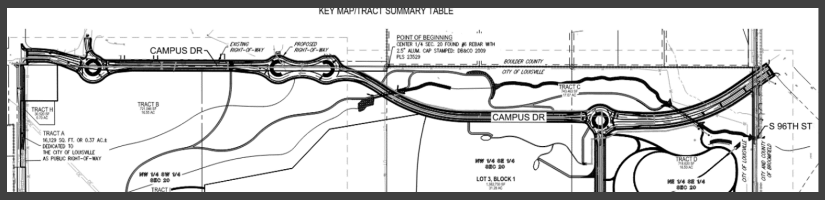
- All Streets Include Multi-Use Paths and On-Street Buffered Bike Lanes
- Soft and Hard Surface Trail Networks
- US 36 Bikeway to Rock Creek Trail Connection
- Campus Drive Underpasses





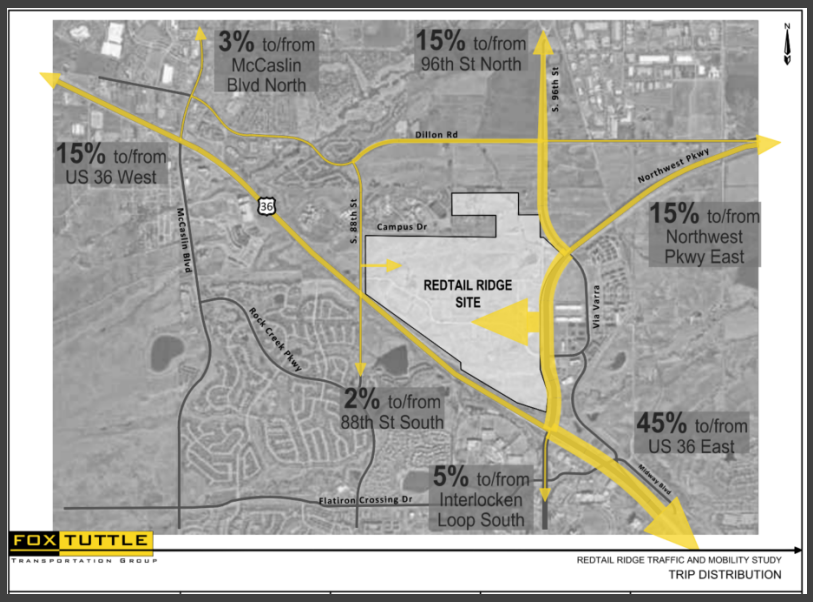
Campus Drive Alignment

- BVSD Support
- Proposed Alignment Runs through Portion of NW Parkway Right of Way
- Recommend Conditional Approval of Preliminary Plat Requiring NW Parkway Approval



Traffic Analysis

- 75% of Traffic To/From NW Parkway and US 35
- 21,285 Average Daily Vehicle Trips at Full Build Out
- Outlines Road Capacity Improvements to Accommodate Traffic and Maintain Minimum Levels of Service (LOS)
- Specific Improvements Not Identified for NW Parkway/US 36 Interchange – Lack of Clarity on NW Parkway Expansion Plans



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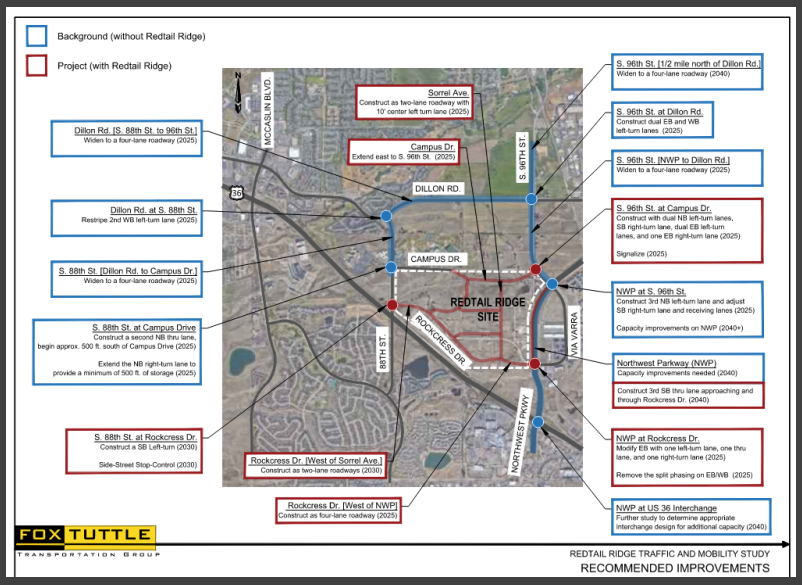
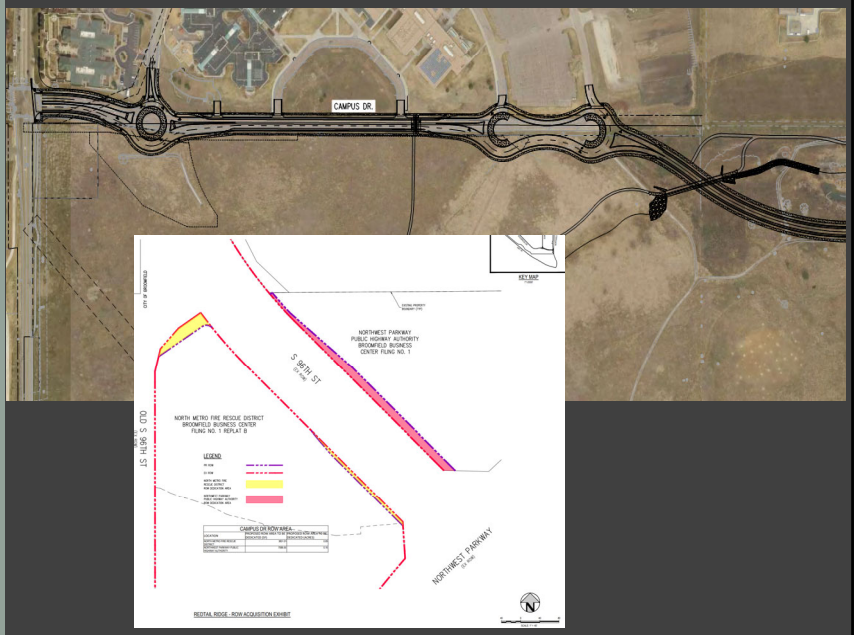


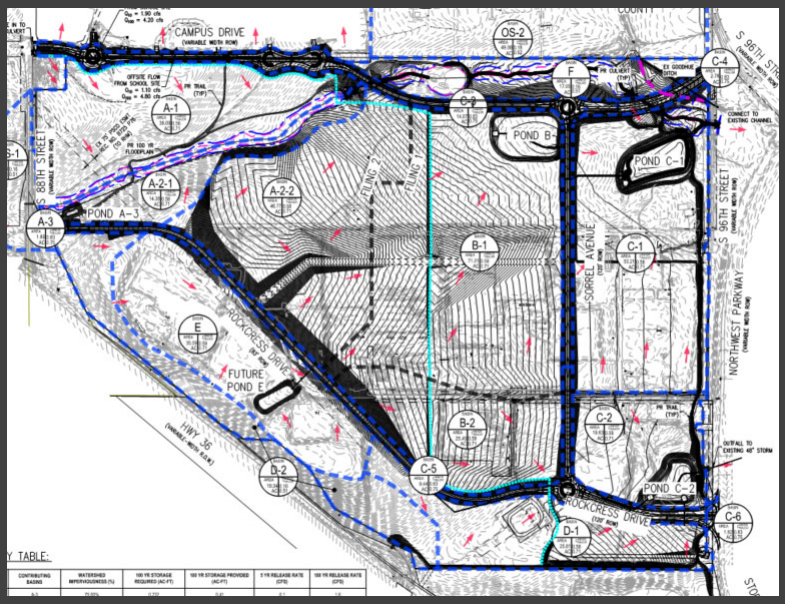
ROW Requirements

- NW Parkway Authority
- North Metro Fire Rescue
- Boulder Valley School District



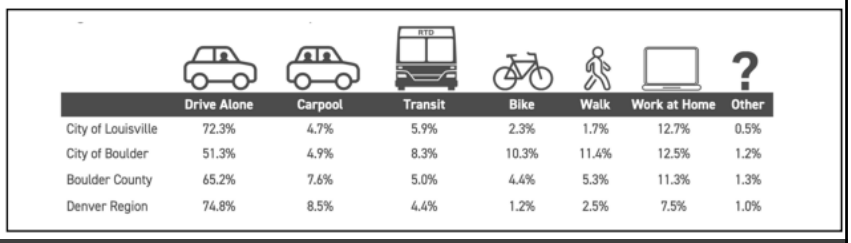
Grading/Drainage and Utilities

- Final Drainage Report Provided
- Six Regional Detention Ponds
- New Storm Sewer, Waste Water and Potable Water Lines
- New Sewer Lift Station
- Waste Water Treatment Plant will Require Expansion at Future Stages of Development



Transportation Demand Management

- Required by 2010 Zoning Agreement
- Staff Recommends Updated Plan with Funding by Metro District
- E.g. Programs: EcoPasses; Hire TDM Coordinator; Carpool/Vanpool Program; Local Shuttles to RTD Stations; Bicycle Commute Amenities



	Drive Alone	Carpool	Transit	Bike	Walk	Work at Home	Other
City of Louisville	72.3%	4.7%	5.9%	2.3%	1.7%	12.7%	0.5%
City of Boulder	51.3%	4.9%	8.3%	10.3%	11.4%	12.5%	1.2%
Boulder County	65.2%	7.6%	5.0%	4.4%	5.3%	11.3%	1.3%
Denver Region	74.8%	8.5%	4.4%	1.2%	2.5%	7.5%	1.0%

Sustainability Commitments

- Can be Assured through Subdivision Improvement Agreement and Planned Unit Development Approvals

Sustainability Commitments

SECTION	#	COMMITMENT	VALIDATION
Community	1	Wayfinding	Fitwel
	2	Crop Share Drop Off	Fitwel
	3	Building Operational Guidelines	Fitwel
	4	Comprehensive Composting	LEED
	5	Emergency Preparedness Plan	Fitwel
	6	Public Art	Fitwel
Energy & Carbon	7	LEED Certification for all buildings	LEED
	8	Idle Reduction	Fitwel
	9	Optimize Energy Performance	LEED
	10	Renewable Energy Production Min. 2.6 MW Solar Garden	LEED
	11	Heat Island Reduction	Fitwel
	12	Advanced Energy Metering	LEED
Site Development & Water	13	Open Space	LEED
	14	Walking Trail	Fitwel
	15	Light Pollution Mitigation	Fitwel
	16	Restorative Garden	Fitwel
	17	Indoor Water Use	LEED
	18	Outdoor Water Use	LEED
Transportation & Mobility	19	Pedestrian Network	Fitwel
	20	Green Vehicles	Fitwel
	21	Safe Street Infrastructure	Fitwel
	22	Transit Access	Fitwel
	23	Bicycle Parking	Fitwel
	24	Universal Accessibility	Fitwel
Health	25	Outdoor Fitness Area	Fitwel
	26	Bike Lanes	Fitwel
	27	Minimum IAQ Performance	LEED
	28	Outdoor Space Amenities	Fitwel
	29	Air Quality Testing	Fitwel
	30	Tobacco and Smoke-Free Outdoor Spaces	Fitwel

Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.12.075 Approval Criteria

1. Whether the plat conforms to all of the requirements of this title;

2. Whether approval of the plat will be consistent with the city's comprehensive plan, applicable zoning requirements, and other applicable federal, state and city laws;

3. Whether the proposed subdivision will promote the purposes set forth in section 16.04.020 of this Code and comply with the standards set forth in chapter 16.16 of this Code and this title.

Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.12.075 Approval Criteria

1. Whether the plat conforms to all of the requirements of this title;

Reviewed by Public Works, Parks, Recreation and Open Space, Police, Fire and Utilities and Referral Agencies. Staff finds the plat conditionally complies with the standards within Title 16, Subdivisions

Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.12.075 Approval Criteria

2. Whether approval of the plat will be consistent with the city's comprehensive plan, applicable zoning requirements, and other applicable federal, state and city laws;

- Part of Phillips 66 Rural District, Includes Policies on Density (0.25 FAR), Limits Height to 3 Stories but Promotes Clustering of Buildings in Exchange for Height, Supports Retail, Office, Industrial and Institutional Uses
- GDP Provides Setback and Parking Standards and Requires CDDSG Compliance, Applied at PUD Review Stage

Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.12.075 Approval Criteria

3. Whether the proposed subdivision will promote the purposes set forth in section 16.04.020 of this Code and comply with the standards set forth in chapter 16.16 of this Code and this title.

- Section 16.04.020 Includes 19 Specific Purpose Statements
- Chapter 16.16 Provides Subdivision Design Standards
  - General Design and Construction
  - Site Considerations
  - Streets, Alleys and Easements
  - Blocks
  - Lots
  - Public Sites and Dedications

Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.16.060 – Public Sites and Dedications

- the size of the development and its adequacy for accommodating a suitable public use site;
- the community facility aspects of the comprehensive development plan and the school district's master plan;
- existing parks and other public uses in the area;
- the topography, geology, and location of land in the subdivision available for dedication;
- the needs of the people in the area;
- and any other appropriate factors.

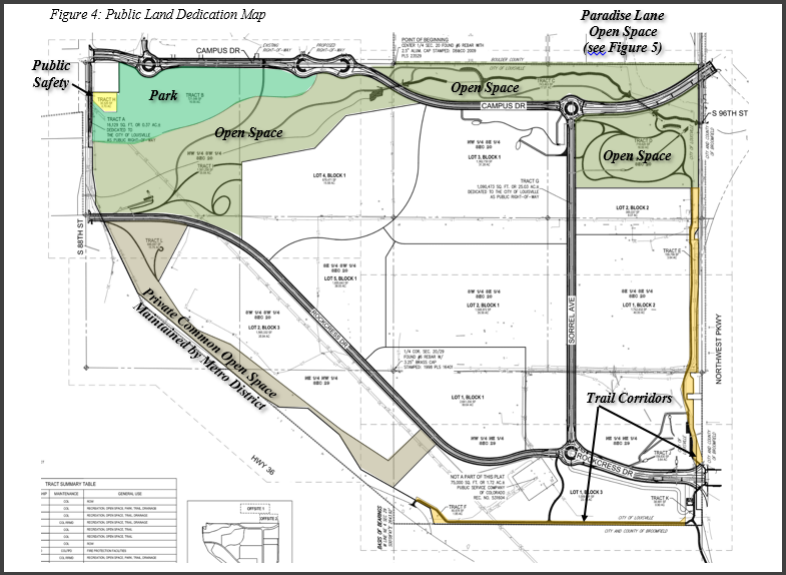
Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.16.060 – Public Sites and Dedications

- The size of dedication set forth in this section is designed and intended to reasonably relate to the needs created or contributed to by subdivision development within the city.

Redtail Ridge
Preliminary Plat Review

LMC Sec. 16.16.060 – Public Sites and Dedications



Redtail Ridge
Preliminary Plat Review

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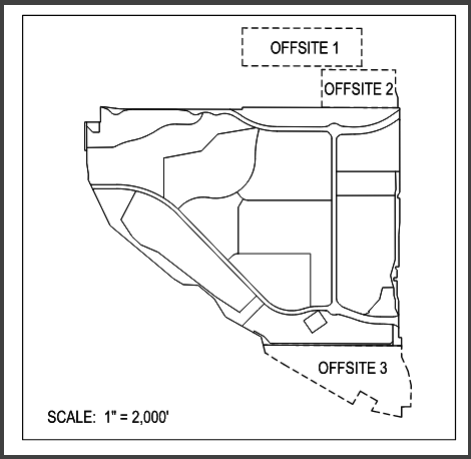

Redtail Ridge
Preliminary Plat Review

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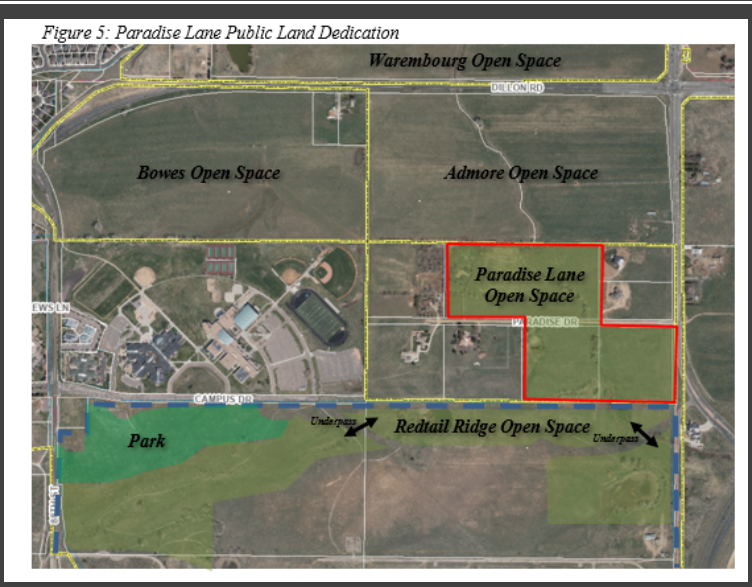
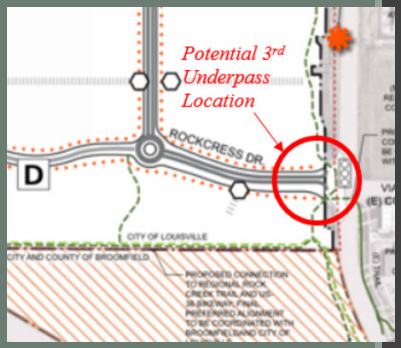


Redtail Ridge



Parks and Public Landscaping Advisory Board (PPLAB) Review

- Reviewed on May 5, 2022 – Recommend Approval

Open Space Advisory Board (OSAB) Review

- Reviewed on May 11, 2022 and June 8, 2022 – Recommend Approval with Conditions
  - Legal Commitment to Rehabilitate and Dedicate Paradise Lane Properties
  - Follow City Standards for Underpass Design
  - OSAB Participation in PUD Review Process
  - Consider 3rd Underpass at Rockress Drive/NW Parkway

Redtail Ridge
Preliminary Plat Review

Planning Commission

- Reviewed on Aug. 11, 2002; Sept. 8 2022; Sept. 22, 2022; Oct. 13, .2022; Nov. 10, 2022; Dec. 8, 2022
- Voted 3-2 to Recommend Denial

Findings:
1. LMC Sec. 16.16.010.D. & E. Preservation of Natural Features
2. LMC Sec. 16.04.020.K. Traffic Congestion
3. LMC Sec. 16.16.040 Block Length
4. LMC Sec. 16.16.020B. Natural Drainage Areas
5. Non Compliance With ConocoPhillips GDP

Redtail Ridge
Preliminary Plat Review

Staff Recommendation

Staff recommends approval with the following conditions:
- Prior to the City Council hearing on the final plat, the applicant shall provide final approval from the NW Parkway Authority
- Prior to the City Council hearing on the final plat, the applicant shall address all Public Works comments on the Traffic and Mobility Study