

Redtail Ridge

Traffic and Mobility Study



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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 first phase of the proposed development is anticipated to be completed in Year 2025 and includes approximately 414,000 square feet of industrial park and 287,000 square feet of general office building space. The full build out of the project includes a total of 15,000 square feet of general retail space, 1,380,000 square feet of industrial park, and 1,720,000 square feet of general office building space. 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 20,104 daily, 1,923 AM peak hour, and 2,010 PM peak hour trips.

Traffic Changes Since Storage Tek Closure

While the project area is currently vacant, this site was previously occupied by Storage Tek. Many changes have taken place in the Redtail Ridge project area since Storage Tek was an active campus in the late 1990's. New single-family residential neighborhoods and a mixed-use town center have been built in Superior; in Broomfield, 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 have been constructed; and the City of Louisville has added new uses to the Colorado Technology Center. Over this timeline the number of open enrollment students attending Monarch K8 and Monarch High School, who are not provided school bus services, has remained consistent. This growth has utilized the vehicle traffic capacity previously used by traffic generated by Storage Tek on the S. 88th Street, Dillon Road, and S.96th Street corridors.

Project Area Trip Generation Comparison

After Storage Tek vacated the project area, 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. ConocoPhillips completed a traffic study as part of its development proposal. The project was approved by the City of Louisville in Year 2010; however, ConocoPhillips did not move forward with the project. **Table E.1** provides a comparison of the trip generation estimates for the full buildout of the Redtail Ridge development with the former Storage Tek site and the formerly approved ConocoPhillips development.

Table E.1. Trip Generation Comparison

Development	Trip Generation Estimates		
	Daily	AM Peak Hour	PM Peak Hour
Storage Tek	12,400	1,600	1,400
ConocoPhillips	17,500	2,660	2,455
Redtail Ridge	20,104	1,923	2,010
<i>Redtail % Diff. to Storage Tek</i>	62%	20%	44%
<i>Redtail % Diff. to ConocoPhillips</i>	15%	-28%	-18%

Comparing the estimated peak hour trips indicates the current proposal generates 20 to 44 percent more trips than Storage Tek; and 18 to 28 percent fewer trips compared to the formally approved ConocoPhillips development. The AM and PM peak hour trips were used for comparison since detailed traffic operation analysis is based on the peak hours. While it is noted that the currently proposed mix of office and industrial uses on the Redtail site may generate more daily trips than the previously approved Conoco Phillips project, the current proposal of more diverse office and industrial uses will likely have trips more widely dispersed over the course of the day rather than concentrated in the AM and PM peak commuting hours as was the case with the single corporate user in the Conoco Phillips project. The Redtail project has also utilized the most current Institute of Transportation Engineers trip generation rates which are updated over time. These factors account for why the Redtail Project may have fewer peak hour trips than the previous proposal. While daily traffic volumes provide planning level thresholds for roadway capacities, improvements are recommended based on the peak hour intersection capacity analysis.

Current Study Area Traffic and Safety Conditions

Current conditions have been evaluated based on traffic counts collected during August of 2019, while schools were in session during pre-COVID19 conditions. The Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections are currently operating at LOS E or worse during the AM peak hour. Both intersections are heavily influenced by traffic generated by the Monarch school campus. Queues on S. 88th Street from Campus Drive were observed to extend to Dillon Road, and westbound left-turn queues on Dillon Road were observed to extend more than 2,500 feet. To address the existing operational issues during the AM peak hour, previous studies have recommended that Campus Drive be extended from where it dead ends 2,200 feet east of S. 88th Street to S. 96th Street to provide an alternative access to the Monarch school campus.

In addition, under existing conditions the Northwest Parkway/S. 96th Street/Via Varra intersection is approaching capacity in the AM peak and the Dillon Road/S. 96th Street intersection is approaching capacity in the PM peak hour. Both Dillon Road and S. 96th Street are currently two-lane roadways, but the existing daily traffic volumes on both roadways are pushing the planning level daily traffic volume thresholds that are typically assumed for a two-lane roadway [note that

traffic engineers generally consider 18,000 to 20,000 vehicles per day to be the daily capacity of a 2-lane roadway]. Dillon Road and S. 96th Street are two-lane roadways but expand to provide two through lanes in all directions at the Dillon Road/S. 96th Street intersection. While this increases the capacity through the intersection, this also results in poor lane utilization and occasionally some inefficiencies when vehicles exit the intersection and merge back down to one-lane.

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 arterial intersections near the Redtail Ridge project were identified as high crash locations, including the Dillon Road/S. 88th Street, Dillon Road/S. 96th Street, S. 88th Street/Campus Drive, and Northwest Parkway/S. 96th Street/Via Varra intersections. Also, three 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.

Near-Term Improvements

To address the expected issues at the study intersections, the improvements listed below are recommended to accommodate the project development anticipated to be completed by Year 2025. In addition to safety and improving traffic operations, these improvements are also designed to reduce crashes and improve operations for the Monarch school campus.

- Extend Campus Drive from where it dead ends east of S. 88th Street to S. 96th Street
- S. 88th Street/Campus Drive** extend the northbound right-turn lane
- S. 96th Street/Dillon Road** construct dual eastbound and westbound left-turn lanes on Dillon Road
- Widen S. 96th Street** to a four-lane roadway between Dillon Road and Northwest Parkway and extend the four-lane roadway to the north of the Dillon Road intersection a minimum of one-half mile
- S. 96th Street/Campus Drive (new intersection) construct a southbound right-turn lane, dual eastbound left-turn lanes with an eastbound right-turn lane, dual northbound left-turn lanes, and provide three 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/S. 96th Street** construct triple northbound left-turn lanes on Northwest Parkway to turn onto northbound S. 96th Street and modify the southbound right-turn lane movement to be controlled on Northwest Parkway.

*** Indicates an improvement that was also recommended under Year 2025 background conditions (without the project).*

Additional improvements beyond which have asterisks above were recommended under Year 2025 background conditions without the project to accommodate anticipated traffic volumes and conditions without the Campus Drive extension project. The Campus Drive extension project is located on the Redtail Ridge property and will only be constructed as part of a development project. The additional improvements needed to accommodate Year 2025 background conditions without the Campus Drive extension are listed below:

- Widen S. 88th Street between Dillon Road and Campus Drive to a four-lane roadway
- Dillon Road/S. 88th Street modify the westbound approach on Dillon Road from one left-turn lane and two through lanes, to dual left-turn lanes and one through lane
- S. 88th Street/Campus Drive construct a second northbound through lane that would begin approximately 500 feet south of Campus Drive

Potential Network Improvements

There are currently multiple ongoing projects that have the potential to affect traffic volumes, traffic patterns, and future transportation improvement assumptions in the study area in the mid- to long-term scenarios. While it is currently unknown if/when these projects will move forward, the projects are important to consider when determining future infrastructure needs for the study area:

Jefferson Parkway: The Level 1 Traffic and Revenue Study for Jefferson Parkway 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 in the study was the “Northwest Parkway Extension”, which includes the Redtail Ridge study area on Northwest Parkway between S. 96th Street/Via Varra and the US 36 interchange. The study noted that Northwest Parkway would be reconstructed to separate toll and local traffic which would include constructing new interchanges and a frontage road system to accommodate local traffic. If the Northwest Parkway Extension project is constructed, the future interchanges and frontage road system would provide additional capacity to the Redtail Ridge study network.

RTD Bus Rapid Transit (BRT): The Northwest Area Mobility Study (NAMS) study identified the S. 96th Street/Highway 42 as one of the six candidate Arterial Bus Rapid Transit 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 (see below).

State Highway 42 (SH 42): The City of Louisville is in the process of securing Denver Regional Council of Governments (DRCOG) funding for an updated study and plan for the SH 42 corridor. The proposed plan will provide design for improvements that address transportation, growth and land development challenges outlined in the DRCOG Metro Vision plan, including: increasing mobility options for individuals without a car or with mobility challenges, reducing traffic congestion, reducing traffic crashes and improving overall safety, and addressing access issues related to population and economic growth and development along this corridor.

Long-Term Improvements

The City of Louisville's TMP recommends building more Great/Complete streets citywide. The Redtail Ridge project team is recommending helping build 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. 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 Streets have been shown to reduce conflicts that lead to crashes.

To accommodate the trips generated by the full buildout of the Redtail Ridge development in Year 2040, the following capacity improvements are expected to be needed:

- Northwest Parkway/US 36 interchange – the South Ramps are expected to be at capacity with Year 2040 background traffic volumes and over capacity with Year 2030 + project traffic volumes. Additional capacity is needed to accommodate the projected traffic volumes with and without the project site trips. The additional capacity will likely require that the bridge be widened. A coordinated study should occur to begin to look at interchange concepts.
- 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. The Northwest Parkway intersections at 96th Street/Via Varra and at Rockcress Drive/Via Varra are anticipated to be near/at capacity between Year 2035-2040 with the project trips.
 - o One option to improve operations through Year 2040 would be to add a third southbound through lane on Northwest Parkway from northeast of the 96th Street/Via Varra intersection to the US 36 interchange.
 - o 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. Further, if Jefferson Parkway is built, additional traffic volumes beyond what were projected for this study would be anticipated on Northwest Parkway and should be considered. As previously noted, previous studies have suggested that the future Northwest Parkway will be grade separated with frontage roads for local access.

Note that additional improvements beyond what are listed above were recommended under Year 2040 background conditions to accommodate anticipated traffic volumes/conditions without the Campus Drive extension project. The additional improvements under Year 2040 background conditions include:

- Widen Dillon Road between S. 88th Street and S. 96th Street to a four-lane roadway
- Dillon Road/S. 96th Street: construct dual northbound and southbound left-turn lanes

A summary of the recommended improvements and estimated year the improvement is needed is illustrated in **Figure E1** and **Figure E2** and summarized in **Table E.2**.

Internal Intersections

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.

- 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 operate 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. The Campus Drive access to the Zone 3 office area is anticipated to operate acceptably as an unsignalized intersection with side-street stop control.
- 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 anticipated to operate acceptably as a roundabout; the remaining intersections are expected to operate acceptably as unsignalized.
- Sorrel Avenue: recommended to be a two-lane roadway; the driveway accesses and internal intersections are expected to operate acceptably as unsignalized.

Next Steps

- Additional study and concept development are needed for the Northwest Parkway corridor and at the US 36 interchange.
- After the GDP 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.

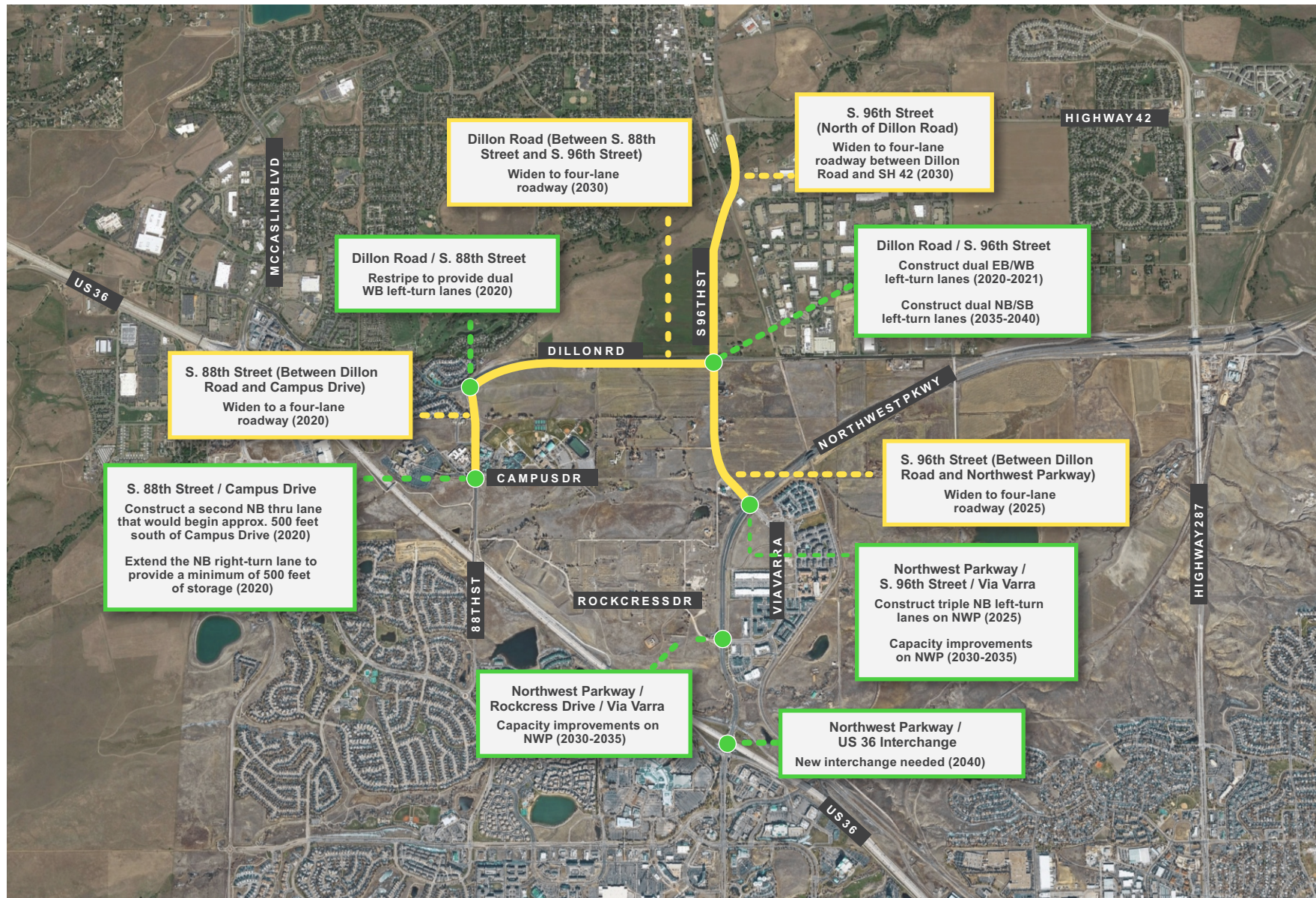




Table E.2 – Improvement Phasing Summary

Recommendation (Intersection/Segment)	Project Need (Expected Timeline/Year)		Notes
	Background (No Project)	With Project	
Campus Drive Extension	(N/A) - located on the Redtail Ridge project property	-Construct with first phase of the development (Opening Year 2022)	
McCaslin Boulevard / Dillon Road	--	--	Signal timing should continually be monitored to manage queues.
Dillon Road / S. 88th Street	-Restripe to provide dual WB left-turn lanes (2020) – <i>assumes Campus Drive is not extended</i>	--	
Dillon Road (Between S. 88th Street and S. 96th Street)	-Widen to four-lane roadway (shortly after 2030) <i>assumes Campus Drive is not extended</i>	-Dillon Road is nearing capacity in Year 2040. Monitor the corridor and if traffic volumes increase at a higher rate than projected, Dillon Road may need to be expanded to a four-lane roadway	The City noted a desire to maintain Dillon Road as a two-lane roadway. Based on projected volumes, a two-lane is expected to operate acceptably with traffic generated by the project. However, without the Campus Drive extension, Dillon Road is expected to need to be a four-lane around 2030.
Dillon Road / S. 96th Street	-Construct dual EB/WB left-turn lanes (2020-2021) -Construct dual NB/SB left-turn lanes (2035-2040) <i>assumes Campus Drive is not extended</i>	-Construct dual EB/WB left-turn lanes (2022 with Campus Drive Ext.) -Monitor and if long queues/cycle failure begins to occur construct dual NB/SB left-turn lanes (after 2040)	
S. 96th Street (Between Dillon Road and Northwest Parkway)	-Widen to four-lane roadway (2025)	-Widen to four-lane roadway (2022 with Campus Drive Ext.)	
S. 96th Street (North of Dillon Road)	-Widen to four-lane roadway between Dillon Road and SH 42 (shortly after 2030)	-Widen to four-lane roadway ~ 1/2 mile to the north (2025) -Widen to four-lane roadway to SH 42 (shortly after 2030)	Coordination with the SH 42 BRT project and other development/studies along S. 96th Street should occur to refine timing needs.
S. 88th Street (Between Dillon Road and Campus Drive)	-Widen to a four-lane roadway (2020) <i>assumes Campus Drive is not extended</i>	--	
S. 88th Street (Between Campus Drive and Rock Creek Pkwy)	--	--	Expected to operate acceptably as a two-lane with turn lanes at key intersection.
S. 88th Street / Campus Drive	-Construct a second NB thru lane that would begin approx. 500 feet south of Campus Drive (2020) <i>assumes Campus Drive is not extended</i> -Extend the NB right-turn lane to provide a minimum of 500 feet of storage (2020)	-Extend the NB right-turn lane to provide 400- 500 feet of storage (with Campus Drive extension)	
S. 88th Street / Rockcress Drive	(N/A)	-Construct a SB left-turn lane and NB right-turn lane on S. 88th Street (with opening of Rockcress Drive, between 2025-2030).	
S. 88th Street and Rock Creek Pkwy	--	--	No improvements anticipated to be needed
S. 96th Street / Campus Drive	(N/A)	-Construct dual NB left-turn lanes and a SB right-turn lane on S. 96th Street, and dual EB left-turn and an EB right-turn lane on Campus Drive (2022 with Campus Drive Ext.). Signalize intersection when warranted.	
Northwest Parkway / S. 96th Street / Via Varra	-Construct triple NB left-turn lanes on NWP (2025) -Capacity improvements on NWP – see note (2030-2035)	-Construct triple NB left-turn lanes on NWP (2025); -Capacity improvements on NWP – see note (2030-2035)	Constructing a third SB thru lane from north of S. 96th Street to the US 36 interchange is expected to improve operations. However, this may not be the optimal design for travel time. Previous studies have recommended that this intersection be grade separated in the future. Therefore, a separate corridor study is recommended rather than specific intersection recommendations.
Northwest Parkway / Rockcress Drive / Via Varra	-Capacity improvements on NWP – see note (2030-2035)	-Capacity improvements on NWP – see note (2030-2035)	See note for Northwest Parkway / 96th Street / Via Varra intersection
Northwest Parkway / US 36 Interchange	-New interchange needed (2040)	-New interchange needed (2027-2028)	To address the anticipated capacity constraints, the interchange needs to be modified to provide additional capacity or an alternative access to this area needs to be provided via US 36. A follow-up study should be conducted that looks at future grade separation concepts along Northwest Parkway and evaluates all interchange configuration operations for US 36.

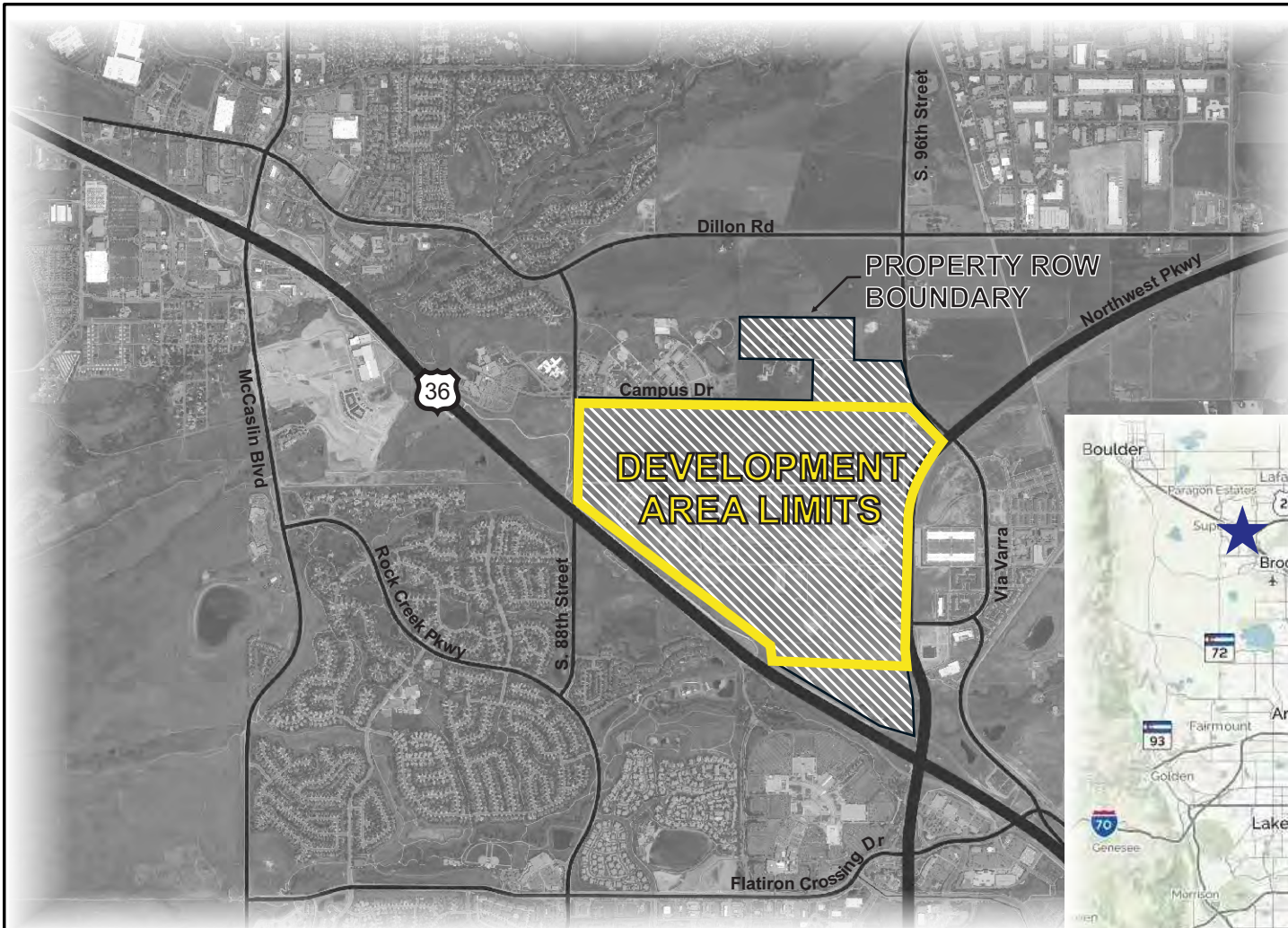
REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

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 office, industrial, and retail uses. A previous report was submitted for the former project name “Nawatny Ridge” in September 2019, along with an update in May 2020. This study evaluates an updated land use development plan and internal roadway network. This study supersedes the recommendations provided in previous studies.

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 Brue Baukol Capital Partners. 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 access points along the former privately owned/maintained Tape Drive (hereon referred to as Rockcress Drive) which intersects with S. 88th Street to the west and Northwest Parkway to the east. Currently vehicles are not permitted to drive on Rockcress Drive and there are barricades blocking vehicles from accessing the roadway on both the west and east sides of the property.

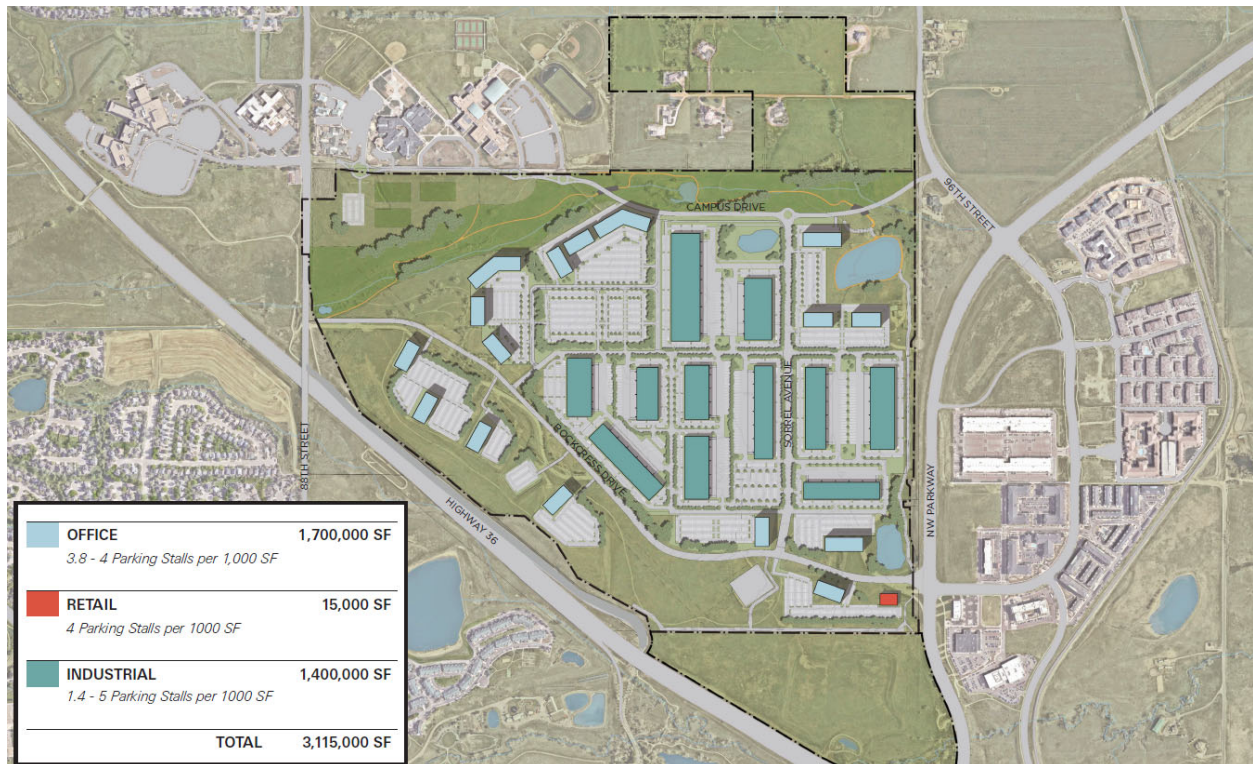
The purpose of this study is to assist in identifying potential traffic and mobility projects within the study area as a result of each of phase of this project. The traffic study evaluates peak hour intersection operations and roadway conditions in the study area with and without the project generated 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.



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:

Anticipated Development Prior to Year 2025

- 414,000 square feet of industrial park and 286,666 square feet of office building space

Additional Growth Anticipated to be Completed Between Year 2025 and Year 2030

- 15,000 square feet of retail; 690,000 square feet of industrial park; and 716,665 square feet of office building space

Additional Growth Anticipated to be Completed Between Year 2030 and Year 2035

- 276,000 square feet of industrial park and 716,665 square feet of office building space

Full Build Out (Cumulative Development)

- 15,000 square feet of retail
- 1,380,000 square feet of industrial park
- 1,720,000 square feet of office building space

Prior to Year 2025, Campus Drive will be extended to connect between S. 88th Street and S. 96th Street (it currently dead ends at Monarch High School, approximately 2,200 feet east of S. 88th Street). This new connection will serve traffic generated by the proposed development, as well as existing traffic currently traveling through the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections which will now have an alternative route. With the Campus Drive extension, a new full-movement signalized access is proposed along S. 96th Street at the northeast corner of the site near where Old 96th Street/Disc Drive currently intersects as a 3/4 movement access.

Prior to Year 2025, Rockcress Drive will be constructed between Sorrel Avenue and Northwest Parkway; and prior to Year 2030, Rockcress Drive will connect to S. 88th Street.

A summary table showing the scenarios proposed to be evaluated in this project is shown in **Table 1**. This study evaluates Year 2025, Year 2030, and Year 2040 with and without the project. 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 1. Scenario Summary

Scenario	Background Traffic	Development Traffic Prior to Year 2025	Development Traffic Prior to Year 2030	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

This section summarizes recently completed traffic and/or multimodal transportation studies in the study area. An overview of the study is provided below as well as key considerations for the Redtail Ridge study.

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.

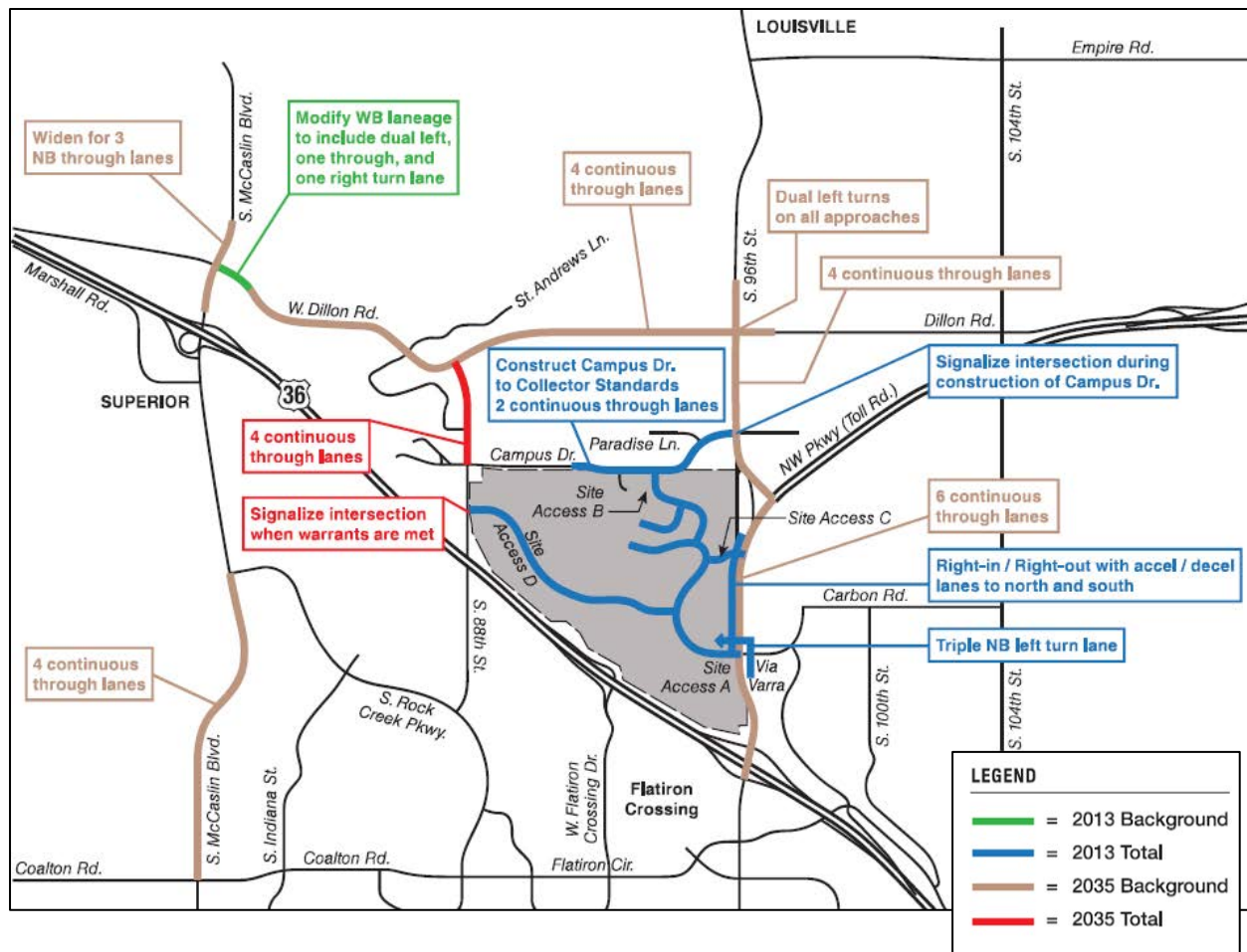
The study evaluated Year 2013 and Year 2035 with and without the project site trips. Recommendations were identified under the background and with project trip scenarios. Those improvements were illustrated in Figure ES-1 in the Traffic Impact Study (TIS) and are also shown in **Figure 3**. Notable recommended 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.

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.

Figure 3. Summary of Roadway Improvements (ConocoPhillips Campus TIS)



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).

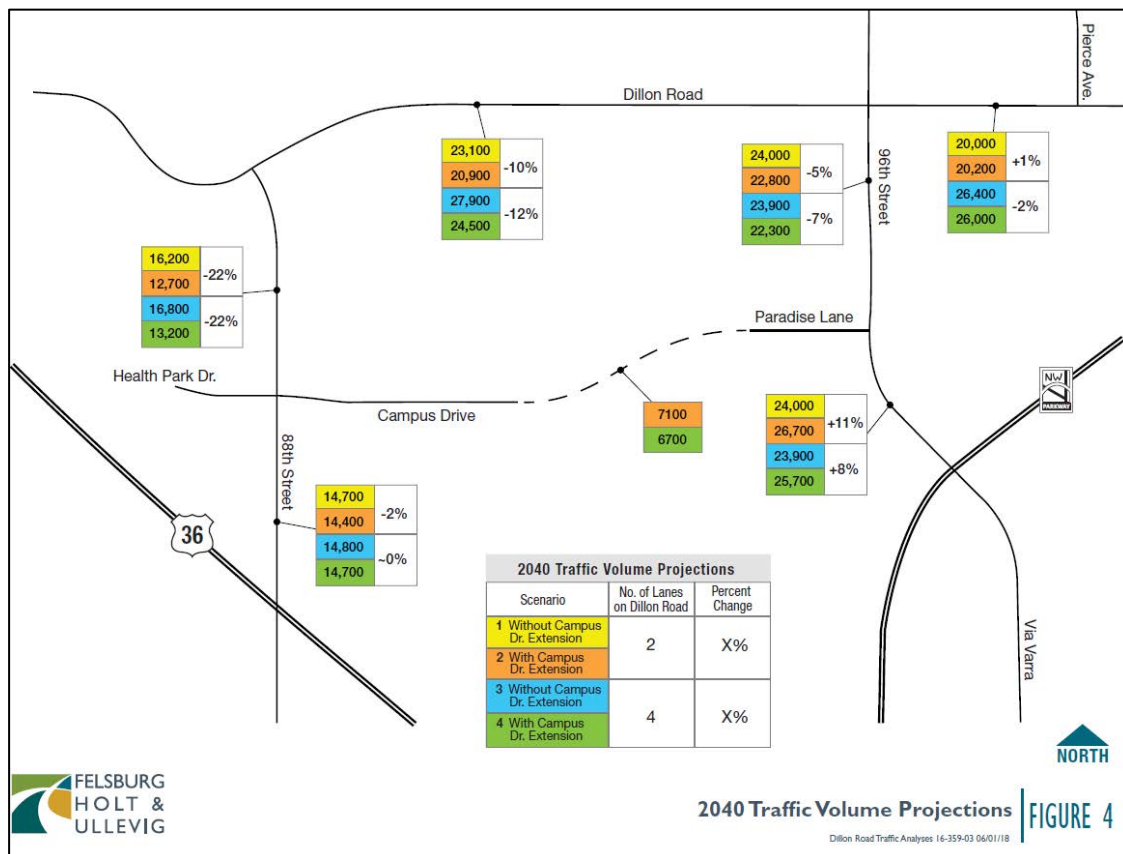
The Parkway Circle development area is approximately half built-out currently and is anticipated to be fully built out prior to Year 2040. Since the 2016 TIS, the auto dealership and some of the proposed retail to the south of Via Varra has been constructed and is open/operating. However, since this area is not fully built out, traffic generated by the undeveloped parcels in the Parkway Circle development was accounted for in the background traffic growth assumed for the Redtail Ridge analysis.

88th Street/Campus Drive Traffic Evaluation

In May 2018, a traffic analysis was completed along S. 88th Street and for the potential extension of Campus Drive to S. 96th Street for the Town of Superior. 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.

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 was expected to reduce congestion along S. 88th Street for the school. The Campus Drive extension was projected to accommodate 6,700 to 7,100 vpd in Year 2040 and a two-lane roadway was anticipated to operate acceptably. Projected Year 2040 daily traffic volumes were provided in Figure 3 from the S. 88th Street/Campus Drive study (see **Figure 4** below). 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 4. 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 (Year 2022). 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. Further, since the completion of the 2018 study, the start/end times for the Monarch K-8 and High School have changed. The new hours for K-8 are 8:00 AM to 3:05 PM and for the High School are 8:30 AM to 3:30 PM.

Dillon Road Corridor Study

This corridor study was completed for the City of Louisville in June 2018 and evaluated Dillon Road between S. 88th Street and 104th Street as part of the City's ongoing planning efforts. The purpose of this study was to understand existing travel constraints and to plan for improvements as traffic grows and as new development occurs along the corridor.

The study evaluated the operations of the Campus Drive extension on Dillon Road and on S. 88th Street (see **Figure 4** above, which is also Figure 4 in the Dillon Road Corridor Study). The study estimated that the Campus Drive extension was expected to reduce daily traffic volumes on Dillon Road by 10-12 percent and on Campus Drive by approximately 22 percent. The corridor study's 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. Further, Dillon Road as a two-lane 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. As noted in the S. 88th Street/Campus Drive study, the Dillon Road Corridor Study also recommends that Campus Drive be extended to S. 96th Street to reduce traffic volumes on S. 88th Street north of Campus Drive and along Dillon Road between S. 88th Street and S. 96th 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 more vehicle demand that wants to be on Dillon Road but due to the very limited capacity available today during peak periods, that traffic is currently using alternative routes until Dillon Road is expanded to a four-lane. 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

In November 2019, LSC Transportation Consultants prepared the *96th & Dillon Trip Generation Comparison Letter* 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 proposes two access on S. 96th Street. The area is currently owned by three property owners and the area is the process of updating the General Development Plan (GDP).

The project proposes to construct an indoor tennis center in “Zone A”, a 10-fueling station gas station with a car wash, approximately 85,000 square feet of light industrial space, and a 3,000 square foot fast casual restaurant in “Zone B”, and a 20,000 square foot church, approximately 100,000 square feet of light industrial, a 10,000 square foot day care center, and a 600 student school in “Zone C”. Based on discussions with the developer, the industrial/commercial areas in Zone B and potentially Zone C are anticipated to be constructed in Year 2021. The tennis center, church and school are not expected to be developed until after Year 2030.

The November 2019 letter provided trip generation estimates for each of the proposed uses. Under full build-out the total development is anticipated to generate 6,294 daily, 958 AM peak hour, and 649 PM peak hour net new trips to the study network. An updated traffic study for the currently proposed land uses has not yet been completed for the project.

Key Considerations for Redtail Ridge: This development is located near the Dillon Road/S. 96th Street study intersection. The project is anticipated to generate traffic that will be added to the study intersections at a rate higher than the general background growth. Therefore, the traffic generated by this development was accounted for in the background traffic growth assumed for the Redtail Ridge analysis.

Morgan Ranch – Downtown Superior Traffic Impact Analysis

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

<http://www.jppha.org/wp-content/uploads/2019/08/Level-1-Traffic-and-Revenue-Study-Jefferson-Parkway.pdf>

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)

<https://www.engagelouisvilleco.org/transportation-master-plan>

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

<https://www.bouldercounty.org/transportation/plans-and-projects/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

<https://drcog.org/programs/transportation-planning/bicycle-and-pedestrian-planning/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

http://www.mobilitychoiceblueprintstudy.com/assets/docs/MCB_Final_Report_.pdf

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

<http://www.rtd-denver.com/firstmile-lastmile.shtml>

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

http://www.rtd-fastracks.com/nams_1

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.

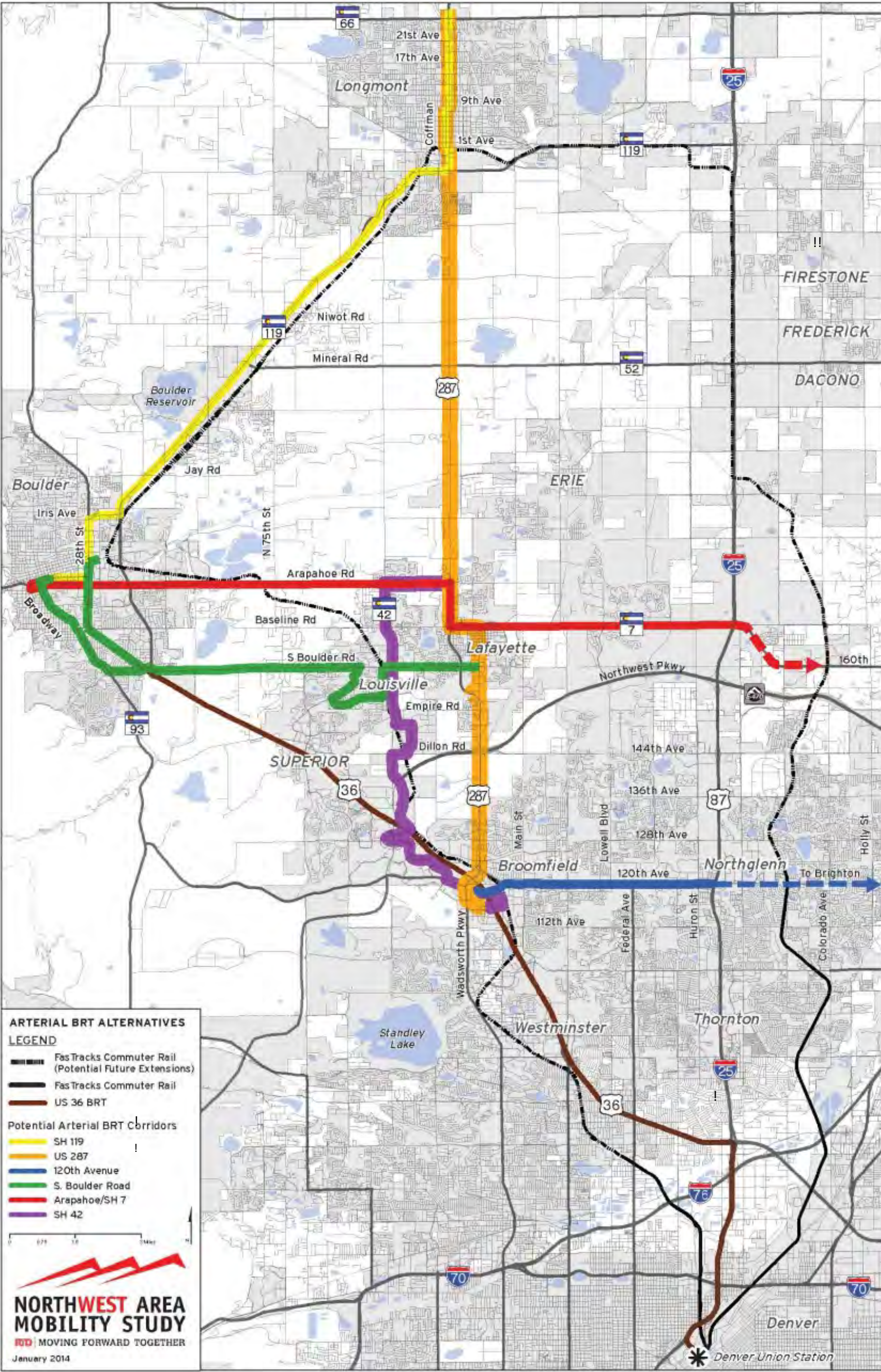
RTD Transportation Transformation (T2) Comprehensive Plan

<http://www.rtd-denver.com/documents/projects/T2-Summit-091018.pdf>

The RTD Transportation Transformations Comprehensive Plan (T2 Plan) is currently underway. The T2 Plan is a wholesale evaluation of RTD's current and anticipated resources in order to chart a roadmap for RTD's future as a Mobility Integrator and public transit provider for the Denver metro region. The study is an essential component of RTD's Transportation Transformation initiative as the District moves from a transit agency to a mobility integrator.

The T2 Plan will be completed in coordination with the RTD Board of Directors, DRCOG, CDOT, local governments, and stakeholders/citizens. The T2 Plan is anticipated to answer the question of "what's next" to complement FasTracks, charting a course that optimizes existing and future FasTracks infrastructure first before determining what other future investments are needed. Rather than "competing" with FasTracks, instead the idea is to provide incremental value to the existing program rather than a series of random projects that may have no relationship to each other or the overall regional system.

Key Considerations for Redtail Ridge: The T2 Plan will likely outline funding and timeline options for Bus Rapid Transit (BRT) projects in the S. 96th Street/Highway 42 corridor. Also, the future of how local RTD bus routes and shared ride mobility providers will be further defined.



4.0 STUDY CONSIDERATIONS

4.1 Data Collection

Intersection turning movement and daily traffic volumes were collected in August 2019 in the study area when school was in session on the Monarch school campus. The existing traffic volumes are illustrated on **Figure 6**. 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 and SimTraffic software.

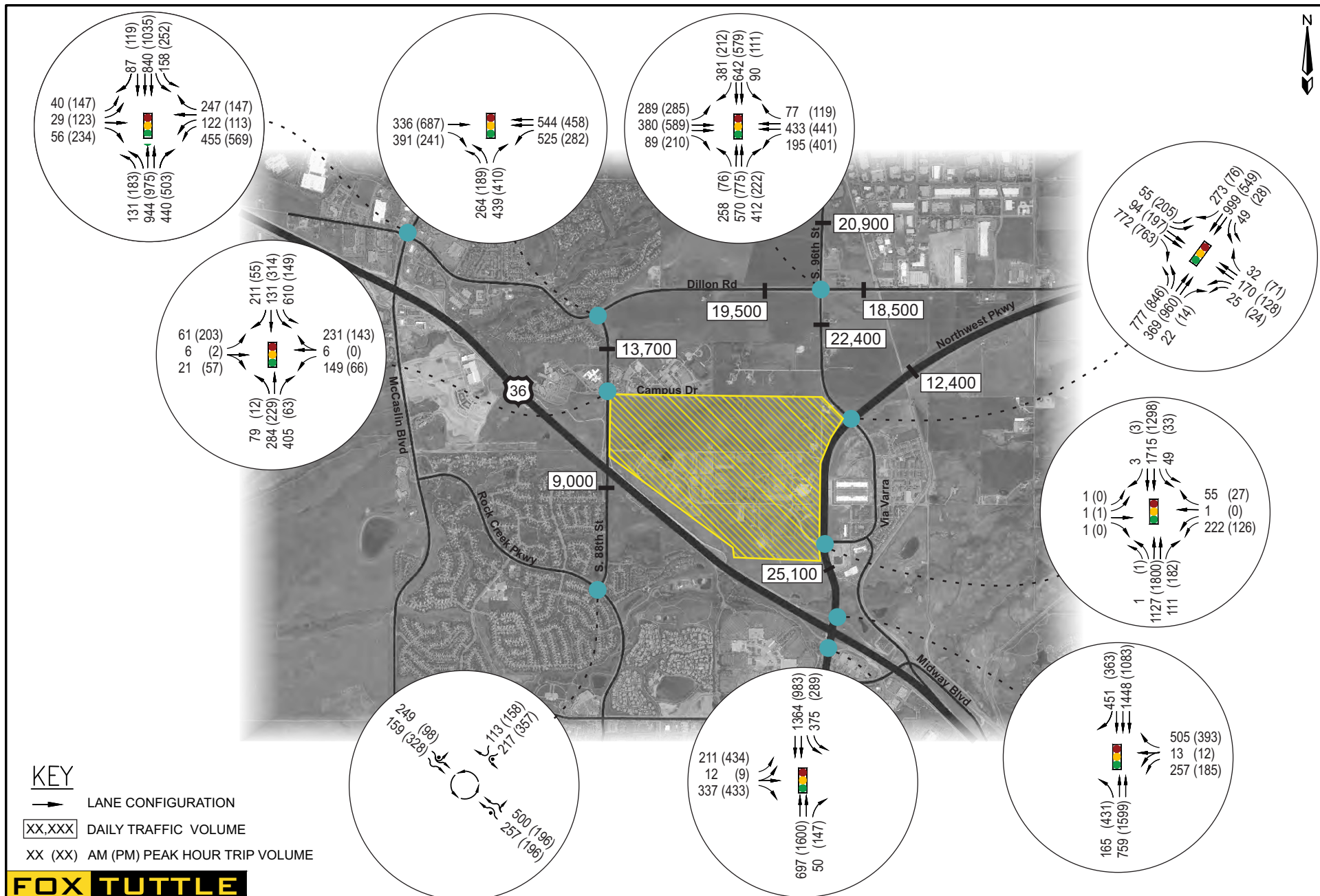
4.3 Level of Service Definitions

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.

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



REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY
EXISTING (YEAR 2019) TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	1/21/20	Drawn by	EJK	Figure #	6
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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.

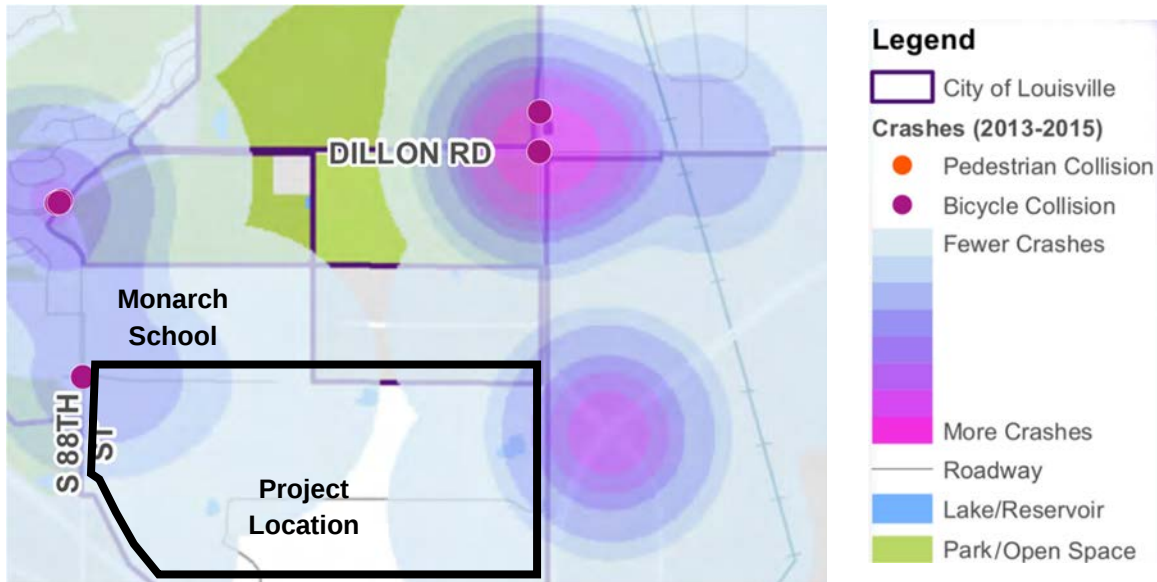
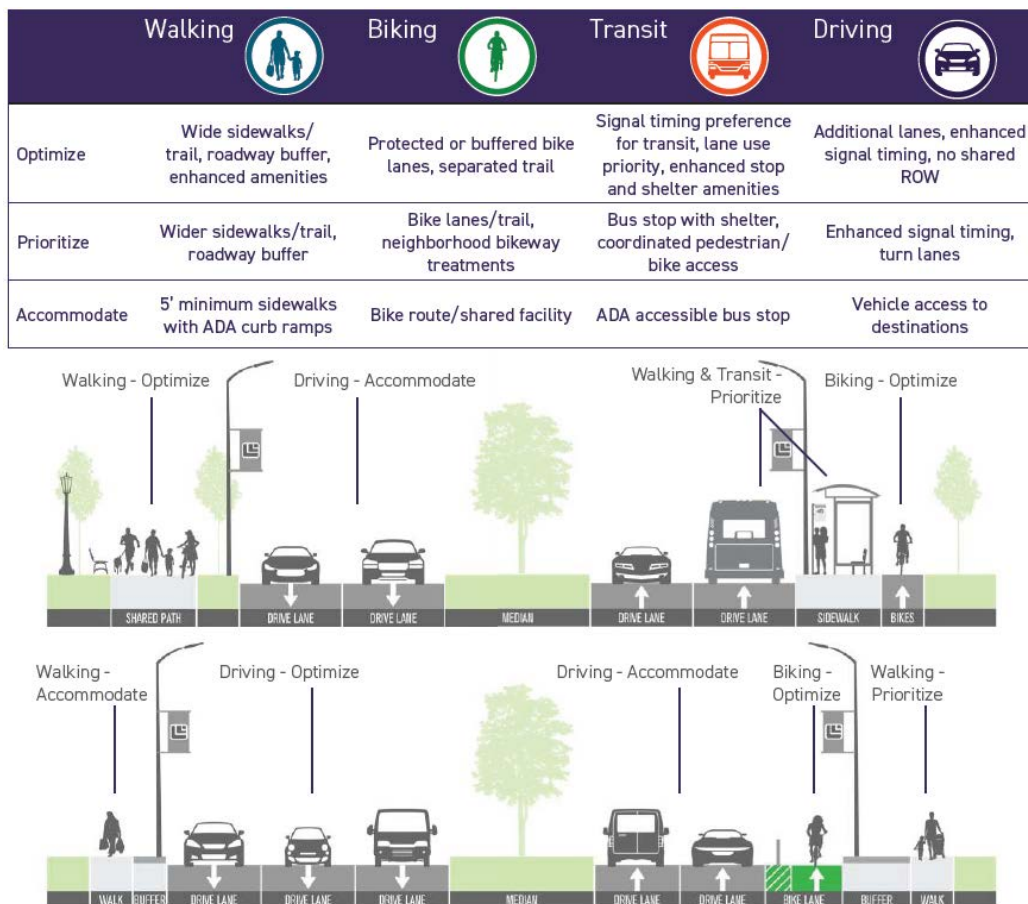
Four existing arterial intersections near the Redtail Ridge project were identified as high crash locations in the City of Louisville TMP, including the Dillon Road/S. 88th Street, Dillon Road/S. 96th Street, S. 88th Street/Campus Drive, and Northwest Parkway/S. 96th Street/Via Varra intersections as shown in **Figure 7**. Also, three 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. 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 8** below, Figure 4.2 in the TMP).

In addition to building Great/Complete street design internal to the project on Campus Drive, Rockcress Drive, and Sorrel Avenue, the Redtail Ridge project team is recommending to help build 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. 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. Most importantly, Great Streets have been shown by the Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA) to reduce conflicts that lead to crashes.

<https://www.ite.org/pub/?id=F56B1D96-EFFB-B97B-153B-F217E1B69DD8>

<https://www.transportation.gov/mission/health/complete-streets>

Figure 7. High Crash Locations (City of Louisville Transportation Master Plan)**Figure 8. Great 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 88,000 vpd west of the McCaslin Boulevard interchange and approximately 94,000 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 24,400 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 18,000 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 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 21,700 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 (signal)
- Dillon Road and S. 88th Street (signal)
- Dillon Road and S. 96th Street (signal)
- S. 88th Street and Campus Drive (signal)
- S. 88th Street and Rock Creek Parkway (multi-lane roundabout)
- Northwest Parkway and S. 96th Street/Via Varra (signal)

- Northwest Parkway and Rockcress Drive/Via Varra (signal)
- Northwest Parkway and US 36 Westbound/North Ramps (signal)
- Northwest Parkway and US 36 Eastbound/South Ramps (signal)

The existing lane configuration at each of the study locations is illustrated on **Figure 6**. Additional site-access intersections were analyzed for the scenarios with the addition of project-added traffic.

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 percent of the student body at Monarch High School (approximately 700 students) and 25 percent at Monarch K8 (approximately 75 students). All these changes over the past 18 years since the Storage Tek property closed have utilized the vehicle traffic capacity previously used by traffic generated by Storage Tek on the S. 88th Street, Dillon Road, and S. 96th Street corridors.

The historic volumes shown in **Figure 9**, **Figure 10**, and **Figure 11** show what occurred in the area since the Storage Tek site was vacated in the early 2000's. When Storage Tek was fully active in the late 1990's it generated approximately 12,400 average daily trips in the study area. When Storage Tek closed, the other developments in Superior, Broomfield, and Louisville utilized the roadway capacity that was vacated by Storage Tek. Over this time there were incremental changes made to add turn lanes and motor vehicle capacity at some intersections. However, the S. 88th Street, Dillon Road, and S. 96th Street corridors are currently reaching capacity.

Planning level daily capacity estimates for two-lane roadways with turn lanes range from 16,000 to 18,000 vpd. However, as shown in **Figure 10** and **Figure 11**, both Dillon Road and S. 96th Street currently exceed the planning level thresholds. The increased capacity at the Dillon Road/S. 96th Street intersection and the limited number of access locations are two of the reason these corridors have traffic volumes that exceed the planning level daily capacity thresholds. Based on the current operations, it is estimated that between 22,000 and 24,000 vpd could be accommodated on these segments. However, if additional conflict points, intersections, or left-turning traffic is added to the corridors, the capacity will likely decrease.

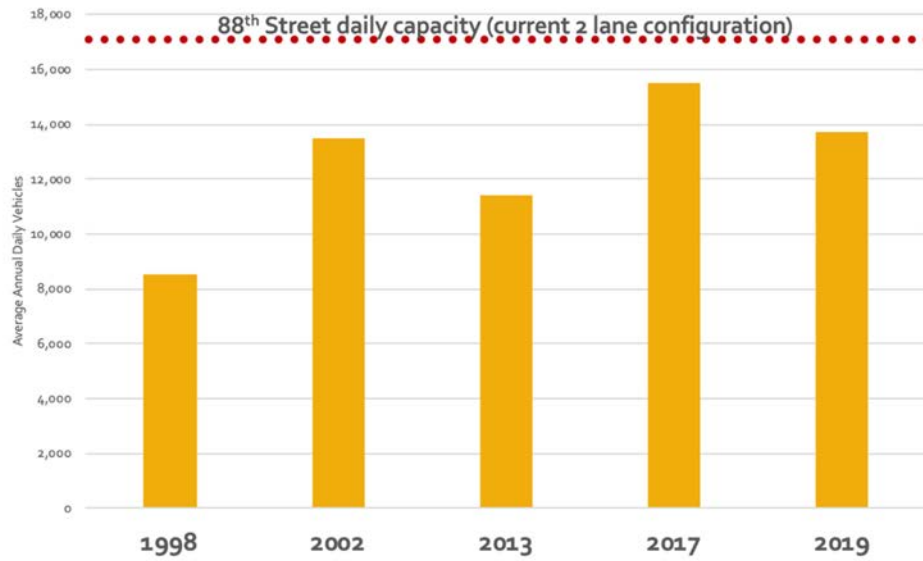
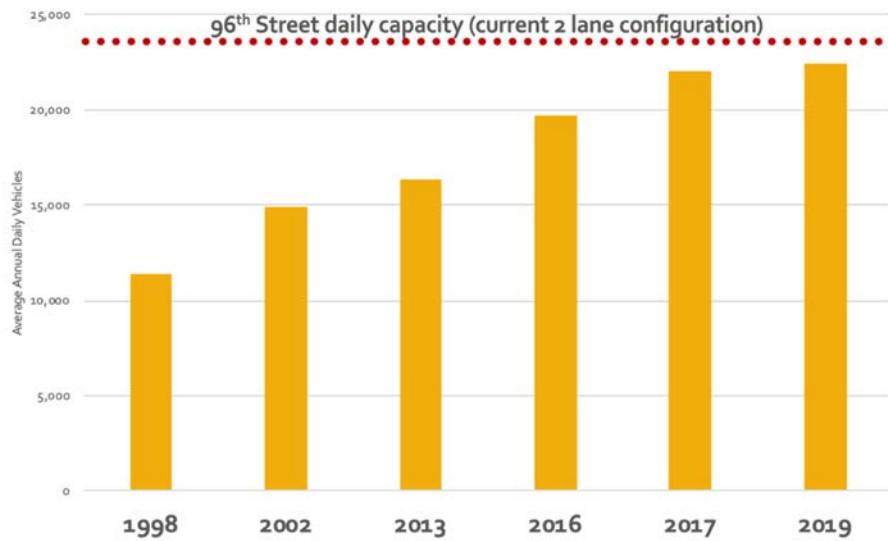
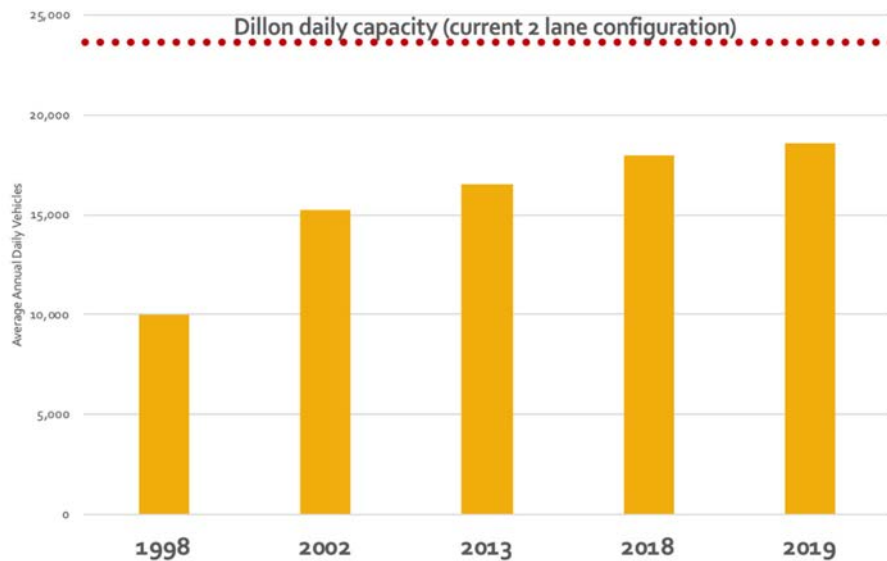
Figure 9. South 88th Street North of Campus Drive Volume Trends**Figure 10. South 96th Street South of Dillon Road Volume Trends**

Figure 11. Dillon Road East of S. 96th Street Volume Trends

5.4 Walking in the Project Area

Most of the current sidewalk and multi-use walking 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 that transverses under S. 88th Street just south of Dillon Road. This underpass connects the Monarch school campus to the sidewalks on Dillon Road. Although the sidewalk network in the area is missing connections in the S. 88th Street, Dillon Road and S. 96th Street corridors, each intersection has pedestrian crosswalks (an example of a missing sidewalk is shown in **Figure 12** which shows the informal connection on the north side of the Dillon Road/S. 88th Street intersection). It is anticipated that the demand to complete the sidewalk and multi-use path network between the CTC Campus, Redtail Ridge, and Monarch school campus 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.

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 13**). 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.

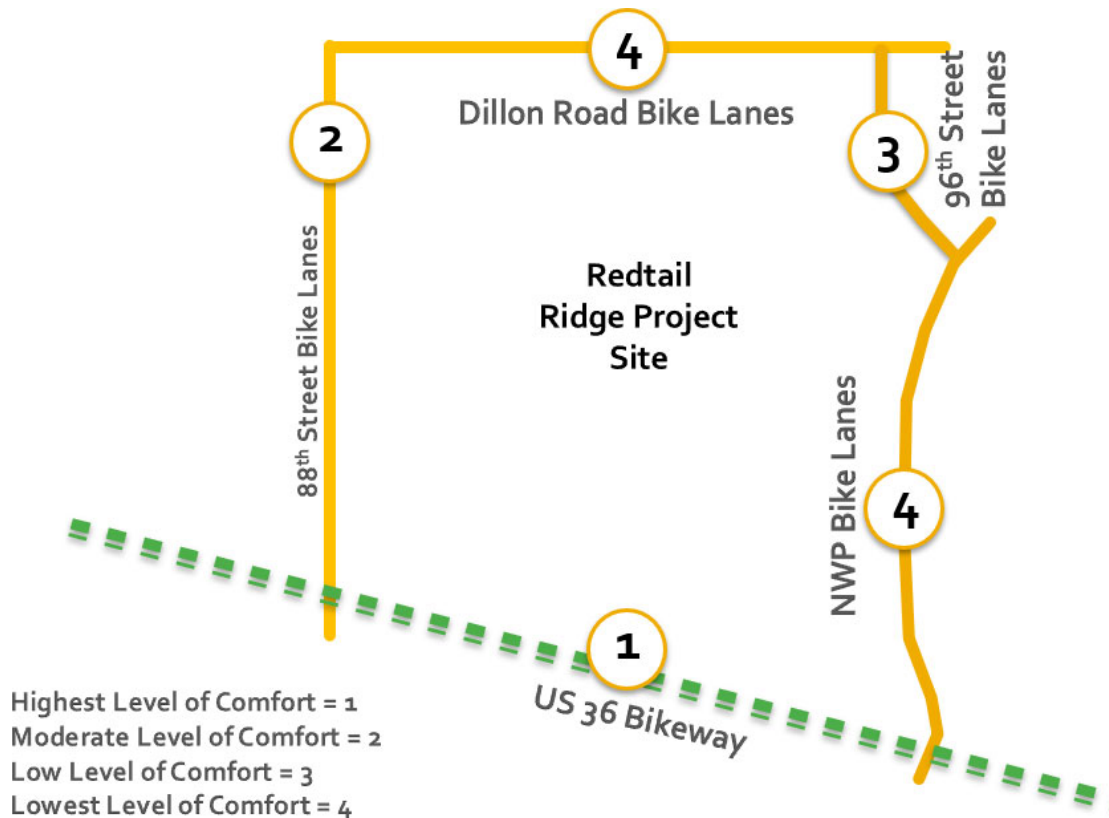
Figure 12. Coal Creek Regional Trail Informal Connection**Figure 13. Northwest Parkway Multi-Use Path Underpass**

5.5 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.

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 results is illustrated in **Figure 14**). Based on this 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 in the prior section. 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 Redtail Ridge project team is recommending 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 would include supporting the City's efforts to install protected bike lanes, multi-use pathways, and intersection treatments that provide greater protection for all skill levels, although it is noted that implementing these facilities 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.

Figure 14. Bicycle Level of Comfort City of Louisville Transportation Master Plan

5.6 Transit Access in the Study Area

The Redtail Ridge site is located within one 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 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. The AB route that provides 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.

5.7 Transportation Demand Management and Current Mode Share

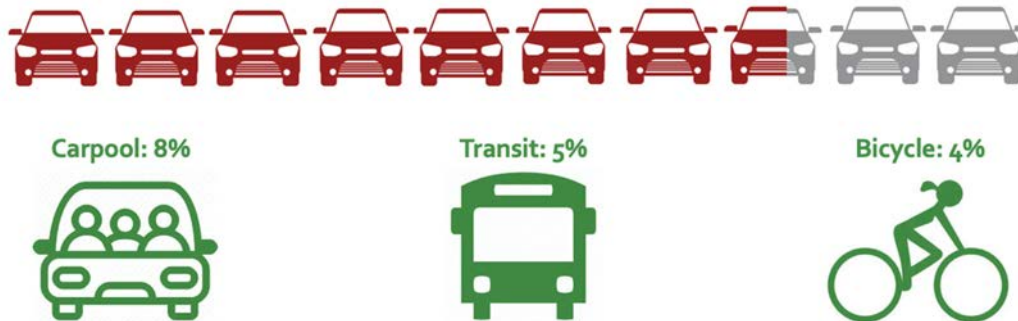
Communities in the US 36 Corridor (Boulder, Superior, Louisville, Broomfield, and Westminster) have been working together for decades to plan and implement multimodal travel projects in the US 36 corridor. This includes work at the local community level to rebuild local roadways as complete streets and expand walk, bike, and transit connectivity within and across borders.

The new City of Louisville 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 below as year 2012 to 2016 estimates. Based on this data (shown in **Figure 15**), approximately 28 percent of people who work in Louisville travel to work by non-SOV modes.

Figure 15: 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 16** 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 as year 2012 to 2016 estimates. Based on this data, approximately 22 percent of people who work in the US 36 corridor travel to work by non-SOV modes. Note that the data from the 2016 Report was collected between Year 2011 and 2015, which is prior to the opening of the RTD's Flatiron Flyer BRT service (opened in January 2016).

Figure 16: US 36 Communities Year 2016 Estimated Mode Share**US 36 communities: 78% single occupant vehicles**

<https://commutingsolutions.org/wp-content/uploads/2016-Northwest-Region-Mobility-Report.pdf>

5.8 Existing Intersection Capacity Analysis

The existing volumes, lane configuration, and traffic control are illustrated on **Figure 6**. The results of the LOS calculations for the intersections are summarized in **Table 2**. A summary table with LOS by movement and 95th percentile queues by lane as well as the intersection LOS worksheets are included in the **Appendix**. **Results of the existing peak hour intersection capacity analysis indicate that Dillon Road/S. 88th Street and S. 88th Street/Campus Drive currently operate at LOS E or worse during the AM peak hour. All other study intersections operate at LOS D or better.**

Table 2. Existing Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (31 sec)	C (32 sec)
Dillon Road/S. 88th Street	E (77 sec)	D (43 sec)
Dillon Road/S. 96th Street	C (32 sec)	D (52 sec)
S. 88th Street/Campus Drive	F (99 sec)	C (30 sec)
Northwest Parkway/S. 96th Street/Via Varra	D (51 sec)	C (24 sec)
Northwest Parkway/Rockcress Drive/Via Varra	B (14 sec)	B (11 sec)
Northwest Parkway/US 36 North Ramps (WB)	B (12 sec)	B (16 sec)
Northwest Parkway/US 36 South Ramps (EB)	B (15 sec)	C (25 sec)
S. 88th Street/Rock Creek Parkway ⁽¹⁾	A (8 sec)	A (6 sec)

⁽¹⁾ Roundabout controlled intersection

Queuing issues and movements with LOS E or worse during the peak hours are listed below:

Dillon Road and McCaslin Boulevard

- During the AM and PM peak hours, there are several movements that currently operate at LOS E or worse. At this intersection the northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements.
 - o During the AM peak hour, the following movements operate at LOS E or worse: eastbound left-, eastbound through, northbound left- and southbound left-turn.
 - o During the PM peak hour, the following movements operate at LOS E or worse: eastbound left-, eastbound through, westbound left-, northbound left- and southbound left-turn.
- No significant queuing issues were observed in the field or in the traffic analysis reports.

Dillon Road and S. 88th Street

- The following movements operate at LOS E or worse:
 - o During the AM peak hour, westbound left and northbound left.
 - o During the PM peak hour, eastbound through and northbound left.
- During the AM peak hour this intersection operates near the LOS E/F border.
 - o This intersection is heavily influenced by traffic generated by the Monarch school campus. Queues on S. 88th Street from Campus Drive were observed to extend back to Dillon Road, impacting traffic operations at this intersection.
 - o Near the school start time, westbound left-turn queues were observed to extend more than 2,500 feet and northbound queues were observed to extend approximately 1,500 feet
 - o When the pedestrian movement across Dillon Road is activated, all controlled movements are required to stop, this increases motorist delay.
- During the PM peak hour, eastbound through queues extend more than 1,000 feet.

Dillon Road and S. 96th Street

- During the AM and PM peak hours, there are several movements that currently operate at LOS E or worse. Both Dillon Road and S. 96th Street are two-lane roadways but expand to provide two through lanes in all directions at the intersection. This results in poor lane utilization and occasionally some inefficiencies when vehicles exit the intersection and merge back down to one-lane. These inefficiencies reduce the capacity of this intersection.
 - o During the AM peak hour, the southbound through movement operates at LOS E.
 - o During the PM peak hour, the westbound left-, northbound through, and southbound through operate at LOS E or worse.

- During the AM peak hour, northbound left-turn queues were observed to extend more than 700 feet.
- During the PM peak hour, westbound left-turn and northbound through queues extend more than 700 feet.

S. 88th Street and Campus Drive

- During the AM peak hour this intersection operates at LOS F. This intersection is the only access to the Monarch school campus and the adjacent medical campus.
 - o The following movements operate at LOS E or worse: eastbound left, eastbound through, westbound through, northbound left, northbound through, northbound right, southbound left, southbound through, and southbound right.
 - o Southbound queues on S. 88th Street extend back to Dillon Road, impacting traffic operations at the signal.
 - o Northbound through queues extend 1,000 feet and vehicles making a northbound right-turn will utilize the shoulder when the right-turn lane queues extend beyond the available storage.
- 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).
- During the PM peak hour, the eastbound left- and eastbound through movements operate at LOS E or worse. All other movements operate at LOS D or better. No major queuing issues were observed.

Northwest Parkway and S. 96th Street/Via Varra

- During the AM peak hour, the following movements operate at LOS E or worse: eastbound left-, eastbound through, northbound left-, southbound left-, and southbound through.
- During the PM peak hour, all movements operate at LOS D or better.
- The northbound left and eastbound right- are high volume movements during both the AM and PM peak hours. Currently there are existing dual northbound left-turn lanes on Northwest Parkway that turn onto S. 96th Street. Three lanes merge into one 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. The southbound right-turn is a free movement and turns into a third through lane (acceleration lane) on S. 96th Street.
- During the AM peak hour, the northbound left-turn queue is approximately 690 feet (700 feet of available storage) and the southbound through queue is approximately 770 feet.

- During the PM peak hour, the northbound left-turn conflicts with a lower southbound through volume and therefore while the northbound left-turn traffic volume is greater during the PM peak hour, the queue is less than the AM peak hour queue.

Northwest Parkway and Rockcress Drive/Via Varra

- At this intersection the northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements.
 - During the AM peak hour, the eastbound left- and northbound left-turn movements operate at LOS E or worse. Both movements are low volume (one vehicle observed during the peak hour).
 - During the PM peak hour, all movements operate at LOS D or better.
- No significant queuing issues were observed in the field or in the traffic analysis reports.

Northwest Parkway and US 36 Westbound/North Ramps

- At this intersection the northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements.
 - During the AM peak hour, the westbound left- and westbound through movements operate at LOS E.
 - During the PM peak hour, all movements operate at LOS D or better.
- During the PM peak hour, the northbound left-turn queues extend approximately 310 feet, which is beyond the available left-turn lane storage. These queues do not extend to the US 36 South Ramps intersection to the south.

Northwest Parkway and US 36 Eastbound/South Ramps

- At this intersection the northbound/southbound through movements are prioritized over the eastbound/westbound approaches and the left-turn movements.
 - During the AM and PM peak hours, the southbound left-turn operates at LOS E.
- No significant queuing issues were observed in the field or in the traffic analysis reports.

Although the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive study intersections currently operate at LOS E/F, no mitigation is recommended at this time. As previously mentioned, previous 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 traffic operations. 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

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 2040 regional model projections, and planned development projects in the study area.

Historical traffic volumes along the study roadway network were reviewed, including traffic volumes along S. 88th Street, Dillon Road, S. 96th Street, and Northwest Parkway. This review indicates that traffic volumes in the study area have been steadily increasing with annual growth rates ranging from less than one (1) percent to four (4) percent. As previously mentioned, when Storage Tek closed, other developments in Superior, Broomfield, and Louisville utilized the roadway capacity vacated by Storage Tek, and thus traffic volumes have steadily been increasing.

A comparison of the DRCOG base-year vs. 2040 projections shows annual growth of approximately one-half percent along the study roadways, except along Northwest Parkway, which is anticipated to have an annual growth rate of approximately one and one-half (1.5) percent. A review of the assumed projected socio-economic data within the traffic analysis zones (TAZ) where the project is proposed indicates that DRCOG did not anticipate that this area would redevelop. Therefore, the background growth rates from DRCOG data represent non-project traffic forecast to the study roadway network and the traffic volume generated by the project does not need to be factored out of the DRCOG forecasts.

A higher annual growth rate is likely to occur in the near-term and a lower growth rate is anticipated in the long-term. It is also important to consider that the Dillon Road and S. 96th Street corridors are approaching capacity. As daily traffic volumes increase on these corridors, the increase is likely to occur during non-peak period times where there is more capacity.

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

Parkway Circle: Approximately half of the parcels in the Parkway Circle development are currently developed. 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. Under Year 2040 conditions, it is assumed that the Parkway Circle development will be fully developed. 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 two (2) for year 2040, with approximately a quarter of the development occurring by Year 2025, half by Year 2030 and full build out by Year 2040. The traffic volumes were then proportionally distributed to the study roadway network based on existing travel patterns.

St. Louis Parish: The trip generation estimates from the November 2019 trip generation letter were assumed for the study area. The industrial/commercial uses were assumed to be constructed with the first phase in Year 2021 and were included in the Year 2025 background traffic forecasts. The full buildout of the site, which includes the tennis center, church, and school, was assumed to be constructed after Year 2030 and were included in the Year 2040 background traffic forecasts. Trips generated by the development were distributed to the study network based on the 2001 TIS.

Morgan Ranch: Trips generated by the Morgan Ranch DTS development and anticipated to utilize the new 88th Street / Promenade Boulevard intersection were added to the study intersections and included in the Year 2025 background traffic forecasts.

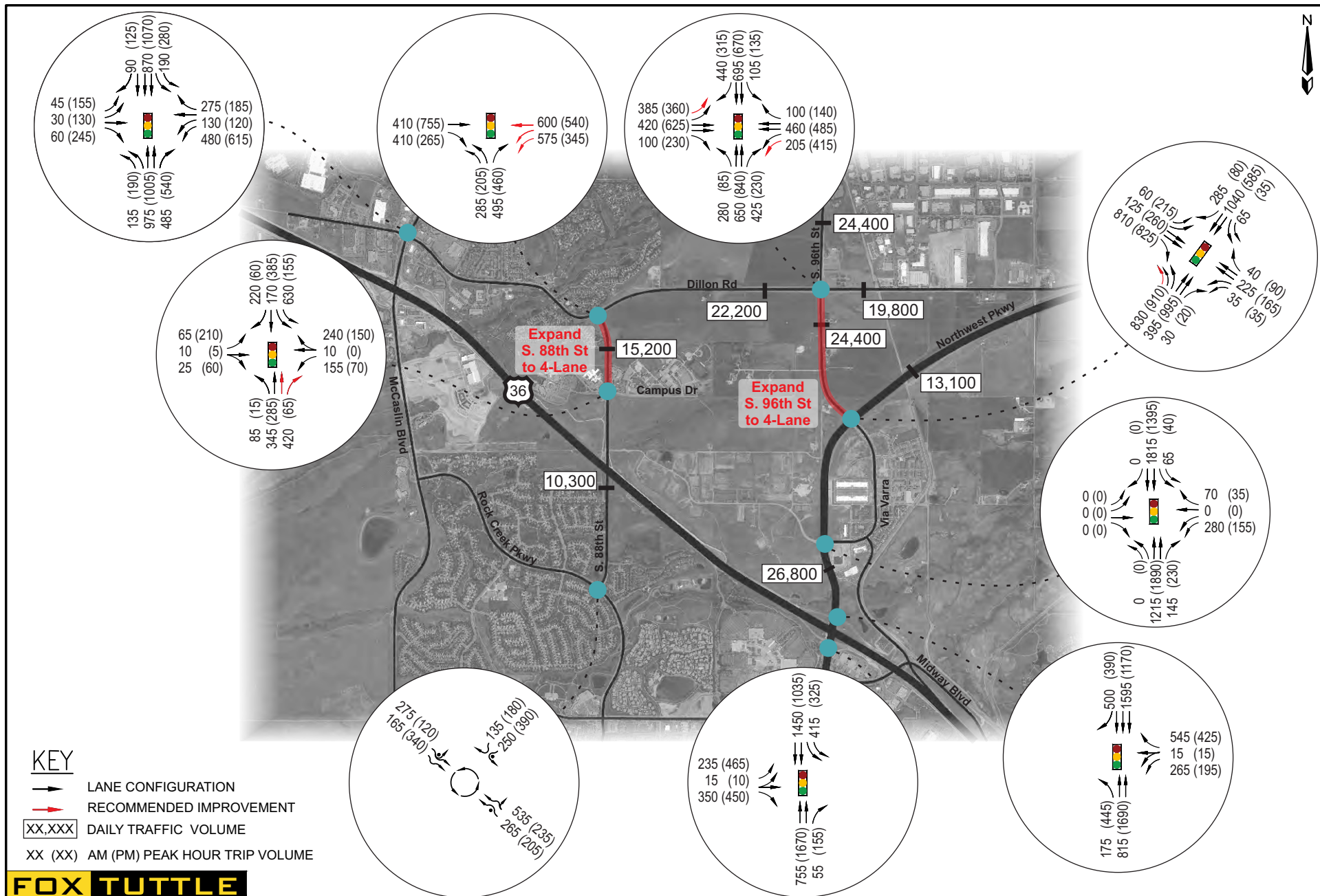
Based on a review of the historical traffic volume trends, the projected future traffic forecasts, and the known planned developments, the following assumptions were used to develop the background traffic volumes for Year 2025, 2030 and 2040:

- Year 2025 Background: an annual growth rate of one-half percent was applied to the existing traffic volumes at the study intersections; in addition, planned development trips generated by the Parkway Circle, St. Louis Parish, and Morgan Ranch were added to the study network. **The resultant growth rate to the study intersections is approximately two percent per year at the Dillon Road, S. 88th Street, and S. 96th Street intersections and approximately one percent per year at the Northwest Parkway and US 36 intersections.**
- Year 2030 and Year 2040 Background: an annual growth rate of one-quarter (0.25) percent was applied to all study intersections, except for through movements along Northwest Parkway which were grown by one and one-half (1.5) percent; in addition planned development trips generated by the Parkway Circle, St. Louis Parish, and Morgan Ranch were added to the study network. **The resultant growth rate to the study intersections is approximately one percent per year.**

The resultant background traffic volumes for Year 2025, Year 2030, and Year 2040 are provided in **Figure 17, Figure 18, and Figure 19.**

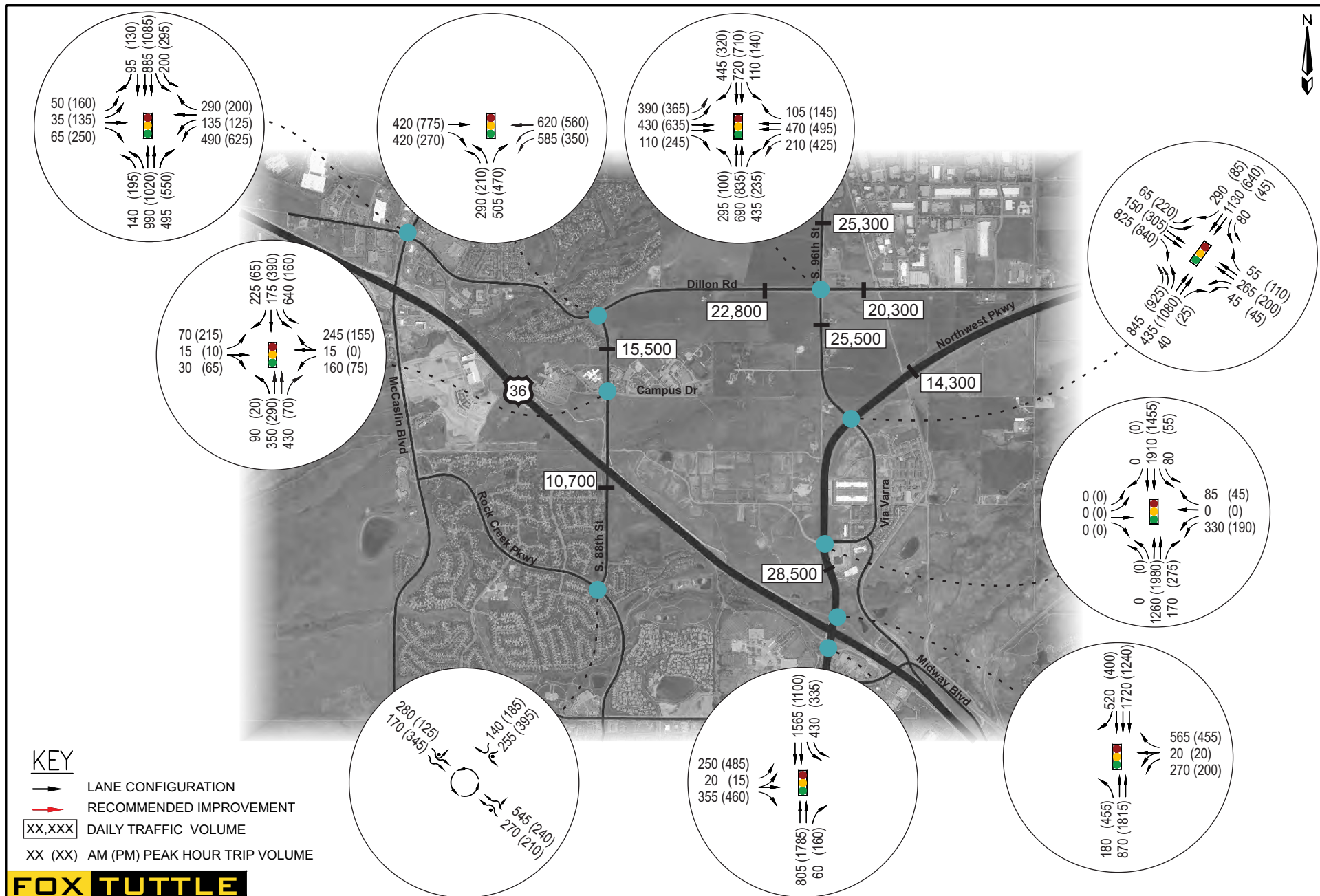
It is important to note that while the Year 2040 background traffic forecasts do not assume the Jefferson Parkway extension, if that project is constructed prior to Year 2040 it would increase traffic volumes along Northwest Parkway at the intersections between S. 96th Street and US 36 from what was projected for this study. As noted in the Level 1 Traffic and Revenue Study Jefferson Parkway report, with the Jefferson Parkway extension the project would rebuild the Northwest Parkway/Interlocken Loop corridor between S. 96th Street and SH 128. Under the Northwest Parkway Extension scenario, Northwest Parkway would be reconstructed to separate toll and local traffic which would include constructing new interchanges and a frontage road system to accommodate local traffic.

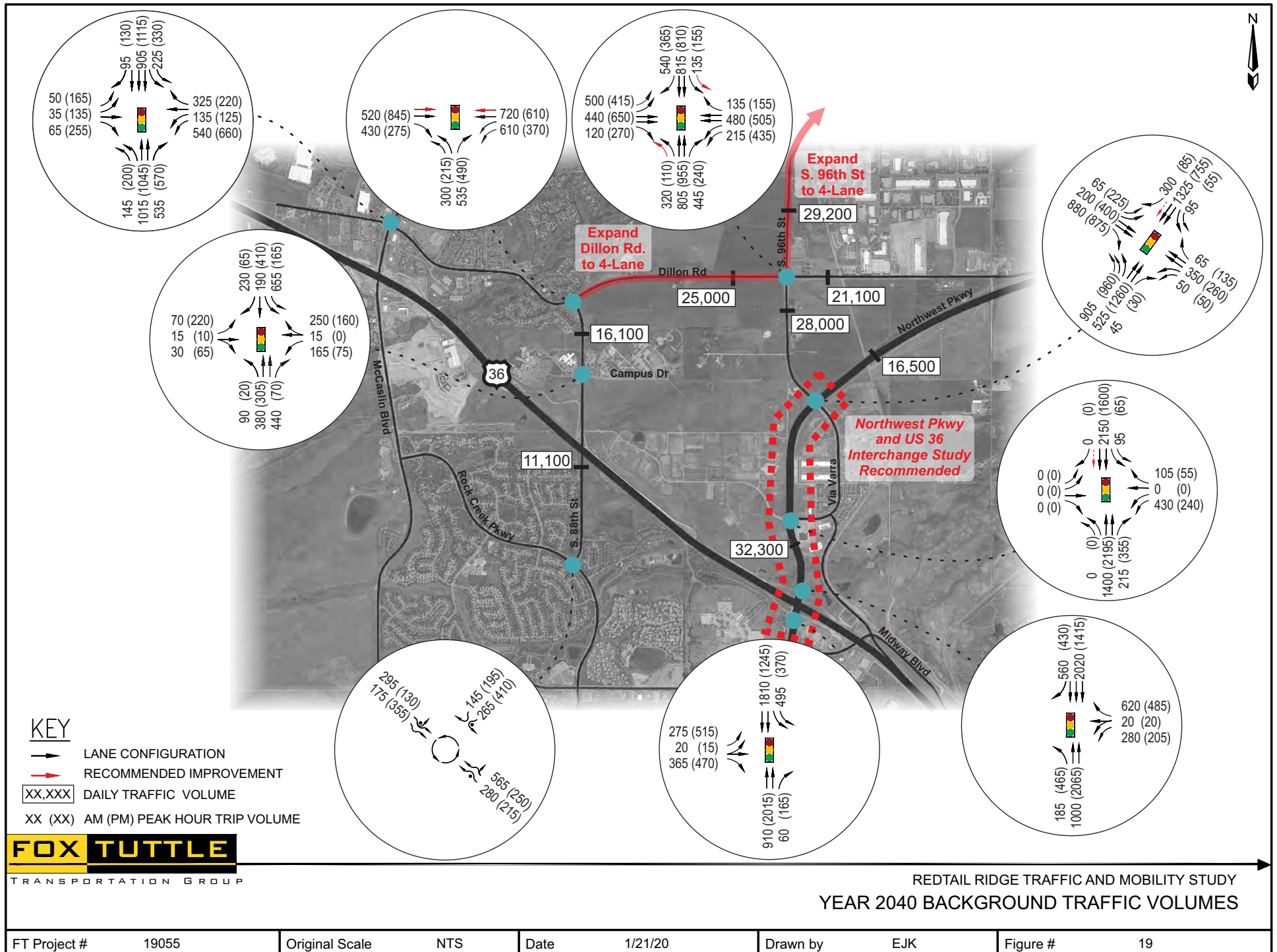
If the Northwest Parkway Extension project is constructed, the future interchanges and frontage road system would provide additional capacity to the Redtail Ridge study network. A collaborative study that includes CDOT, the City of Louisville, City and County of Broomfield, Northwest Parkway Authority, and JPPHA should be conducted to identify how interchanges and frontage roads could be constructed to accommodate future traffic volumes along Northwest Parkway. While the Redtail Ridge project team has met with Northwest Parkway and began preliminary discussions about a future study, at this time, no design or concepts have been completed for this segment of Northwest Parkway. Additional analysis should be completed to better understand projected peak hour traffic to the network as well as to identify what interchange options will provide acceptable operations and can be constructed within the right-of-way.



REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY
YEAR 2025 BACKGROUND TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	1/21/20	Drawn by	EJK	Figure #	17
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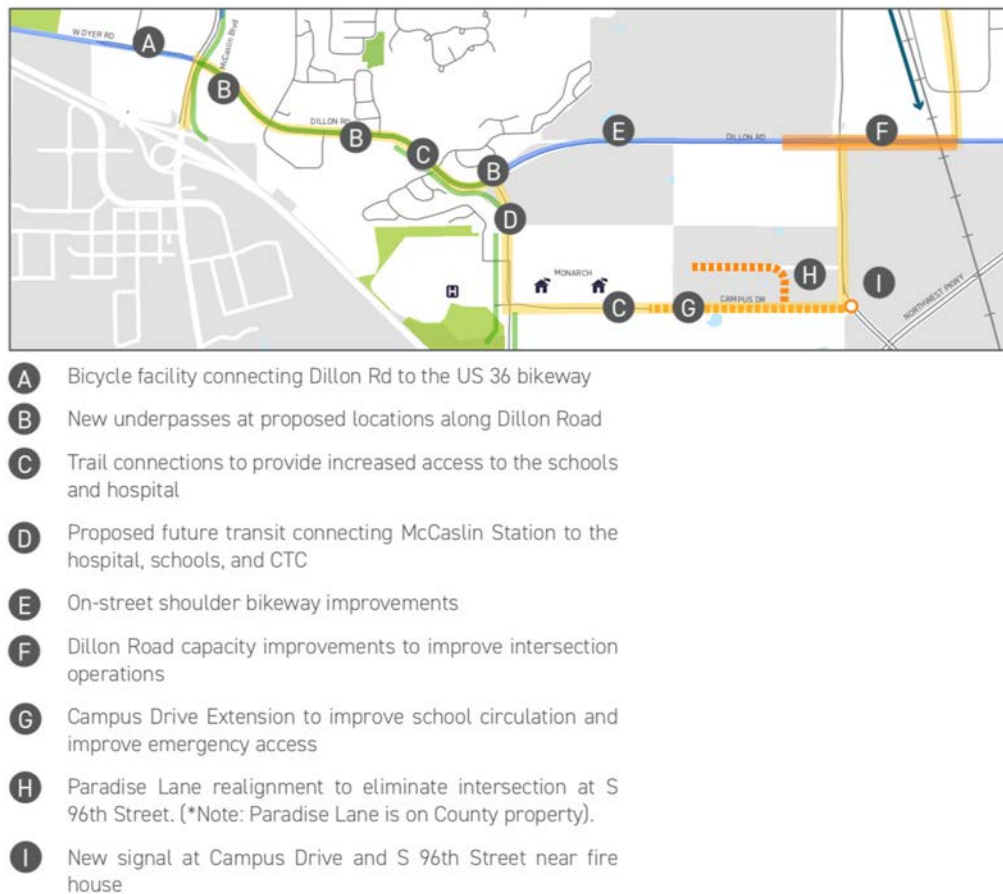




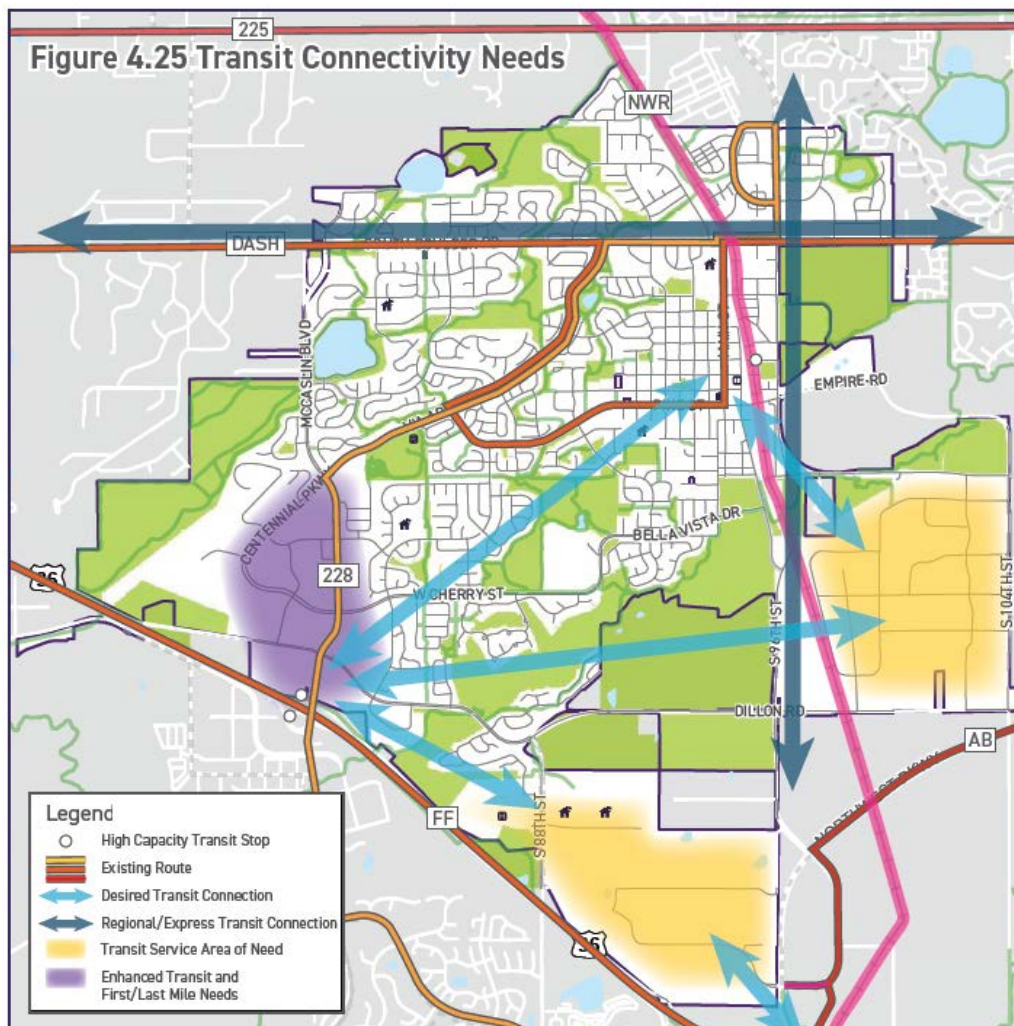
6.2 Future Multimodal Network Assumptions

The future multimodal network improvements around Redtail Ridge project are outlined in the City of Louisville TMP and shown in **Figure 20**. They include a series of bike lanes, transit stops, underpasses, and multiuse trail connections.

Figure 20. Future Multimodal Network Identified in the City of Louisville TMP



The TMP also recommends a partnership with the City 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 BRT service in the S. 96th street corridor and two Northwest Rail station within a mile of Redtail Ridge (see **Figure 21**). The Northwest Rail stations are planned to be located near the CTC and at the Flatiron and US 36 Park-n-Ride.

Figure 21. Future Transit Network Identified in the City of Louisville TMP

The City is also beginning to have 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 work with RTD to determine feasibility of adding a stop for the Flatiron Flyer BRT to the west of Northwest Parkway on the project site.

Table 3 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** of this study.

Table 3. Future Multimodal Network Assumption Summary

Corridor	Bike Lanes	Multi-Use Pathways	Sidewalks	Bus Lanes
S. 88th Street (US 36 to Dillon Road)	unprotected	westside	westside	none
Dillon Road (S. 88th to S. 96th Street)	unprotected	none	none	none
S. 96th Street (Northwest Parkway to Front Street)	unprotected	none	none	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 and to identify any capacity constraints associated with background traffic for development traffic expected to be constructed prior to Year 2025. The background volumes, lane configuration, and traffic control are illustrated on **Figure 17**.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the Year 2025 background volumes. The results of the LOS calculations for the intersections are summarized in **Table 4**. 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.

The results of the LOS calculations for the intersections are summarized in **Table 4**. Summary tables with LOS and 95th percentile queues by movement are included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections are expected to operate at LOS F during the AM peak hour. The Dillon Road/S. 96th Street and Northwest Parkway/S. 96th Street/Via Varra intersections are expected to operate at LOS E during the AM peak hour and the Dillon Road/S. 88th Street intersection is expected to operate at LOS E during the PM peak hour. The other study intersections are expected to operate at an overall LOS D or better.**

Table 4. Year 2025 Background Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (25 sec)	C (32 sec)
Dillon Road/S. 88th Street	F (97 sec)	E (57 sec)
Dillon Road/S. 96th Street	E (62 sec)	D (55 sec)
S. 88th Street/Campus Drive	F (113 sec)	C (33 sec)
Northwest Parkway/S. 96th Street/Via Varra	E (74 sec)	C (28 sec)
Northwest Parkway/Rockcress Drive/Via Varra	B (16 sec)	B (13 sec)
Northwest Parkway/US 36 North Ramps (WB)	B (12 sec)	B (17 sec)
Northwest Parkway/US 36 South Ramps (EB)	B (19 sec)	C (29 sec)
S. 88th Street/Rock Creek Parkway ⁽¹⁾	A (9 sec)	A (7 sec)

⁽¹⁾ Roundabout controlled intersection

Under Year 2025 Background conditions, there are three intersections that are expected to decrease a LOS grade with the added background traffic during the AM and/or PM peak hour:

- Dillon Road/S. 88th Street – this intersection operates at LOS E during the AM peak hour and LOS D during the PM peak hour under existing conditions and is expected to operate at LOS F during the AM peak hour and LOS E during the PM peak hour under Year 2025 background conditions. As noted under existing conditions, during the AM peak hour, the westbound left-turn currently extends more than 2,500 feet on Dillon Road and the northbound queues extend approximately 1,500 feet. These queues are expected to increase under Year 2025 background conditions. In addition, under Year 2025 conditions, during the AM and PM peak hour, the eastbound through queues are expected to extend more than 1,600 feet, into the adjacent signalized intersection to the west.
- Dillon Road/S. 96th Street – this intersection operates at LOS C during the AM peak hour under existing conditions and is expected to operate at LOS E under Year 2025 background conditions. As noted under existing conditions, the northbound left-turn currently extends more than 700 feet during the AM peak hour and the westbound left-turn currently extends more than 700 feet during the PM peak hour. These queues are expected to increase under Year 2025 background conditions. In addition, the southbound through queues during the AM peak hour are expected to extend approximately 1,500 feet, which is partially due to queues from the merge from two to one though lane south of Dillon Road extending back to the Dillon Road intersection.
- Northwest Parkway/S. 96th Street/Via Varra – during the AM peak hour this intersection operates at LOS D under existing conditions and is expected to operate at LOS E under Year 2025 background conditions. The high volume of northbound left-turn traffic conflicts with the high volume of southbound through traffic during the AM peak hour. The

northbound left-turn and southbound through delay and queues are expected to increase under Year 2025 background conditions.

As noted above, operations at the Dillon Road/S. 88th Street, Dillon Road/S. 96th Street, S. 88th Street/Campus Drive, and Northwest Parkway/S. 96th Street/Via Varra intersections are expected to get worse with the added traffic from the background growth applied. To address the operational issues expected in Year 2025 background conditions, the following is recommended:

- Expand S. 88th Street between Dillon Road and Campus Drive to a four-lane roadway.
- Dillon Road/S. 88th Street modify the westbound approach from one left-turn lane and two through lanes, to dual left-turn lanes and one through lane.
- 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.
- Dillon Road/S. 96th Street construct dual eastbound and westbound left-turn lanes.
- Expand S. 96th Street between Dillon Road and Northwest Parkway to a four-lane roadway.
- Northwest Parkway/S. 96th Street/Via Varra construct triple left-turns from northeast bound Northwest Parkway onto northbound S. 96th Street.
 - o Construct a third left-turn lane on Northwest Parkway within the existing grass median.
 - o Modify the northwest approach on S. 96th Street to allow for three receiving lanes.
 - o Modify the free right-turn movement to be controlled for the southwest bound right-turn lane movement on Northwest Parkway to northbound S. 96th Street.

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. The recommended geometric improvements are shown with red arrows on **Figure 17**. The intersection LOS and queuing report worksheets are attached in the **Appendix**. Summary tables with LOS and 95th percentile queues by movement are included in the **Appendix**.

Results of the peak hour intersection capacity analysis shown in Table 5 indicate that with the recommended improvements all study intersections are expected to operate at LOS D or better during the AM and PM peak hours.

Table 5. Year 2025 Background Conditions Level of Service Summary (Improvements)

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	--	--
Dillon Road/S. 88th Street	B (18 sec.)	C (28 sec.)
Dillon Road/S. 96th Street	D (36 sec.)	D (41 sec.)
S. 88th Street/Campus Drive	C (35 sec.)	C (27 sec.)
Northwest Parkway/S. 96th Street/Via Varra	D (41 sec.)	C (24 sec.)
Northwest Parkway/Rockcress Drive/Via Varra	--	--
Northwest Parkway/US 36 North Ramps (WB)	--	--
Northwest Parkway/US 36 South Ramps (EB)	--	--
S. 88th Street/Rock Creek Parkway	--	--

⁽¹⁾ LOS results only shown for Intersections with recommended improvements

With the recommended improvements the S. 88th Street intersections at Dillon Road and Campus Drive are still anticipated to 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.

6.4 Year 2030 Background Intersection Capacity Analysis

The study intersections were evaluated to determine baseline operations and to identify any capacity constraints associated with anticipated Year 2030 background traffic. The background volumes, lane configuration, and traffic control are illustrated on **Figure 18**.

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 6**. 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.

The results of the LOS calculations for the intersections are summarized in **Table 6**. Summary tables with LOS and 95th percentile queues by movement are included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that the study intersections are expected to operate at an acceptable overall LOS D or better during the AM and PM peak hours, except for the Northwest Parkway/S. 96th Street/Via Varra intersection, which is expected to operate at the LOS D/E border during the AM peak hour.**

Table 6. Year 2030 Background Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (27 sec)	D (35 sec)
Dillon Road/S. 88th Street	B (19 sec.)	C (30 sec.)
Dillon Road/S. 96th Street	D (40 sec.)	D (42 sec.)
S. 88th Street/Campus Drive	C (37 sec.)	C (28 sec.)
Northwest Parkway/S. 96th Street/Via Varra	E (57 sec.)	C (24 sec.)
Northwest Parkway/Rockcress Drive/Via Varra	B (19 sec)	B (13 sec)
Northwest Parkway/US 36 North Ramps (WB)	B (12 sec)	B (14 sec)
Northwest Parkway/US 36 South Ramps (EB)	B (17 sec)	C (34 sec)
S. 88th Street/Rock Creek Parkway ⁽¹⁾	A (10 sec)	A (7 sec)

⁽¹⁾ Roundabout controlled intersection

While the Northwest Parkway/S. 96th Street/Via Varra intersection is expected to operate near the LOS D/E border under Year 2030 background conditions, no queuing issues are anticipated and therefore no mitigation was recommended. 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 traffic in a long-term buildout scenario. The background volumes, lane configuration, and traffic control are illustrated on **Figure 19**.

The LOS criteria discussed previously was applied to the study intersections to determine the travel conditions with the near-term background volumes. The results of the LOS calculations for the intersections are summarized in **Table 7**. Summary tables with LOS and 95th percentile queues by movement are included in the **Appendix**. The intersection LOS worksheets are attached in the **Appendix**. **Results of the Year 2040 background conditions traffic operations analysis indicate that there are three intersections that are anticipated to operate at an unacceptable LOS E or worse during the AM or PM peak hours, including the Dillon Road/S. 96th Street, Northwest Parkway/S. 96th Street/Via Varra, and Northwest Parkway/US 36 South Ramp intersections.**

Table 7. Year 2040 Background Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (27 sec)	D (38 sec)
Dillon Road/S. 88th Street	C (27 sec)	D (42 sec)
Dillon Road/S. 96th Street	E (59 sec)	D (53 sec)
S. 88th Street/Campus Drive	D (40 sec)	C (30 sec)
Northwest Parkway/S. 96th Street/Via Varra	F (89 sec)	D (36 sec)
Northwest Parkway/Rockcross Drive/Via Varra	C (27 sec)	B (14 sec)
Northwest Parkway/US 36 North Ramps (WB)	B (13 sec)	B (19 sec)
Northwest Parkway/US 36 South Ramps (EB)	B (19 sec)	E (56 sec)
S. 88th Street/Rock Creek Parkway ⁽¹⁾	B (11 sec)	A (7 sec)

⁽¹⁾ Roundabout controlled intersection

To address the capacity issues, the following is recommended for Year 2040 background traffic:

- Dillon Road/S. 96th Street – Construct dual northbound and southbound left-turn lanes.
- S. 96th Street– Expand the four-lane roadway to the north of Dillon Road. As noted in **Section 3 “Previous Studies”**, there are other studies that are also analyzing 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.
- Northwest Parkway/S. 96th Street/Via Varra – While the Jefferson Parkway project has identified the potential need for a grade separated intersection at this location, there are uncertainties to if/when that project may occur.
 - o To address the anticipated capacity issues at this intersection, one option is to construct a third southbound through lane on Northwest Parkway that would begin north of the S. 96th Street/Via Varra intersection and continue to the US 36 interchange.
 - o Additional study should be conducted along the Northwest Parkway corridor between S. 96th Street and US 36 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.
- Northwest Parkway/US 36 interchange – the South Ramps are at capacity during the PM peak hour with Year 2040 background traffic volumes. The northbound queues are expected to extend more than 1,600 feet into the right-in/right-out access to the south. Additional capacity will be needed to accommodate the projected traffic volumes. The additional capacity will likely require that the bridge be widened. As previously mentioned,

if the Jefferson Parkway project moves forward, that project would likely require modifications to the US 36 interchange as well.

- o Due to the unknowns of future project impacts to this area, no specific mitigation is recommended. Additional study/analysis should be conducted at the interchange to determine the optimal design to meet the future needs. With a new design with increased capacity, this interchange should operate acceptably in the future.

In addition, while the Dillon Road/S. 88th Street intersection is expected to operate at an overall LOS D or better during the AM and PM peak hours, the eastbound approach delay and queues are not expected to operate acceptably. The eastbound through queues are expected to extend more than 1,400 feet during the PM peak hour, which impacts the signalized intersection to the west. **To address this and to improve lane utilization at the Dillon Road/S. 96th Street intersection, a four-lane roadway is recommended on Dillon Road between S. 88th Street and S. 96th Street.**

The study intersections were evaluated with the recommended improvements listed above. The recommended geometric improvements are shown with red arrows on **Figure 19**. The intersection LOS and queuing report worksheets are attached in the **Appendix**. Summary tables with LOS and 95th percentile queues by movement are included in the **Appendix**.

Results of the peak hour intersection capacity analysis shown in Table 8 indicate that with the recommended improvements all study intersections are expected to operate at LOS D or better during the AM and PM peak hours. Note that this assumes that a new interchange is constructed at the Northwest Parkway/US 36 interchange to address the anticipated capacity issues under Year 2040 background conditions during the PM peak hour.

Table 8. Year 2040 Background Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	--	--
Dillon Road/S. 88th Street	C (25 sec)	B (15 sec)
Dillon Road/S. 96th Street	D (38 sec)	D (38 sec)
S. 88th Street/Campus Drive	--	--
Northwest Parkway/S. 96th Street/Via Varra	D (52 sec)	D (35 sec)
Northwest Parkway/Rockcress Drive/Via Varra	B (15 sec.)	B (15 sec.)
Northwest Parkway/US 36 North Ramps (WB)	N/A	N/A
Northwest Parkway/US 36 South Ramps (EB)	N/A	N/A
S. 88th Street/Rock Creek Parkway	--	--

⁽¹⁾ LOS results only shown for Intersections with recommended improvements

N/A – Intersection identified to be included in an interchange study.

The Level 1 Traffic and Revenue Study Jefferson Parkway study reviewed a scenario that would rebuild the Northwest Parkway corridor between S. 96th Street and SH 128. In this study it was noted that Northwest Parkway would be reconstructed to separate toll and local traffic which would include constructing new interchanges and a frontage road system to accommodate local traffic. While no concepts were provided in the study to illustrate the proposed capacity changes to Northwest Parkway between S. 96th Street and US 36, it's important to note that this study is evaluating this section on a regional level.

Additional capacity improvements are needed at the US 36 interchange to accommodate the Year 2040 traffic volumes. However, this would require widening of the Northwest Parkway/Interlocken Loop bridge over US 36. Since concepts to increase capacity and funding has not been allocated to reconstruct the interchange, no capacity improvements were assumed. Further, if the Jefferson Parkway project is authorized, the US 36 interchange would likely be reconstructed as part of that project to accommodate the additional traffic generated by the Jefferson Parkway extension.

7.0 PROPOSED DEVELOPMENT TRAFFIC

7.1 Campus Drive Extension

Construction of the Campus Drive extension is proposed to coincide with the opening of the first vertical developer. 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 an access to/from the Redtail Ridge development as shown in **Figure 2**.

In addition to serving traffic to/from the Monarch school campus, traffic generated by the Centennial Peaks Hospital/Avista Family Life Center medical facilities and residents living in the Rock Creek subdivision are also expected to use Campus Drive once connected. To estimate the number of vehicles 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. As noted under existing conditions, these movements experience significant delay during the AM peak hour.

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 percent less. The travel distance for vehicles destined to/from the hospital is approximately the same.

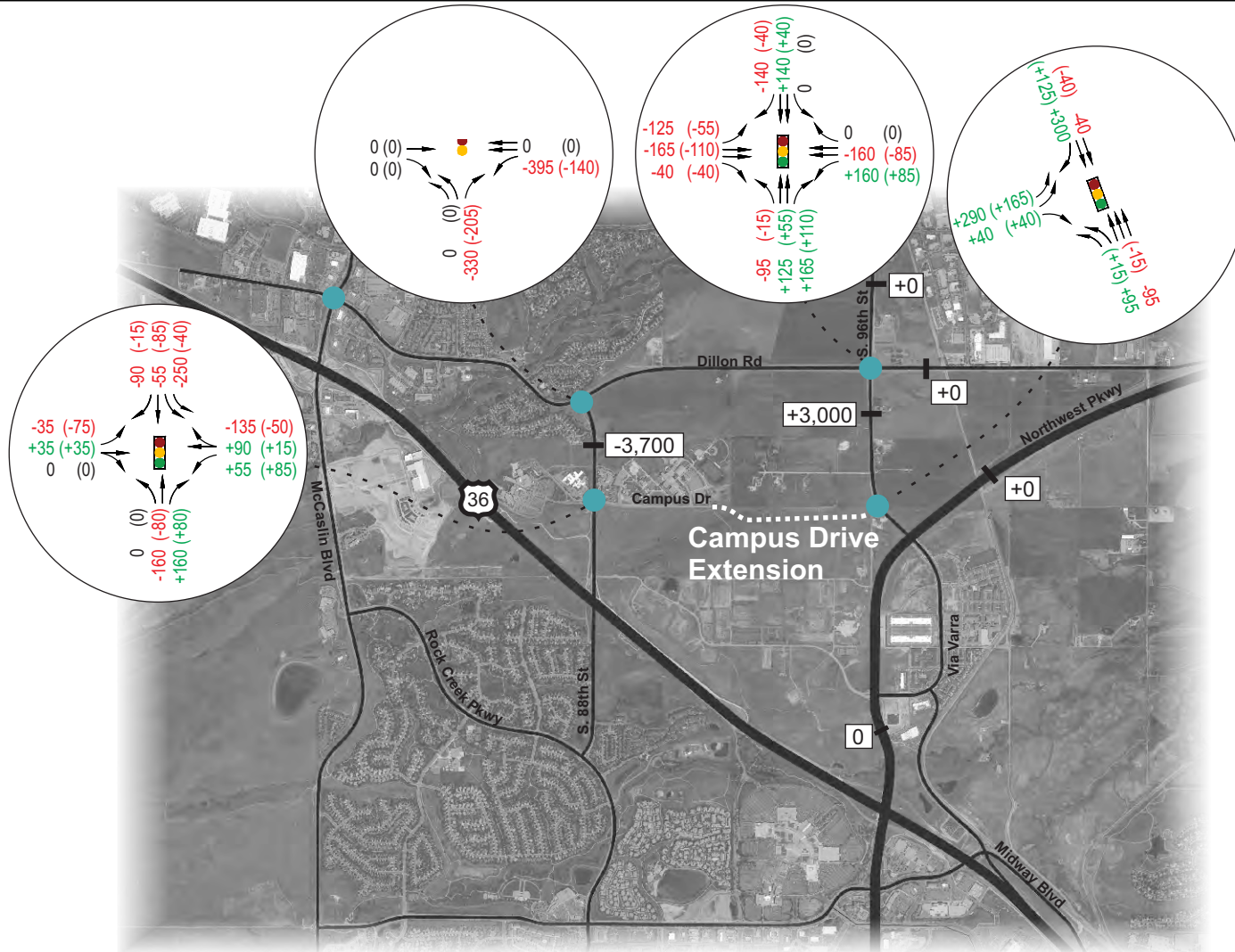
During the AM peak hour, a high percent of the vehicles making a westbound left-turn at the Dillon Road/S. 88th Street intersection are estimated to be destined to the Monarch school campus (65 percent). The existing congestion that is at the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections during the AM peak hour was also taken into consideration. Based on these factors, it is estimated that approximately 75 percent 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, a lower percent of vehicles to/from the Dillon Road/S. 88th Street intersection are destined to/from the Monarch school campus (30 percent). Further, the northbound right-turn and westbound left-turn movements at the Dillon Road/S. 88th Street intersection operate acceptably during the PM peak hour. Therefore, it is estimated that 50 percent 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 PM peak hour.

The travel conditions of the Campus Drive extension to the existing traffic volumes during the AM and PM peak hours are illustrated on **Figure 22**.

The Campus Drive concept layout near the Monarch school campus is shown in **Figure 23**. 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 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.

It should be noted that the project is planning to build Rockcress Drive incrementally and is expected to be fully constructed prior to Year 2030. Like Campus Drive, Rockcress Drive will also be a new connection between S. 88th Street and Northwest Parkway. 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.



KEY

→ LANE CONFIGURATION

XX,XXX DAILY TRAFFIC VOLUME

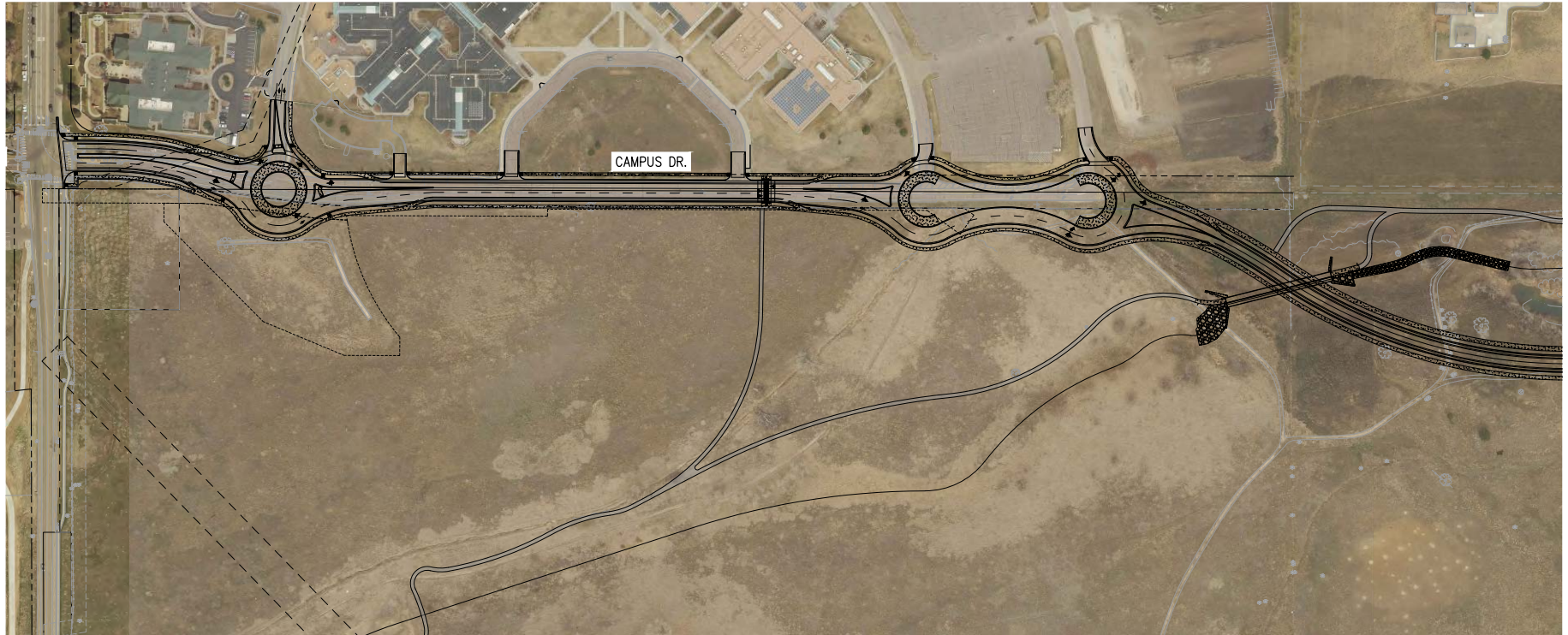
XX (XX) AM (PM) PEAK HOUR TRIP VOLUME CHANGE FROM EXISTING



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

REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY CAMPUS DRIVE EXTENSION TRAFFIC PATTERN CHANGES (EXISTING VOLUMES)

FT Project #	19055	Original Scale	NTS	Date	1/22/20	Drawn by	EJK	Figure #	22
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7.2 Proposed Multimodal Network

The Redtail Ridge project will be built over the next 20 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/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 that is recommended with the Redtail Ridge project is shown in **Table 9**. Additional details regarding at-grade signalized crossings, underpasses, trail connections, transit stops, shared ride mobility, and other multimodal infrastructure will be detailed as this project continues ahead in the PUD process.

Table 9. Enhanced-Future Multimodal Network Assumption with Redtail Ridge Project

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 County Road)	buffered or protected	westside	westside and eastside	yes
Northwest Parkway (S. 96th Street to US 36)	None	eastside	eastside	shoulder running
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.

The proposed regional and local trail network for the Redtail Ridge project area is also illustrated in **Figure 24**. As shown in the graphic, the project proposes to connect the gap in the Rock Creek Regional Trail as well as provide new east/west and north/south connections through the project, giving users more route options to travel through the area.

7.2 Proposed Multimodal Network

The Redtail Ridge project will be built over the next 20 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/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.

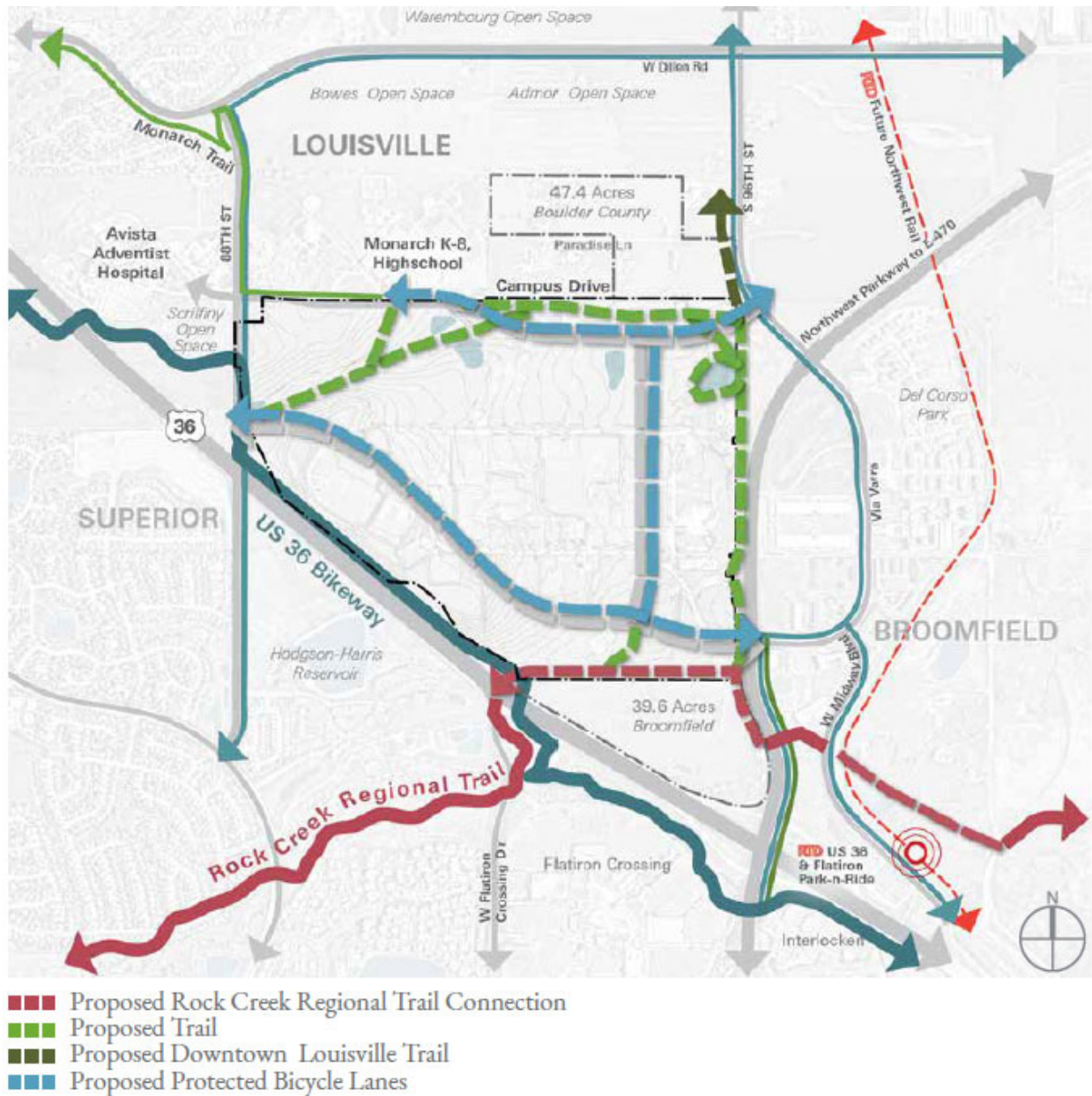
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S. 88th Street (US 36 to Dillon Road)	buffered or protected	westside or eastside	westside and eastside	none
Dillon Road (S. 88th to S. 96th Street)	buffered or protected	northside	northside and southside	none
S. 96th Street (Northwest Parkway to County Road)	buffered or protected	westside	westside and eastside	yes
Northwest Parkway (S. 96th Street to US 36)	None	eastside	eastside	shoulder running
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.

The proposed regional and local trail network for the Redtail Ridge project area is also illustrated in **Figure 24**. As shown in the graphic, the project proposes to connect the gap in the Rock Creek Regional Trail as well as provide new east/west and north/south connections through the project, giving users more route options to travel through the area.

Figure 24. Proposed Enhanced Redtail Ridge Regional and Local Trail Network

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 draft TDM Plan that is included in the **Appendix** of this study. 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 percent 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 percent 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 percent was assume 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, 10th Edition*² were applied to estimate the traffic for the proposed land uses. ITE trip generation rates for “Industrial Park” (#130), “General Office Building” (#710), 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. For the projected retail land use on the site, the “Shopping Center” (ITE #820) land use category was applied as the data for this land use code is described as follows:

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses). Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices.

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. Using this criterion, the equation was used to generate trips for all land uses that fall under the “General Office” (ITE #710) category. The other land uses had R^2 values of less than 0.75 and the average rate was therefore utilized.

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

² Trip Generation 10th Edition, Institute of Transportation Engineers, 2017.

(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 three (3) percent for the industrial and office uses and 75 percent 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 percent non-SOV assumption identified in **Section 7.4** were applied to the trip generation estimates.

As shown in **Table 10**, with the assumptions listed above, the project site is expected to generate approximately 4,194 daily, 394 AM peak hour, and 405 PM peak hour external trips by Year 2025. At full build out the project site is expected to generate approximately 20,104 daily, 1,923 AM peak hour, and 2,010 PM peak hour external trips.

Table 10. Trip Generation Summary

Land Use	Size	Unit	Non-SOV	Internal Capture	Net Reduction Factor	Average Weekday Trips		Weekday AM Peak Hour Trips				Weekday PM Peak Hour Trips			
						Rate	Total	Rate	Total	In	Out	Rate	Total	In	Out
Year 2025 Completion															
#130 Industrial Park	414	KSF	12%	3%	85%	*	1,678	0.4	141	114	27	0.4	141	30	111
#710 General Office Building	287	KSF	12%	3%	85%	**	2,516	***	253	218	35	****	264	42	222
Subtotal							4,194		394	332	62		405	72	333
Year 2030 Completion															
#820 Shopping Center	15.0	KSF	12%	75%	22%	37.75	125	0.94	3	2	1	3.81	13	6	7
#130 Industrial Park	690	KSF	12%	3%	85%	*	2,188	0.4	236	191	45	0.40	236	50	186
#710 General Office Building	717	KSF	12%	3%	85%	**	6,119	***	598	514	84	****	631	101	530
Subtotal							8,432		837	707	130		880	157	723
Year 2035 Completion															
#130 Industrial Park	276	KSF	12%	3%	85%	*	1,359	0.4	94	76	18	0.40	94	20	74
#710 General Office Building	717	KSF	12%	3%	85%	**	6,119	***	598	514	84	****	631	101	530
Subtotal							7,478		692	590	102		725	121	604
Full Buildout Total							20,104		1,923	1,629	294		2,010	350	1,660

* ITE Equation: $EXP(0.52LNx+4.45)$

** ITE Equation: $EXP(0.97LNx+2.5)$

*** ITE Equation: $(0.94x+26.49)$

**** ITE Equation $EXP(0.95LNx+0.36)$

7.6 Trip Distribution and Assignment

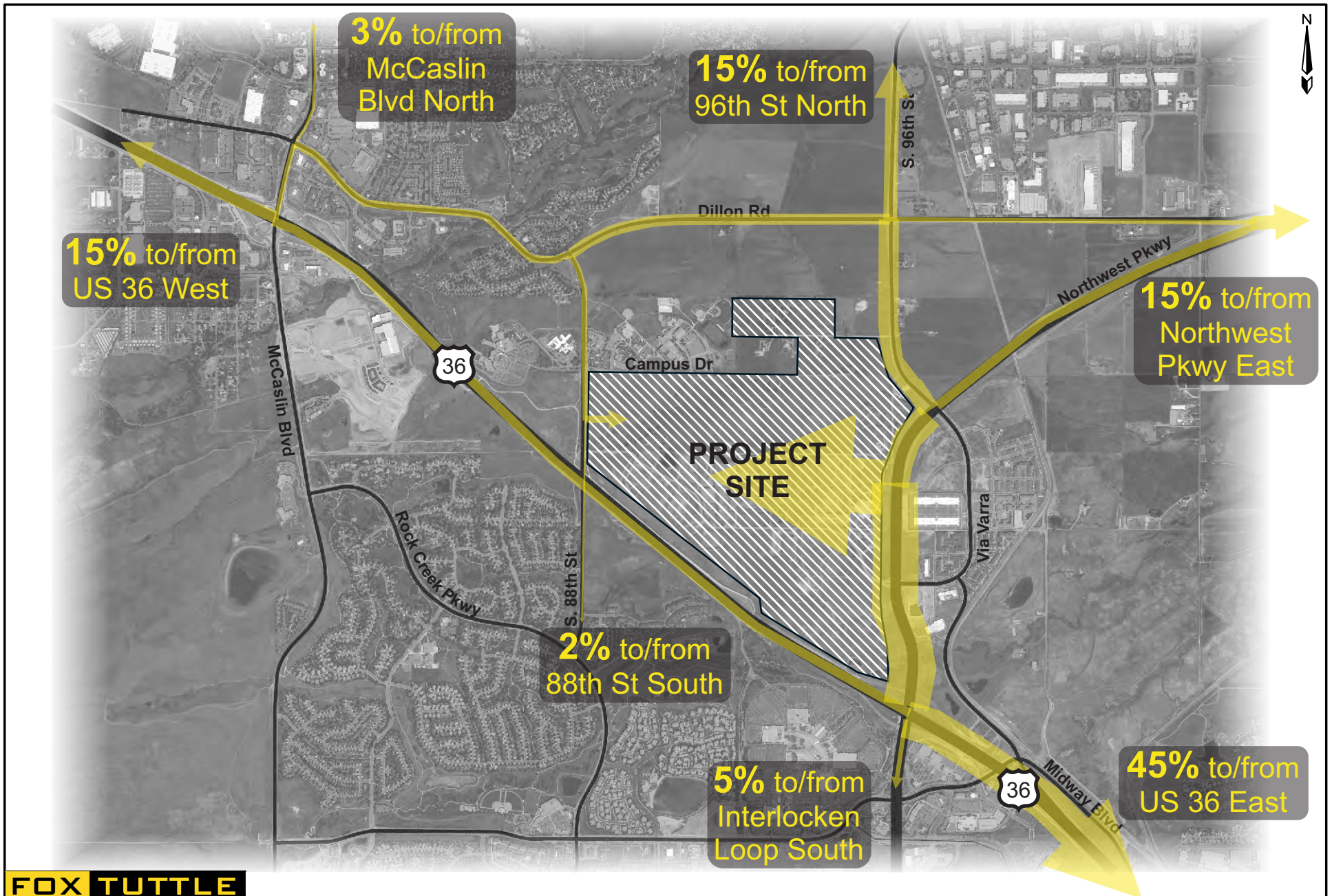
To develop the trip distribution for the proposed development, available traffic count and travel pattern data was reviewed. The proposed land uses for the project site were also taken into consideration which suggests that traffic generated to/from the project site is expected to utilize

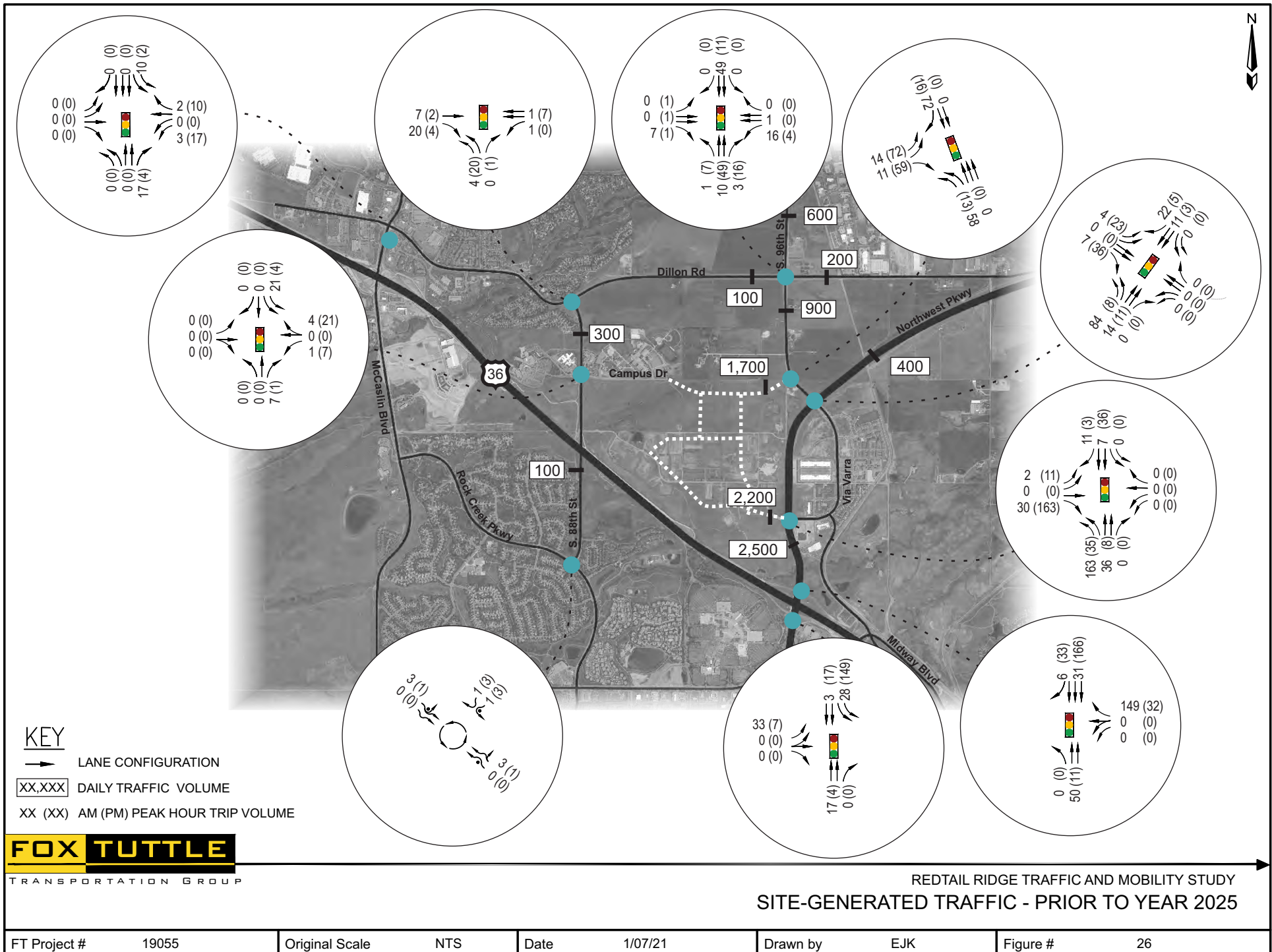
the regional transportation system, with a smaller percent of the trips generated by the local system. Therefore, most vehicles are expected to use the regional routes (such as US 36, Northwest Parkway, and S. 96th Street to the north) and few vehicles are expected to use local roads. Travel routes/patterns 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.

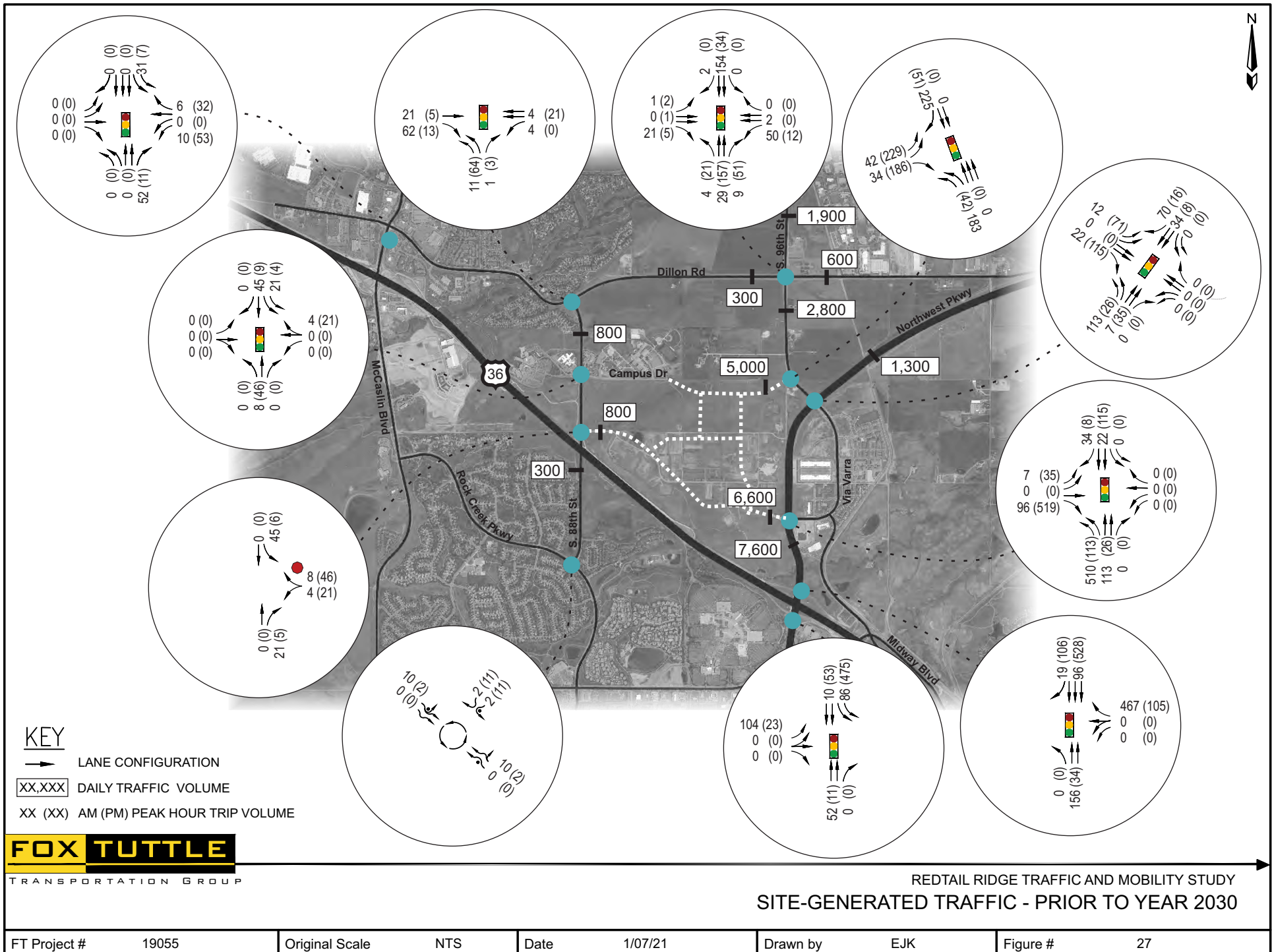
In addition to available traffic/travel pattern information, data available from the StreetLight Data Company was reviewed for the offices in CTC. StreetLight collects mobility data on vehicle trips that can be used to analyze trip origin-destination, trip travel time/route, and trip purpose; this data 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.

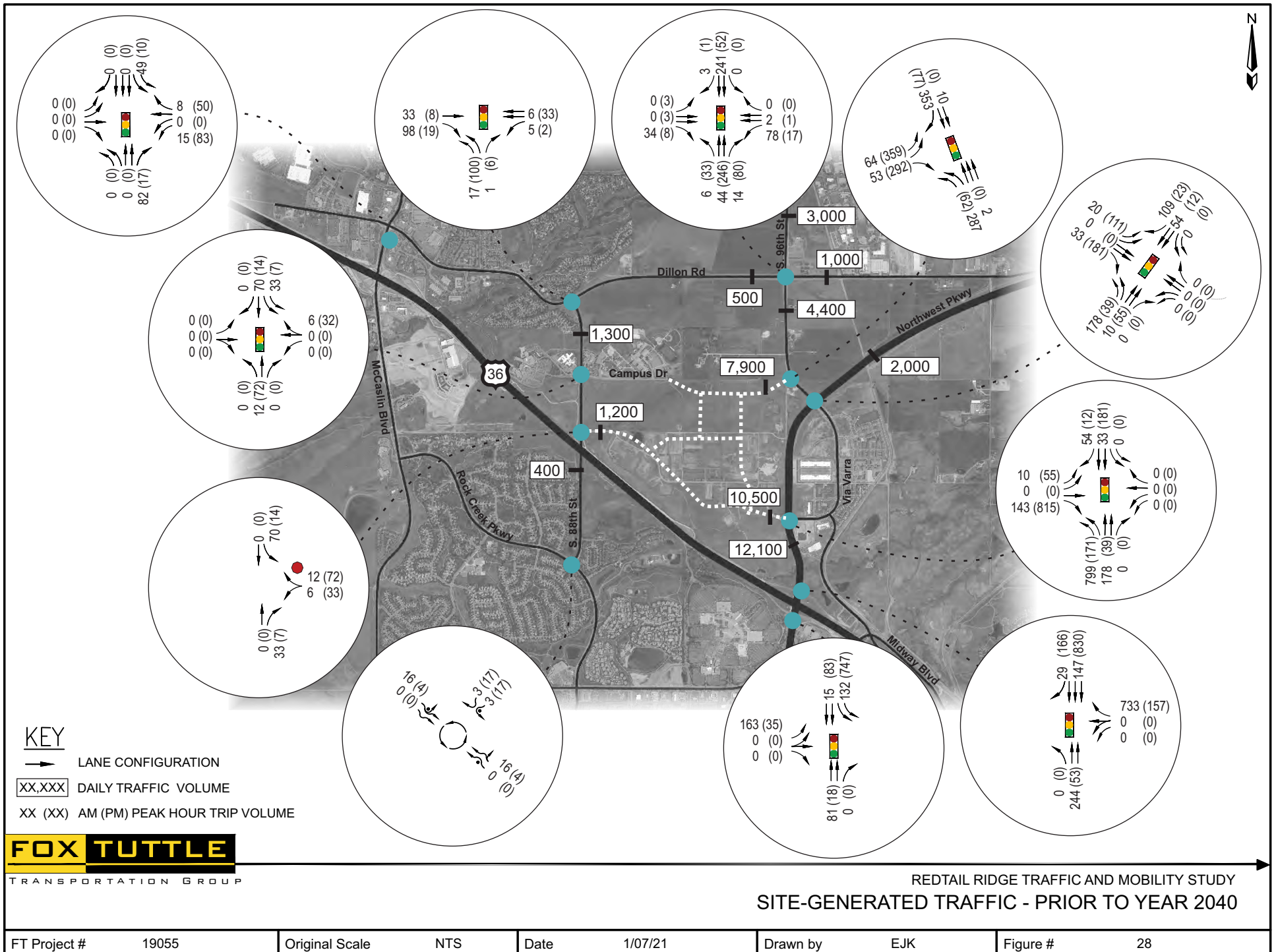
Taking into consideration the factors listed above, the trip distribution was developed for the development traffic entering/exiting the project site and is summarized in **Figure 25**. It is important to note that this trip distribution was evaluated by the City as well as their third-party consultant who used the DRCOG Year 2040 travel demand model for comparison purposes. Based on their review, the trip generation estimates shown in **Figure 25** 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 the project build out in Year 2040 are shown on **Figure 26**, **Figure 27**, and **Figure 28**, respectively.









7.7 Crash Reduction and Vision Zero

The crash analysis completed in the City of Louisville TMP, also shown in **Section 3** 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 threatening crashes.

The Redtail Ridge design team is proposing to enhance the TMP Vision Zero recommendations. 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. 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.

8.0 FUTURE CONDITIONS + SITE GENERATED TRAFFIC

This section evaluates the anticipated future traffic operations with the project trips.

8.1 Year 2025 Background + Project Intersection Capacity Analysis

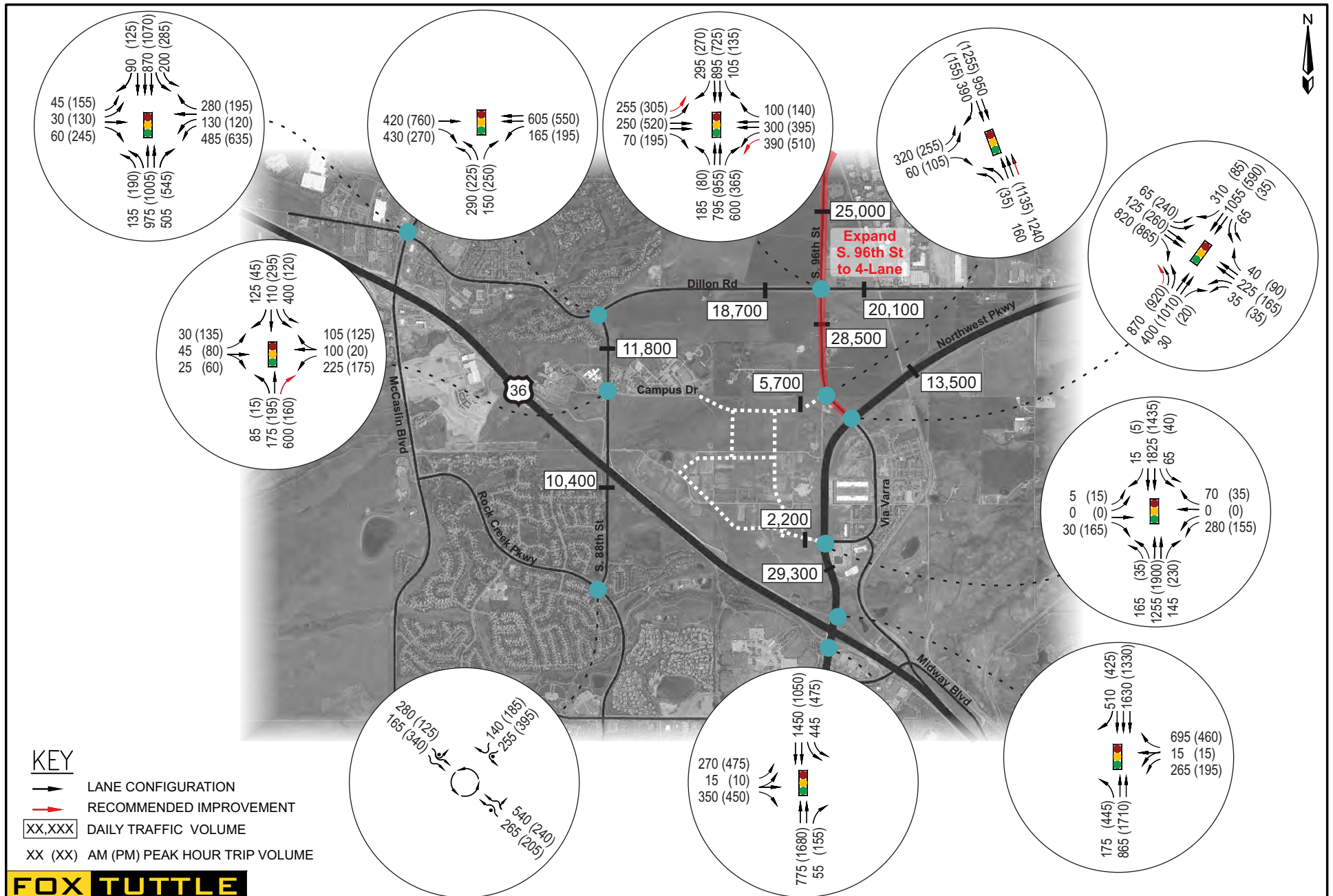
This section discusses travel conditions associated with the addition of development trips to the Year 2025 conditions. Signal timing was assumed to be optimized at all the study intersections. As previously noted, the Campus Drive extension was assumed as part of the initial phase and will be constructed/open to coincide with the opening of the first vertical development opening. The S. 88th Street/Rockcress Drive access was assumed to remain unsignalized with side-street stop control with southbound left- and northbound right-turn lanes assumed along S. 88th Street. The S. 96th Street/Campus Drive intersection was assumed to be signalized; a southbound right-turn lane, dual northbound left-turn lanes, and dual eastbound left-turn lanes with an eastbound right-turn lane (consistent with previous study recommendations). Since the Northwest Parkway/Rockcress Drive/Via Varra intersection was designed to accommodate higher traffic volumes from when Storage Tek was operating; only minor modifications (besides signal timing) were assumed under Year 2025 background + project conditions, including replacing the dual eastbound left-turn lanes with a single eastbound left-turn lane to better align with the proposed Rockcress Drive alignment to the west.

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 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 29**.

The results of the LOS calculations for the intersections are summarized in **Table 11**. Summary tables with LOS and 95th percentile queues by movement as well as the intersection LOS worksheets are included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that the Dillon Road/S. 96th Street and the Northwest Parkway/S. 96th Street/Via Varra intersections are expected operate at LOS E or worse during the AM or PM peak hour. All the other study intersections are expected to operate at an overall LOS D or better.**

As previous studies have suggested, the Campus Drive extension improves traffic operations at the Dillon Road/S. 88th Street and S. 88th Street/Campus Drive intersections. Both intersections were expected to operate at LOS F during the AM peak hour under Year 2025 background conditions. The Campus Drive extension provides an alternative route for Monarch school campus traffic to enter/exit. This reduces traffic volumes at these two key intersections on S. 88th Street.



REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY
YEAR 2025 BACKGROUND+SITE GENERATED TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	5/19/20	Drawn by	EJK	Figure #	29
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Table 11. Year 2025 + Project Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (25 sec)	C (33 sec)
Dillon Road/S. 88th Street	C (20 sec)	C (20 sec)
Dillon Road/S. 96th Street	E (64 sec)	F (85 sec)
S. 88th Street/Campus Drive	C (33 sec)	C (33 sec)
S. 88th Street/ Rockcress Drive ⁽¹⁾	--	--
S. 96th Street/Campus Drive	D (39 sec)	C (27 sec)
Northwest Parkway/S. 96th Street/Via Varra	F (90 sec)	C (32 sec)
Northwest Parkway/ Rockcress Drive/Via Varra	C (21 sec)	A (9 sec)
Northwest Parkway/US 36 North Ramps (WB)	A (9 sec)	B (15 sec)
Northwest Parkway/US 36 South Ramps (EB)	B (18 sec)	C (34 sec)
S. 88th Street/Rock Creek Parkway ⁽²⁾	A (10 sec)	A (7 sec)

⁽¹⁾ Intersection assumed to not be constructed until after Year 2025.

⁽²⁾ Roundabout controlled intersection

Note that the internal intersections were evaluated under Year 2025 background + project conditions and the intersection LOS worksheets are included in the **Appendix**. However, the analysis results, intersection operation discussion, and lane geometry/traffic control recommendations are included in a later section: **Section 10.0 “Internal Intersection Analysis”**.

To address the expected issues at the study intersections, the improvements listed below are recommended (these improvements are also illustrated in **Figure 29**). Additional information on the anticipated timing for improvements is provided in **Section 12.0 “Improvement Phasing”**.

- S. 96th Street/Dillon Road: Construct dual eastbound and westbound left-turn lanes on Dillon – *also recommended under Year 2025 background conditions*
- Widen S. 96th Street to a four-lane section between Dillon Road to Northwest Parkway and to the north of the Dillon Road intersection approximately one-half mile – *S. 96th Street between Dillon Road and Northwest Parkway also recommended to be expanded to a four-lane under Year 2025 background conditions*
- S. 88th Street/Campus Drive: Extend the northbound right-turn lane to provide 400 to 500 feet of storage – *also recommended under Year 2025 background conditions*
- S. 96th Street/Campus Drive: Construct three northbound through lanes that extend from the Northwest Parkway/S. 96th Street/Via Varra intersection to the Campus Drive intersection. The three northbound through lanes will merge to two through lanes north of Campus Drive.
- Northwest Parkway/S. 96th Street: Construct triple northeast bound left-turn lanes on Northwest Parkway and modify the southwest bound right-turn movement to be controlled on Northwest Parkway – *also recommended under Year 2025 background conditions*

The Year 2025 background + project conditions were evaluated with the improvements listed above. The results of the LOS calculations for the intersections are summarized in **Table 12**. A summary table with LOS and 95th percentile queue by movement as well as the intersection LOS worksheets are included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that with the recommended improvements all study intersections are expected to operate at an overall LOS D or better during the AM and PM peak hours.**

Table 12. Year 2025 Background + Project Conditions Level of Service Summary (Improvements)

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	--	--
Dillon Road/S. 88th Street	--	--
Dillon Road/S. 96th Street	D (35 sec.)	D (37 sec.)
S. 88th Street/Campus Drive	C (30 sec.)	C (32 sec.)
S. 88th Street/ Rockcress Drive	--	--
S. 96th Street/Campus Drive	C (22 sec.)	B (14 sec.)
Northwest Parkway/S. 96th Street/Via Varra	D (38 sec.)	C (29 sec.)
Northwest Parkway/ Rockcress Drive/Via Varra	--	--
Northwest Parkway/US 36 North Ramps (WB)	--	--
Northwest Parkway/US 36 South Ramps (EB)	--	--
S. 88th Street/Rock Creek Parkway	--	--

⁽¹⁾ LOS results only shown for intersections with recommended improvements

Although the study intersections are expected to operate at overall acceptable level-of-service, the following movements are expected to operate at LOS E or worse under Year 2025 conditions with the recommended improvements. Any anticipated queuing issues are also noted below.

Dillon Road and McCaslin Boulevard

- During the PM peak hour, the following movements are expected to operate at LOS E: 4 northbound left- and southbound left-turn. All movements during the AM peak hour are expected to operate at LOS D or better.
- No significant queuing issues are expected. However, the southbound right-turn queue is expected to extend approximately 120 feet occasionally, which will queue beyond the available 110 feet of storage in the right-turn lane.
- The project-related traffic has minimal impact to operations at this intersection.

Dillon Road and S. 88th Street

- The extension of Campus Drive improves traffic operations at this intersection by removing traffic from a critical movement (westbound left-turn). The Campus Drive extension is expected to address the existing westbound left-turn and northbound queues that this intersection currently experiences during the AM peak hour.
- During the PM peak hour, the eastbound queues are expected to extend approximately 560 feet, (which is less than the 1,000 feet that the eastbound queues currently extend under existing conditions).

Dillon Road and S. 96th Street

- During the AM and PM peak hours, there are a few movements that are expected to operate at LOS E with the recommended improvements.
 - o During the AM peak hour, the following movements operate at LOS E: eastbound left, eastbound through, and westbound left-turn.
 - o During the PM peak hour, the following movements operate at LOS E: eastbound through and westbound left-turn.
- No significant queuing issues are expected. The westbound left-turn queue during the PM peak hour is expected to extend approximately 300 feet, which is a significant improvement from existing conditions.

S. 88th Street and Campus Drive

- The extension of Campus Drive improves traffic operations at this intersection by removing traffic from a critical movement (southbound left-turn).
- During the AM and PM peak hours, the eastbound through is expected to operate at LOS E with the recommended improvements.
- No significant queuing issues are expected during the AM or PM peak hours.

S. 96th Street/Campus Drive

- During the AM and PM peak hour, the northbound left-turn movement is expected to operate at LOS E or worse. However, the northbound left-turn queues are expected to be within the available left-turn lane storage (estimated to be 250 feet).

Northwest Parkway and S. 96th Street/Via Varra

- During the AM and PM peak hours, there are a few movements that are expected to operate at LOS E with the recommended improvements.
 - o During the AM peak hour, the following movements operate at LOS E: the eastbound left, eastbound through, westbound left, and westbound through on S 96th Street/Via Varra and the northbound left- and southbound left-turn on Northwest Parkway.
 - o During the PM peak hour, the following movements operate at LOS E: the eastbound left, eastbound through, westbound left-, and westbound through on S 96th Street/Via Varra and the southbound left-turn on Northwest Parkway.
- During the AM peak hour, with the recommended capacity improvements, the northbound left-turn queues on Northwest Parkway are expected to extend approximately 465 feet, which can be accommodated in the available left-turn lane storage of 700 feet. The southbound right-turn queue on Northwest Parkway, which was modified from an uncontrolled to a controlled movement, is expected to extend approximately 165 feet, which can also be accommodated in the available right-turn lane storage of 600 feet.

Northwest Parkway and Rockcress Drive/Via Varra

- During the AM and PM peak hours, there are a few movements that are expected to operate at LOS E or worse.
 - o During the AM peak hour, the following movements operate at LOS E or worse: the westbound left and southbound left-turn.
 - o During the PM peak hour, the following movements operate at LOS E: the eastbound left, westbound left-, northbound left- and southbound left-turn.
- No significant queuing issues are expected.

Northwest Parkway and US 36 Westbound/North Ramps

- During the AM and PM peak hour, the westbound left- and westbound through movements are expected to operate at/near LOS E.
- During the PM peak hour, the northbound left-turn queue is expected to extend approximately 340 feet, which is beyond the available storage. These queues do not extend to the US 36 South Ramps intersection to the south.

Northwest Parkway and US 36 Eastbound/South Ramps

- During the AM and PM peak hours, the eastbound left-, and eastbound through are expected to operate at/near LOS E or worse.
- During the PM peak hour, the eastbound left-turn queues extend approximately 485 feet and northbound through queues extend approximately 640 feet. This intersection is near

capacity under Year 2025 background + project site-generated trips. If traffic volumes increase at this intersection, it will quickly degrade, and the movement delay and approach queues will increase and begin to impact adjacent intersections.

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. Signal timing was assumed to be optimized at all the study intersections. The improvements identified under Year 2025 background + project conditions were assumed to be in place for Year 2030 conditions. The projected site-generated traffic was added to the Year 2030 background study area traffic volumes. The resultant traffic volumes are illustrated on **Figure 30**.

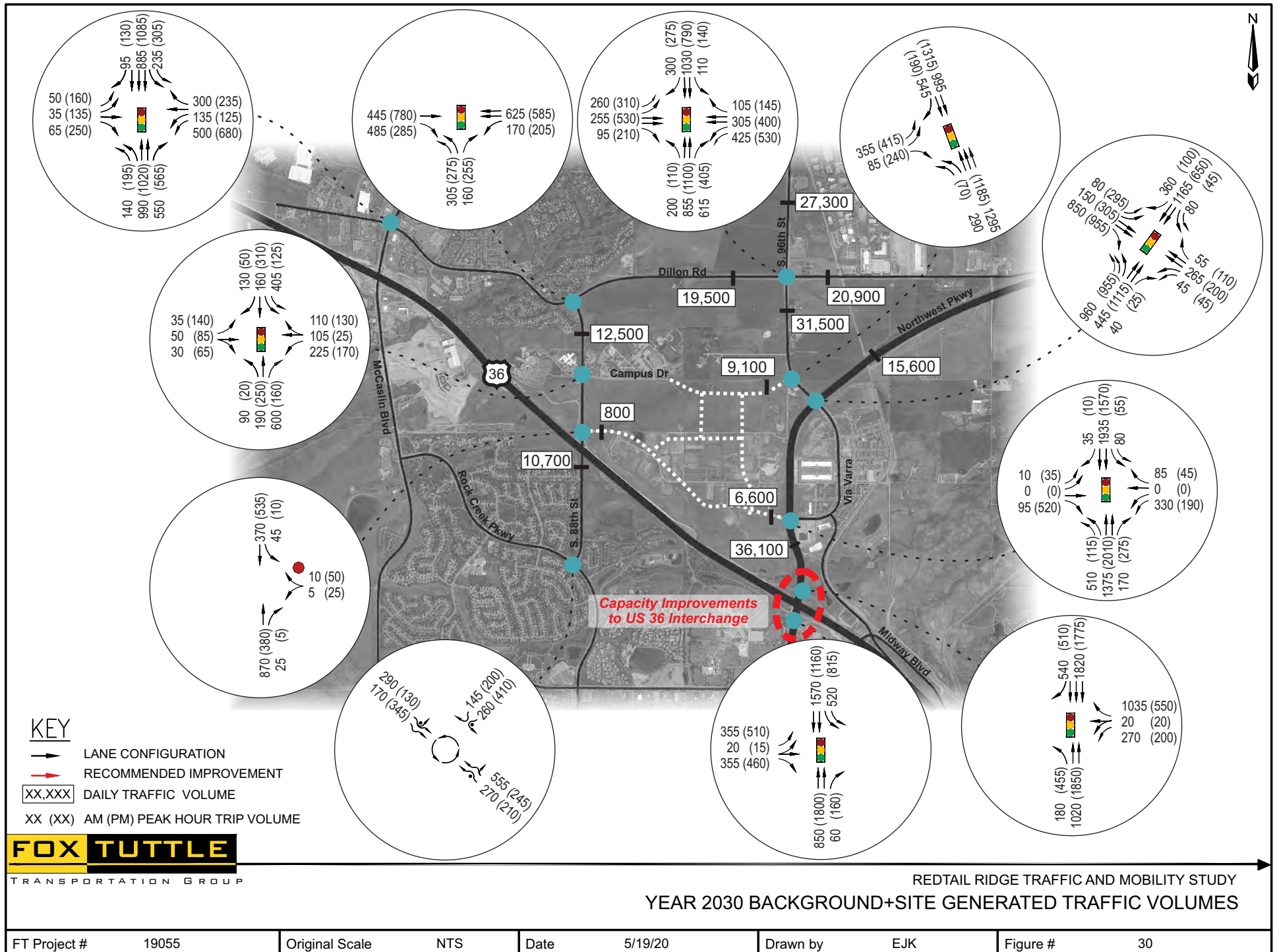
The results of the LOS calculations for the intersections are summarized in **Table 13**. Summary tables with LOS and 95th percentile queues by movement as well as the intersection LOS worksheets are included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that the Northwest Parkway/US 36 South Ramps intersection is expected operate at LOS F during the PM peak hour. All the other study intersections are expected to operate at an overall LOS D or better.**

Table 13. Year 2030 + Project Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (27 sec)	C (34 sec)
Dillon Road/S. 88th Street	C (21 sec)	C (21 sec)
Dillon Road/S. 96th Street	D (37 sec)	D (40 sec)
S. 88th Street/Campus Drive	D (35 sec)	C (24 sec)
S. 88th Street/Rockcress Drive ⁽¹⁾	A / C (16 sec.)	A / B (11 sec)
S. 96th Street/Campus Drive	C (23 sec)	C (21 sec)
Northwest Parkway/S. 96th Street/Via Varra	D (51 sec)	C (30 sec)
Northwest Parkway/Rockcress Drive/Via Varra	D (42 sec)	B (16 sec)
Northwest Parkway/US 36 North Ramps (WB)	A (12 sec)	C (29 sec)
Northwest Parkway/US 36 South Ramps (EB)	B (18 sec)	F (82 sec)
S. 88th Street/Rock Creek Parkway ⁽²⁾	B (10 sec)	A (7 sec)

⁽¹⁾ Unsignalized with side-street stop control. The overall intersection LOS is followed by the worst-movement LOS and delay.

⁽²⁾ Roundabout controlled intersection



Under Year 2030 background + project conditions, the South Ramps at the Northwest Parkway/US 36 interchange are expected to be over capacity during the PM peak hour. The intersection is expected to operate at a LOS F, with multiple movements anticipated to have an average delay of more than two minutes. Further, the eastbound queues are anticipated to extend more than 1,000 feet which is near the US 36 mainline traffic, and the northbound queues are expected to extend more than 1,700 feet.

Additional capacity is needed to accommodate the projected traffic volumes with and without the project site trips at the US 36/Northwest Parkway, which will likely require that the bridge be widened. As noted under the background conditions, due to the unknowns of future project impacts to this area (including both Northwest Parkway Extension and Jefferson Parkway), no specific mitigation is recommended. Additional study/analysis should be conducted at the interchange to determine the optimal design to meet the future needs. With a new design with increased capacity, this interchange should operate acceptably in the future.

Note that the internal intersections were evaluated under Year 2030 background + project conditions and the intersection LOS worksheets are included in the **Appendix**. However, the analysis results, intersection operation discussion, and lane geometry/traffic control recommendations are included in a later section: **Section 10.0 “Internal Intersection Analysis”**.

Although the other study intersections are expected to operate at overall acceptable level-of-service, the following movements are expected to operate at LOS E or worse under Year 2030 background conditions. Any anticipated queuing issues are also noted below.

Dillon Road and McCaslin Boulevard

- During the AM peak hour, the southbound left-turn is expected to operate at LOS E.
- During the PM peak hour, the following movements are expected to operate at LOS E: eastbound left-, eastbound through, northbound left-, and southbound left-turn.
- No significant queuing issues are expected. However, the southbound right-turn lane is expected to approximately 140 feet which will occasionally queue beyond the available storage for the right-turn lane of 110 feet.
- The project-related traffic has minimal impact to operations at this intersection.

Dillon Road and S. 88th Street

- During the PM peak hour, the eastbound queues are expected to extend approximately 640 feet. The nearest intersection is the signal located approximately 965 feet to the west.

Dillon Road and S. 96th Street

- During the AM peak hour, the following movements operate at/near LOS E: eastbound left, westbound, and northbound left-turn.
- During the PM peak hour, the following movements operate at LOS E: eastbound through and westbound left-turn.
- No significant queuing issues are expected.

S. 88th Street and Campus Drive

- During the AM peak hour, the eastbound through and southbound left-turn are expected to operate at LOS E or worse.
- During the AM peak hour, the southbound left-turn queues are expected to extend 380 feet, which is near the available 400-foot of available storage. This is expected to occur near the school arrival peak period for Monarch school campus. Generally, it is acceptable for queuing/delay issues to occur near intersections adjacent to a school during a school's the arrival/departure peak periods since the congestion occurs for a relatively short period of time.

S. 96th Street/Campus Drive

- During the AM peak hour, the eastbound left-and northbound left-turn are expected to operate at LOS E.
- During the PM peak hour, the northbound left-turn is expected to operate at LOS F.
- While, no significant queuing issues are expected during the AM or PM peak hours, it should be noted that poor lane utilization is anticipated for the southbound approach and the right-turn queues are expected to extend approximately 460 feet. The poor lane utilization is due to most vehicles positioning into the outside through lane since they are destined to make a right-turn onto Northwest Parkway.

Northwest Parkway and S. 96th Street/Via Varra

- During the AM peak hour, the following movements operate at LOS E or worse: the eastbound left, eastbound through, westbound left- and westbound through on S 96th Street/Via Varra and the northbound left- and southbound left-turn on Northwest Parkway.
- During the PM peak hour, the following movements operate at/near LOS E: the eastbound left, eastbound through, westbound left-turn, and westbound through on S 96th Street/Via Varra and the southbound left-turn on Northwest Parkway.
- During the AM peak hour, the northbound left-turn queues on Northwest Parkway are expected to extend approximately 745 feet, which will occasionally extend beyond the

available left-turn lane storage of 700 feet. This intersection should be monitored, and signal timing should be adjusted, as needed.

Northwest Parkway and Rockcress Drive/Via Varra

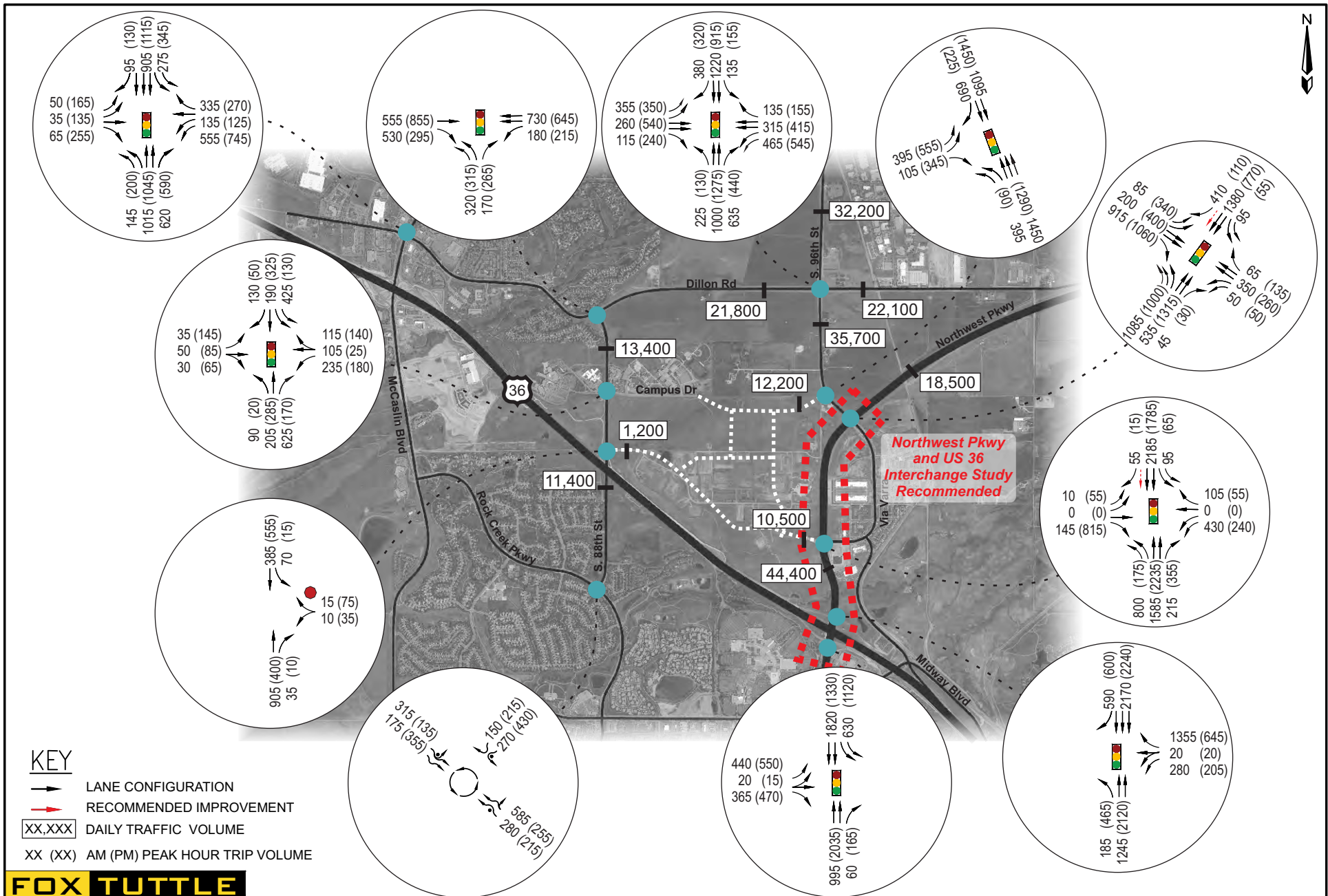
- During the AM and PM peak hours, the following movements operate at LOS E or worse: the eastbound left, westbound left, northbound left, southbound left and southbound through.
- While no significant queuing issues are expected, the southbound queues are expected to extend approximately 1,100 feet during the AM peak hour. The southbound traffic volume is approaching capacity for two through lanes.

8.3 Year 2040 Background + Project Intersection Capacity Analysis

This section discusses travel conditions associated with the build out of the proposed development in the long-term (Year 2040). The projected site-generated traffic was added to the Year 2040 background study area traffic volumes and are illustrated on **Figure 31**. Consistent with the Year 2040 background condition recommendations, S. 96th Street was assumed to be expanded to a four-lane roadway to the north of Dillon Road by Year 2040. Year 2025 background + project conditions recommended that the four-lane be expanded to the north a minimum of one-half mile, but by Year 2040 it is expected that traffic volumes on S. 96th Avenue will warrant a four-lane through the SH 42 intersection.

Based on the results of the Year 2030 background + project conditions, it was assumed that the US 36/ Northwest Parkway interchange would be reconstructed to add additional capacity that would accommodate future traffic volumes. However, since no concepts have been developed for the interchange, the interchange intersections were not evaluated under Year 2040 background + project conditions.

Once again it is also important to consider that if the Jefferson Parkway extension is constructed, then that project would potentially reconstruct the US 36 interchange as well as grade separate the Northwest Parkway/S. 96th Street/Via Varra intersection and construct a frontage road system to accommodate local traffic. However, no concepts showing the potential reconfiguration of Northwest Parkway have been developed.



REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY
YEAR 2040 BACKGROUND+SITE GENERATED TRAFFIC VOLUMES

FT Project #	19055	Original Scale	NTS	Date	1/07/21	Drawn by	EJK	Figure #	31
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Recently completed Jefferson Parkway studies have not evaluated the projected peak hour intersection traffic volumes on Northwest Parkway. Due to the regional connectivity that Jefferson Parkway provides, additional analysis should be completed to better understand projected peak hour traffic to the network and to identify what interchange options will provide acceptable operations and can also be constructed within the available right-of-way.

The results of the LOS calculations for the intersections are summarized in **Table 14**. Summary tables with LOS and 95th percentile queues by movement as well as the intersection LOS worksheets are included in the **Appendix**. **Results of the peak hour intersection capacity analysis indicate that Northwest Parkway intersections at S. 96th Street/Via Varra and Rockcress Drive/Via Varra are expected to operate at LOS F during the AM peak hour. All other study intersections are expected to operate at LOS D or better during the AM and PM peak hours.**

Table 14. Year 2040 + Project Conditions Level of Service Summary

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	C (28 sec)	D (40 sec)
Dillon Road/S. 88th Street	C (25 sec)	C (28 sec)
Dillon Road/S. 96th Street	D (44 sec)	D (43 sec)
S. 88th Street/Campus Drive	D (37 sec)	C (23 sec)
S. 88th Street/Rockcress Drive ⁽¹⁾	A / C (15 sec.)	A / B (12 sec)
S. 96th Street/Campus Drive	C (31 sec)	C (27 sec)
Northwest Parkway/S. 96th Street/Via Varra	F (100 sec.)	C (34 sec)
Northwest Parkway/Rockcress Drive/Via Varra	F (>2min)	C (24 sec)
Northwest Parkway/US 36 North Ramps (WB)	N/A	N/A
Northwest Parkway/US 36 South Ramps (EB)	N/A	N/A
S. 88th Street/Rock Creek Parkway ⁽²⁾	B (12 sec)	A (7 sec)

⁽¹⁾ Unsignalized with side-street stop control. The overall intersection LOS is followed by the worst-movement LOS and delay.

⁽²⁾ Roundabout controlled intersection

N/A – Intersection identified to be included in an interchange study.

Note that the internal intersections were evaluated under Year 2040 background + project conditions and the intersection LOS worksheets are included in the **Appendix**. However, the analysis results, intersection operation discussion, and lane geometry/traffic control recommendations are included in a later section: **Section 10.0 “Internal Intersection Analysis”**.

Both Northwest Parkway study intersections at S. 96th Street/Via Varra and Rockcress Drive/Via Varra are expected to operate at LOS F during the AM peak hour. While the Jefferson Parkway project has identified the potential need for a grade separated intersection at the S. 96th Street/Via Varra intersection, there are uncertainties to if/when that project may occur.

To address the anticipated capacity issues at this intersection, one option is to construct a third southbound through lane on Northwest Parkway that would begin north of the S. 96th Street/Via Varra intersection and continue to the US 36 interchange. While this is not the only option to provide acceptable levels of service on Northwest Parkway, for purposes of this study the third southbound through lane was assumed to address the capacity issues at the S. 96th Street/Via Varra and Rockcress Drive/Via Varra intersections.

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.

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 15**. A summary table with LOS and 95th percentile queue by movement as well as the intersection LOS worksheets are 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 15. Year 2040 + Project Conditions Level of Service Summary (Improvements)

Intersection	Overall Intersection LOS (Delay)	
	AM Peak Hour	PM Peak Hour
Dillon Road/McCaslin Boulevard	--	--
Dillon Road/S. 88th Street	--	--
Dillon Road/S. 96th Street	--	--
S. 88th Street/Campus Drive	--	--
S. 88th Street/Rockcress Drive ⁽¹⁾	--	--
S. 96th Street/Campus Drive	--	--
Northwest Parkway/S. 96th Street/Via Varra	D (52 sec.)	C (32 sec.)
Northwest Parkway/Rockcress Drive/Via Varra	D (52 sec.)	C (25 sec.)
Northwest Parkway/US 36 North Ramps (WB)	--	--
Northwest Parkway/US 36 South Ramps (EB)	--	--
S. 88th Street/Rock Creek Parkway ⁽²⁾	--	--

⁽¹⁾ LOS results only shown for intersections with recommended improvements

The following movements are expected to operate at LOS E or worse under Year 2040 background conditions with improvements to Northwest Parkway. Any anticipated queuing issues are also noted below.

Dillon Road and McCaslin Boulevard

- During the AM peak hour, the eastbound through is expected to operate at LOS E.
- During the PM peak hour, the following movements are expected to operate at LOS E: eastbound left-, eastbound through, westbound left, northbound left-, and southbound left-turn.
- During the PM peak hour, the southbound left- turn and right-turn queues are expected to occasionally queue beyond the available storage. No mitigation is recommended.
- No other queuing issues are anticipated.
- The project-related traffic has minimal impact to operations at this intersection.

Dillon Road and S. 88th Street

- During the AM peak hour, the westbound left- and northbound left-turn are expected to operate at LOS E.
- During the PM peak hour, the northbound left-turn is expected to operate at LOS E.
- During the PM peak hour, the eastbound queues are expected to extend approximately 835 feet. The nearest intersection is the signal located approximately 965 feet to the west.
- Note that the City has a desire to maintain Dillon Road as a two-lane roadway. Since this intersection is anticipated to operate at an overall LOS C during the AM and PM peak hours with Year 2040 traffic volumes, no mitigation is recommended at this intersection. However, traffic volumes on Dillon Road should continue to be monitored and if traffic volumes increase at a higher rate than anticipated, then a four-lane may be needed on Dillon Road to accommodate future traffic volumes safely and efficiently.

Dillon Road and S. 96th Street

- During the AM peak hour, the following movements operate at/near LOS E: eastbound left, eastbound through, westbound left-turn, westbound through, northbound left, and southbound through.
- During the PM peak hour, the following movements operate at LOS E: eastbound left, eastbound through, and westbound left.
- No significant queuing issues are expected.
- As noted above, the City has a desire to maintain Dillon Road as a two-lane roadway. Since this intersection is anticipated to operate at a LOS D during the AM and PM peak hours, no mitigation is recommended at this intersection. However, traffic volumes and operations should continue to be monitored at this intersection. If Dillon Road is expanded to a four-lane, this intersection is expected to have more balanced lane utilization for the eastbound and westbound through movements, which would improve the efficiency of the overall intersection operations.

S. 88th Street and Campus Drive

- During the AM peak hour, the eastbound through and southbound left-turn are expected to operate at LOS E or worse.
- During the AM peak hour, the southbound left-turn queues are expected to extend beyond the 400-foot storage turn lane. This is expected to occur near the school arrival peak period for Monarch school campus. As noted under Year 2030 background conditions, it is generally considered acceptable for queuing/delay issues to occur near intersections adjacent to a school during a school's the arrival/departure peak periods, since the congestion occurs for a relatively short period of time.
- No significant queuing issues are expected during the AM or PM peak hours.

S. 96th Street/Campus Drive

- During the AM peak hour, the eastbound left- and northbound left-turn are expected to operate at LOS E or worse.
- During the PM peak hour, the northbound left-turn is expected to operate at LOS F.
- The northbound queues on S. 96th Street are expected to extend 500 feet during the AM peak hour. There is approximately 630 feet of space on S. 96th Street between Campus Drive and Northwest Parkway; therefore the S. 96th Street/Campus Drive location is expected to operate acceptably and does not need to be located further to the north.
- During the AM peak hour, the northbound left-turn queues are expected to extend approximately 330 feet.
- While, no significant queuing issues are expected during the AM or PM peak hours, it should be noted that poor lane utilization is anticipated for the southbound approach and the right-turn queues are expected to extend approximately 510 feet. The poor lane utilization is due to most vehicles positioning into the outside through lane since they are destined to make a right-turn onto Northwest Parkway. If the Northwest Parkway/ S. 96th Street/Via Varra intersection were grade separated, there is the potential that the lane utilization could be improved with the grade separation design.

Northwest Parkway and S. 96th Street/Via Varra

- During the AM and PM peak hours, there are a few movements that are expected to operate at LOS E with the recommended improvements.
 - o During the AM peak hour, the following movements operate at LOS E or worse: the eastbound left, eastbound through, westbound left- and westbound through on S 96th Street/Via Varra and the northbound left-, and southbound left-turn on Northwest Parkway.

- o During the PM peak hour, the following movements operate at LOS E: the eastbound through and westbound through on S 96th Street/Via Varra and the southbound left-turn on Northwest Parkway.
- During the AM peak hour, the northbound left-turn queues on Northwest Parkway are expected to extend approximately 760 feet, which will occasionally extend beyond the available left-turn lane storage of 700 feet. This intersection should be monitored, and signal timing should be adjusted, as needed.

Northwest Parkway and Rockcress Drive/Via Varra

- During the AM and PM peak hours, the eastbound left, westbound left, northbound left, southbound left are expected to operate at LOS E or worse with the recommended improvements.
- No significant queuing issues are expected during the AM or PM peak hours.

9.0 ARTERIAL TRAVEL TIME ANALYSIS

Two corridors were identified for possible expansion from a two-lane to a four-lane roadway with the project site-generated trips: S. 96th Street and Dillon Road.

S. 96th Street was recommended to be expanded from a two-lane to a four-lane between Dillon Road and Northwest Parkway once the Campus Drive extension is open (estimated to occur in year 2022). S. 96th Street was also recommended to be expanded to a four-lane to the north of Dillon Road. However, it is important to note that there are other ongoing projects adjacent/on S. 96th Street that should be further evaluated/considered when determining when and how far north the four-lane on S. 96th Street should continue, including the St. Louis Parish development project and the SH 42 BRT study. Both studies may recommend that a four-lane be constructed to the north to SH 42 sooner than anticipated in this study.

Dillon Road was not recommended to be expanded to a four-lane roadway under the Year 2040 background + project conditions. Based on discussions with City staff, there is a desire to maintain the Dillon Road corridor between S. 88th Street and S. 96th Street as a two-lane roadway. However, under Year 2040 background + project conditions, the corridor is nearing the capacity for a two-lane roadway. Therefore, it was recommended that this corridor continue to be monitored and studied in the future to reassess if/when a four-lane roadway may be needed.

To provide another metric to evaluate the corridor LOS, arterial travel time information is summarized for background and with project conditions for S. 96th Street corridors (between Dillon Road and Northwest Parkway) and Dillon Road (between S. 88th Street and S. 96th Street). A summary of the travel time estimates is illustrated in **Figures 32 to 35** and the key takeaways are bulleted below.

- Under with and without project conditions, S. 96th Street is recommended to be expanded to a four-lane roadway in Year 2025. As shown in **Figure 32**, the travel time notably decreases for southbound traffic once this improvement is constructed. The northbound traffic also is expected to experience a decrease in travel time with that improvement since vehicles making a heavy left-turn movement from Northwest Parkway onto northbound S. 96th Street no longer merge into a single through lane.
- Dillon Road is anticipated to have the highest travel times in Year 2025 background conditions prior to any improvements constructed. As shown in the graphics, the construction of the Campus Drive extension is expected to reduce travel time on Dillon Road.
- The decrease in travel time on Dillon Road under the improved Year 2025 background + project conditions is due to the dual eastbound/westbound left-turn lanes at the Dillon Road/S. 96th Street, which significantly decreases delay for vehicles traveling through that intersection.
- Under Year 2040 background + project conditions, the travel time on Dillon Road is anticipated to be like existing conditions besides the westbound direction during the AM peak hour which is expected to improve due to the Campus Drive extension. Review of this analysis supports the recommendation for Dillon Road to remain as a two-lane roadway through Year 2040.

Figure 32. S. 96th Street (Dillon Rd to Northwest Pkwy) Arterial Travel Time (Northbound)

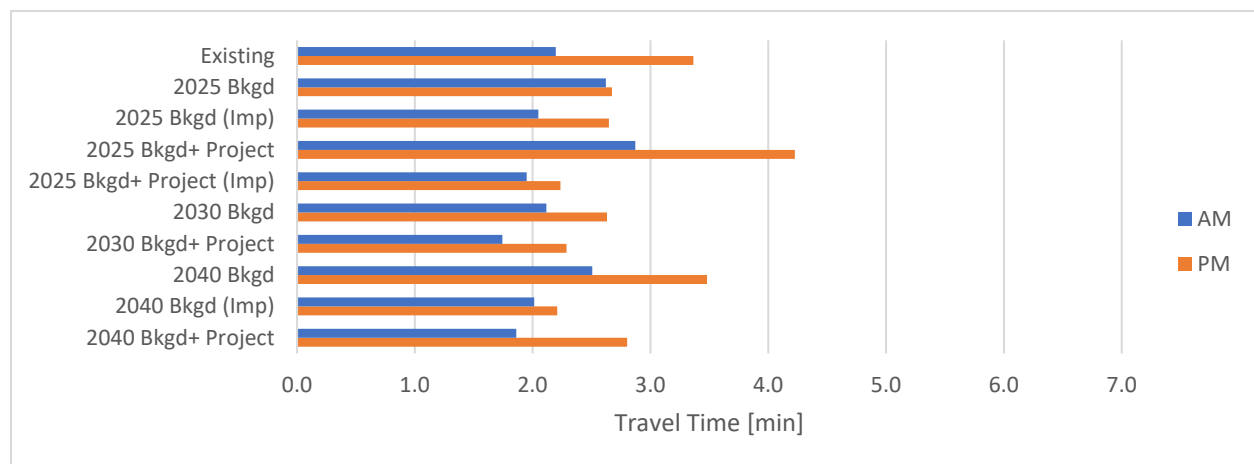
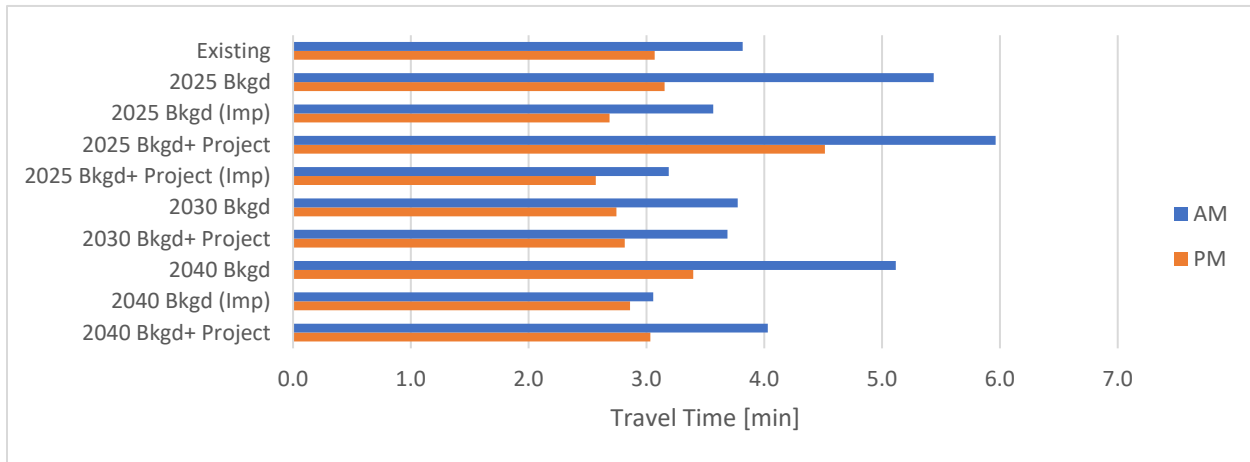
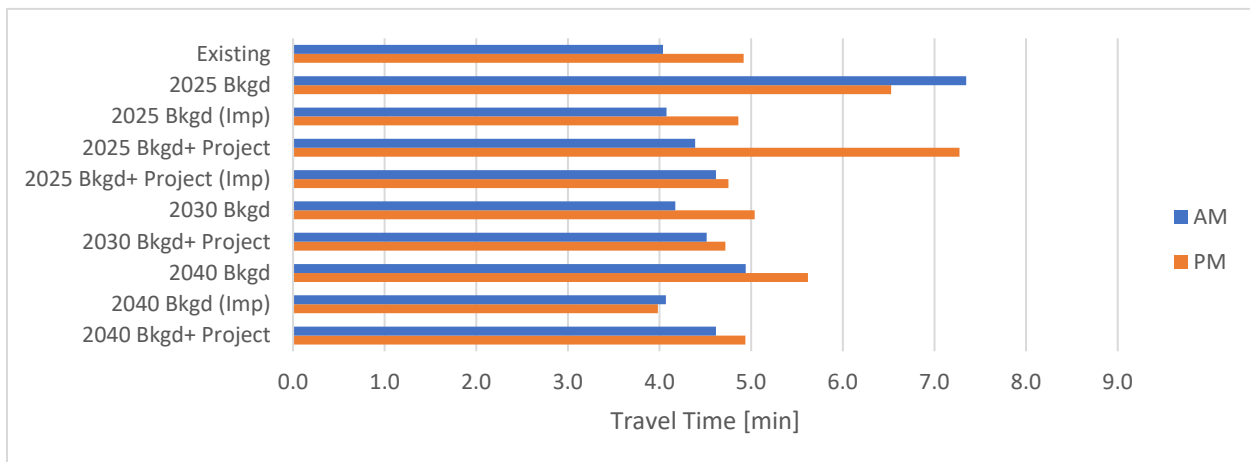
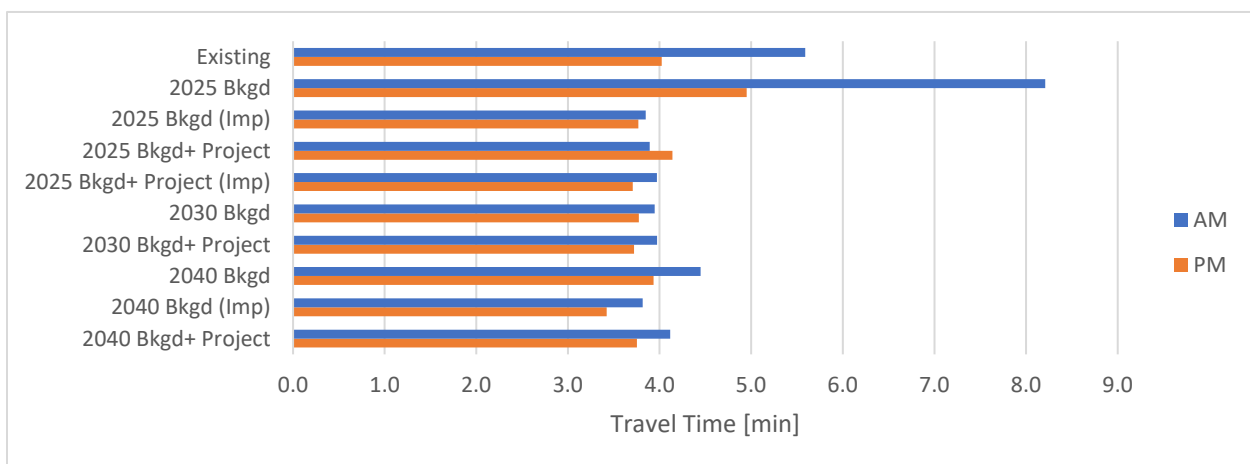


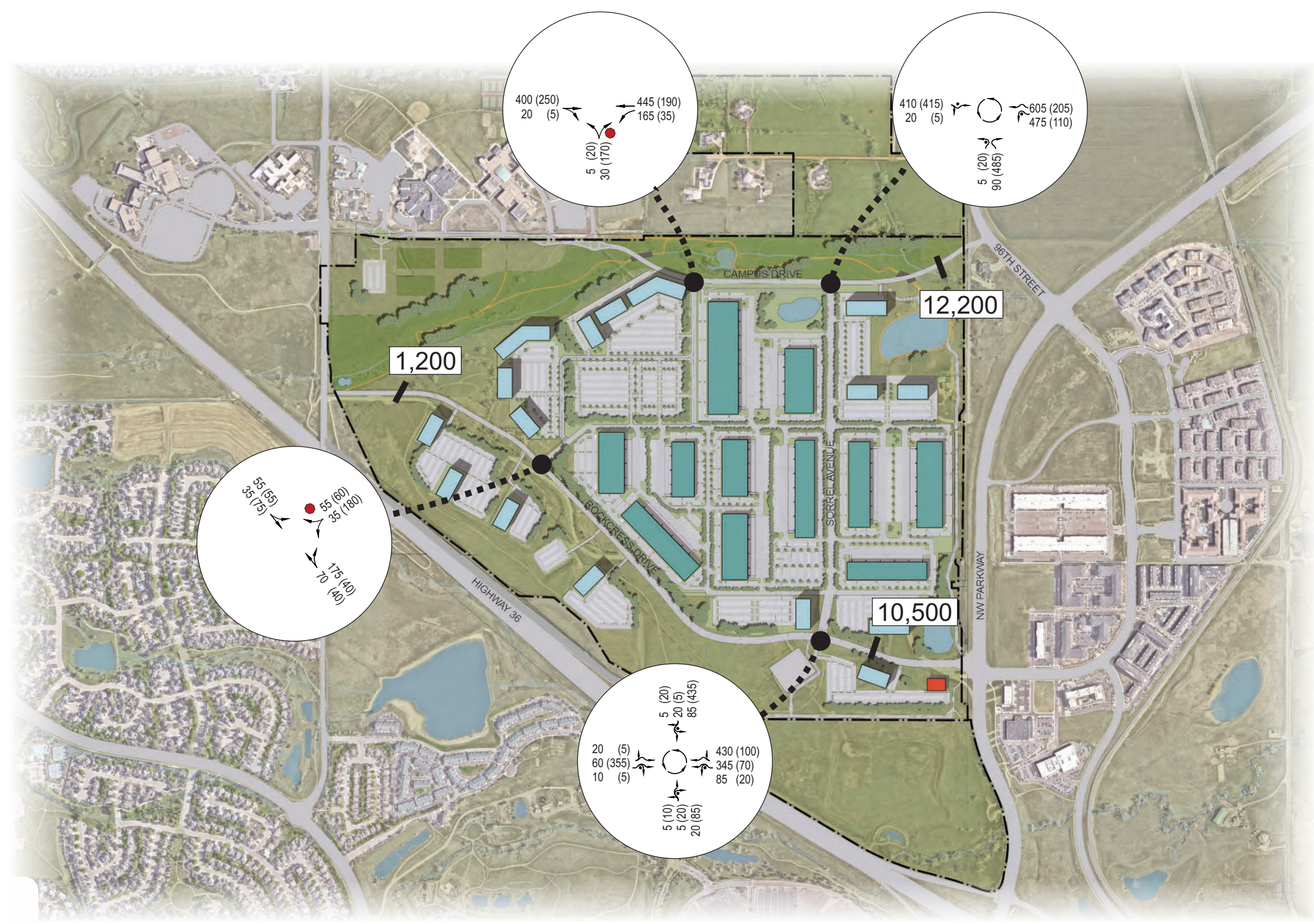
Figure 33. S. 96th Street (Dillon Rd to Northwest Pkwy) Arterial Travel Time (Southbound)**Figure 34. Dillon Road (S. 88th Street to S. 96th Street) Arterial Travel Time (Eastbound)****Figure 35. Dillon Road (S. 88th Street to S. 96th Street) Arterial Travel Time (Westbound)**

10.0 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.

- **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 operate 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. The Campus Drive access to the Zone 3 office area is anticipated to operate acceptably as an unsignalized intersection with side-street stop control.
- **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 anticipated to operate acceptably as a roundabout; the remaining intersections are expected to operate acceptably as unsignalized.
- **Sorrel Avenue**: recommended to be a two-lane roadway; the driveway accesses and internal intersections are expected to operate acceptably as unsignalized.

Projected Year 2040 background + project (full build out) conditions traffic volumes are shown in **Figure 36** for Campus Drive at Sorrel Avenue and the internal Zone 3 office area and Rockcress Drive at Sorrel Avenue and the western internal roadway. Also illustrated in the figure are the recommended intersection geometrics and traffic control for full build out conditions. All intersections and access locations are anticipated to operate at LOS B or better during the AM and PM peak hours. The intersection capacity reports are provided in the **Appendix**. Note that access locations will continue to be analyzed and refined through the PUD process.



KEY

→ LANE CONFIGURATION

XX,XXX DAILY TRAFFIC VOLUME

XX (XX) AM (PM) PEAK HOUR VOLUME



REDTAIL RIDGE TRAFFIC AND MOBILITY STUDY

INTERNAL ROADWAY/INTERSECTION - RECOMMENDED GEOMETRY (YEAR 2040 FULL BUILD OUT)

11.0 PERCENT CONTRIBUTION

The percent of trips generated by the Redtail Ridge development under Year 2025 and Year 2040 with project conditions at each of the study intersections is calculated in Appendix I and summarized below in **Table 16**. The percentages vary from one percent to 15 percent under Year 2025 with project conditions and vary from three percent to 27 percent under Year 2040 with project conditions.

Table 16. Percent Contribution to Intersection Traffic Volumes

Intersection/Segments	Project Percent of Total Entering Traffic			
	Year 2025+ Project (AM Peak)	Year 2025+ Project (PM Peak)	Year 2040+ Project (AM Peak)	Year 2040+ Project (PM Peak)
Dillon Rd/McCaslin Blvd	1%	1%	4%	3%
Dillon Rd /S. 88th St.	2%	2%	6%	6%
Dillon Rd /S. 96th St.	2%	2%	8%	8%
S. 88th St./Campus Dr	2%	2%	5%	8%
S. 88th St./Rockcress Dr	1%	1%	9%	12%
S. 96th St./Campus Drive	5%	5%	18%	20%
Northwest Pkwy/S. 96th St./Via Varra	2%	2%	8%	8%
Northwest Pkwy / Rockcress Dr/Via Varra	6%	6%	22%	22%
Northwest Pkwy /US 36 North Ramps	6%	5%	20%	19%
Northwest Pkwy /US 36 South Ramps	2%	4%	9%	16%
S. 88th St./Rock Creek Pkwy	0%	1%	2%	3%
S. 88th St. (Btw Dillon Rd and Campus Dr)	2%	3%	10%	12%
S. 88th St. (Btw Campus Dr and Rockcress Dr)	1%	1%	6%	8%
S. 88th St. (South of Rockcress Dr)	1%	1%	3%	4%
Dillon Rd (Btw S. 88th St. and S. 96th St.)	1%	1%	3%	2%
S. 96th St. (North of Dillon Rd)	2%	2%	9%	10%
S. 96th St. (Btw Dillon Road and Northwest Pkwy)	3%	3%	11%	12%
Northwest Pkwy (Northeast of S. 96th St.)	2%	2%	7%	7%
Northwest Pkwy (Btw S. 96th St. and Rockcress Dr)	2%	2%	7%	7%
Northwest Pkwy (Btw Rockcress Dr and US 36)	6%	6%	22%	22%
Northwest Pkwy (South of US 36)	1%	1%	3%	3%

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

Recommendation (Intersection/Segment)	Project Need (Expected Timeline/Year)		Notes
	Background (No Project)	With Project	
Campus Drive Extension	(N/A) - located on the Redtail Ridge project property	-Construct with first phase of the development (Opening Year 2022)	
McCaslin Boulevard / Dillon Road	--	--	Signal timing should continually be monitored to manage queues.
Dillon Road / S. 88th Street	-Restripe to provide dual WB left-turn lanes (2020) – <i>assumes Campus Drive is not extended</i>	--	
Dillon Road (Between S. 88th Street and S. 96th Street)	-Widen to four-lane roadway (shortly after 2030) <i>assumes Campus Drive is not extended</i>	-Dillon Road is nearing capacity in Year 2040. Monitor the corridor and if traffic volumes increase at a higher rate than projected, Dillon Road may need to be expanded to a four-lane roadway	The City noted a desire to maintain Dillon Road as a two-lane roadway. Based on projected volumes, a two-lane is expected to operate acceptably with traffic generated by the project. However, without the Campus Drive extension, Dillon Road is expected to need to be a four-lane around 2030.
Dillon Road / S. 96th Street	-Construct dual EB/WB left-turn lanes (2020-2021) -Construct dual NB/SB left-turn lanes (2035-2040) <i>assumes Campus Drive is not extended</i>	-Construct dual EB/WB left-turn lanes (2022 with Campus Drive Ext.) -Monitor and if long queues/cycle failure begins to occur construct dual NB/SB left-turn lanes (after 2040)	
S. 96th Street (Between Dillon Road and Northwest Parkway)	-Widen to four-lane roadway (2025)	-Widen to four-lane roadway (2022 with Campus Drive Ext.)	
S. 96th Street (North of Dillon Road)	-Widen to four-lane roadway between Dillon Road and SH 42 (shortly after 2030)	-Widen to four-lane roadway ~ 1/2 mile to the north (2025) -Widen to four-lane roadway to SH 42 (shortly after 2030)	Coordination with the SH 42 BRT project and other development/studies along S. 96th Street should occur to refine timing needs.
S. 88th Street (Between Dillon Road and Campus Drive)	-Widen to a four-lane roadway (2020) <i>assumes Campus Drive is not extended</i>	--	
S. 88th Street (Between Campus Drive and Rock Creek Pkwy)	--	--	Expected to operate acceptably as a two-lane with turn lanes at key intersection.
S. 88th Street / Campus Drive	-Construct a second NB thru lane that would begin approx. 500 feet south of Campus Drive (2020) <i>assumes Campus Drive is not extended</i> -Extend the NB right-turn lane to provide a minimum of 500 feet of storage (2020)	-Extend the NB right-turn lane to provide 400- 500 feet of storage (with Campus Drive extension)	
S. 88th Street / Rockcress Drive	(N/A)	-Construct a SB left-turn lane and NB right-turn lane on S. 88th Street (with opening of Rockcress Drive, between 2025-2030).	
S. 88th Street and Rock Creek Pkwy	--	--	No improvements anticipated to be needed
S. 96th Street / Campus Drive	(N/A)	-Construct dual NB left-turn lanes and a SB right-turn lane on S. 96th Street, and dual EB left-turn and an EB right-turn lane on Campus Drive (2022 with Campus Drive Ext.). Signalize intersection when warranted.	
Northwest Parkway / S. 96th Street / Via Varra	-Construct triple NB left-turn lanes on NWP (2025) -Capacity improvements on NWP – see note (2030-2035)	-Construct triple NB left-turn lanes on NWP (2025); -Capacity improvements on NWP – see note (2030-2035)	Constructing a third SB thru lane from north of S. 96th Street to the US 36 interchange is expected to improve operations. However, this may not be the optimal design for travel time. Previous studies have recommended that this intersection be grade separated in the future. Therefore, a separate corridor study is recommended rather than specific intersection recommendations.
Northwest Parkway / Rockcress Drive / Via Varra	-Capacity improvements on NWP – see note (2030-2035)	-Capacity improvements on NWP – see note (2030-2035)	See note for Northwest Parkway / 96th Street / Via Varra intersection
Northwest Parkway / US 36 Interchange	-New interchange needed (2040)	-New interchange needed (2027-2028)	To address the anticipated capacity constraints, the interchange needs to be modified to provide additional capacity or an alternative access to this area needs to be provided via US 36. A follow-up study should be conducted that looks at future grade separation concepts along Northwest Parkway and evaluates all interchange configuration operations for US 36.

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. This includes:

- The need to widen Dillon Road to four lanes between 88th Street and 96th Street,
- The need to widen 96th Street from south of Dillon Road to SH 42,
- Signalization of the Campus Drive/96th Street intersection.

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

The follow traffic and mobility study next steps have been identified for this project:

- Additional study and concept development are needed for the Northwest Parkway corridor and at the US 36 interchange.
- After the GDP 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 - Existing Traffic Data

B - Level of Service Definitions

C - Level of Service by Movement and Queuing Summary Tables

D - Travel Demand Management Plan

E - Non-SOV References

F - Intersection Capacity Worksheets (SimTraffic)

G - US 36 6th Edition HCM Reports

H – Percent Contribution





A - Existing Traffic Data



Location: W DILLON RD E/O S 96TH ST
 Date Range: 8/28/2019 - 9/3/2019
 Site Code: 01

Time	Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Tuesday			Mid-Week Average		
	8/28/2019			8/29/2019			8/30/2019			8/31/2019			9/1/2019			9/2/2019			9/3/2019					
	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total	EB	WB	Total
12:00 AM	-	-	-	23	32	55	28	34	62	-	-	-	-	-	-	-	-	-	-	-	-	23	32	55
1:00 AM	-	-	-	6	21	27	12	16	28	-	-	-	-	-	-	-	-	-	-	-	-	6	21	27
2:00 AM	-	-	-	14	16	30	8	13	21	-	-	-	-	-	-	-	-	-	-	-	-	14	16	30
3:00 AM	-	-	-	25	28	53	22	26	48	-	-	-	-	-	-	-	-	-	-	-	-	25	28	53
4:00 AM	-	-	-	38	43	81	43	45	88	-	-	-	-	-	-	-	-	-	-	-	-	38	43	81
5:00 AM	-	-	-	152	127	279	131	116	247	-	-	-	-	-	-	-	-	-	-	-	-	152	127	279
6:00 AM	-	-	-	402	344	746	354	301	655	-	-	-	-	-	-	-	-	-	-	-	-	402	344	746
7:00 AM	-	-	-	749	614	1,363	645	614	1,259	-	-	-	-	-	-	-	-	-	-	-	-	749	614	1,363
8:00 AM	-	-	-	803	712	1,515	760	644	1,404	-	-	-	-	-	-	-	-	-	-	-	-	803	712	1,515
9:00 AM	-	-	-	520	495	1,015	439	461	900	-	-	-	-	-	-	-	-	-	-	-	-	520	495	1,015
10:00 AM	-	-	-	415	517	932	427	509	936	-	-	-	-	-	-	-	-	-	-	-	-	415	517	932
11:00 AM	-	-	-	496	726	1,222	152	187	339	-	-	-	-	-	-	-	-	-	-	-	-	496	726	1,222
12:00 PM	0	0	0	594	633	1,227	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	297	317	614
1:00 PM	607	501	1,108	617	525	1,142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	612	513	1,125
2:00 PM	624	626	1,250	676	571	1,247	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	650	599	1,249
3:00 PM	840	608	1,448	823	660	1,483	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	832	634	1,466
4:00 PM	931	770	1,701	890	854	1,744	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	911	812	1,723
5:00 PM	830	825	1,655	843	798	1,641	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	837	812	1,648
6:00 PM	519	548	1,067	516	501	1,017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	518	525	1,042
7:00 PM	347	315	662	357	300	657	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	352	308	660
8:00 PM	266	222	488	233	218	451	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	220	470
9:00 PM	207	112	319	206	145	351	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	207	129	335
10:00 PM	97	96	193	89	93	182	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93	95	188
11:00 PM	60	25	85	42	45	87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	35	86
Total	5,328	4,648	9,976	9,529	9,018	18,547	3,021	2,966	5,987	-	-	-	-	-	-	-	-	-	-	-	-	9,250	8,671	17,921
Percent	53%	47%	-	51%	49%	-	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	52%	48%	-

1. Mid-week average includes data between Tuesday and Thursday.

Location: S 88TH ST N/O ST ANDREWS LN
 Date Range: 8/28/2019 - 9/3/2019
 Site Code: 02

Time	Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Tuesday			Mid-Week Average		
	8/28/2019			8/29/2019			8/30/2019			8/31/2019			9/1/2019			9/2/2019			9/3/2019					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	-	-	-	21	16	37	21	10	31	-	-	-	-	-	-	-	-	-	-	-	-	21	16	37
1:00 AM	-	-	-	7	8	15	4	5	9	-	-	-	-	-	-	-	-	-	-	-	-	7	8	15
2:00 AM	-	-	-	9	8	17	7	9	16	-	-	-	-	-	-	-	-	-	-	-	-	9	8	17
3:00 AM	-	-	-	6	10	16	4	3	7	-	-	-	-	-	-	-	-	-	-	-	-	6	10	16
4:00 AM	-	-	-	21	12	33	25	11	36	-	-	-	-	-	-	-	-	-	-	-	-	21	12	33
5:00 AM	-	-	-	42	64	106	39	56	95	-	-	-	-	-	-	-	-	-	-	-	-	42	64	106
6:00 AM	-	-	-	139	225	364	116	197	313	-	-	-	-	-	-	-	-	-	-	-	-	139	225	364
7:00 AM	-	-	-	457	607	1,064	442	616	1,058	-	-	-	-	-	-	-	-	-	-	-	-	457	607	1,064
8:00 AM	-	-	-	598	773	1,371	623	729	1,352	-	-	-	-	-	-	-	-	-	-	-	-	598	773	1,371
9:00 AM	-	-	-	310	419	729	337	411	748	-	-	-	-	-	-	-	-	-	-	-	-	310	419	729
10:00 AM	-	-	-	347	333	680	184	253	437	-	-	-	-	-	-	-	-	-	-	-	-	347	333	680
11:00 AM	-	-	-	418	350	768	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	418	350	768
12:00 PM	0	0	0	326	360	686	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	163	180	343
1:00 PM	0	0	0	469	421	890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	235	211	445
2:00 PM	0	1	1	426	455	881	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	213	228	441
3:00 PM	693	553	1,246	790	655	1,445	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	742	604	1,346
4:00 PM	711	491	1,202	657	522	1,179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	684	507	1,191
5:00 PM	544	580	1,124	551	542	1,093	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	548	561	1,109
6:00 PM	357	430	787	380	485	865	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	369	458	826
7:00 PM	209	266	475	243	305	548	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226	286	512
8:00 PM	179	237	416	224	213	437	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	202	225	427
9:00 PM	160	107	267	151	123	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	156	115	271
10:00 PM	51	71	122	59	74	133	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	73	128
11:00 PM	49	32	81	39	22	61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	27	71
Total	2,953	2,768	5,721	6,690	7,002	13,692	1,803	2,300	4,103	-	-	-	-	-	-	-	-	-	-	-	-	6,009	6,298	12,307
Percent	52%	48%	-	49%	51%	-	44%	56%	-	-	-	-	-	-	-	-	-	-	-	-	-	49%	51%	-

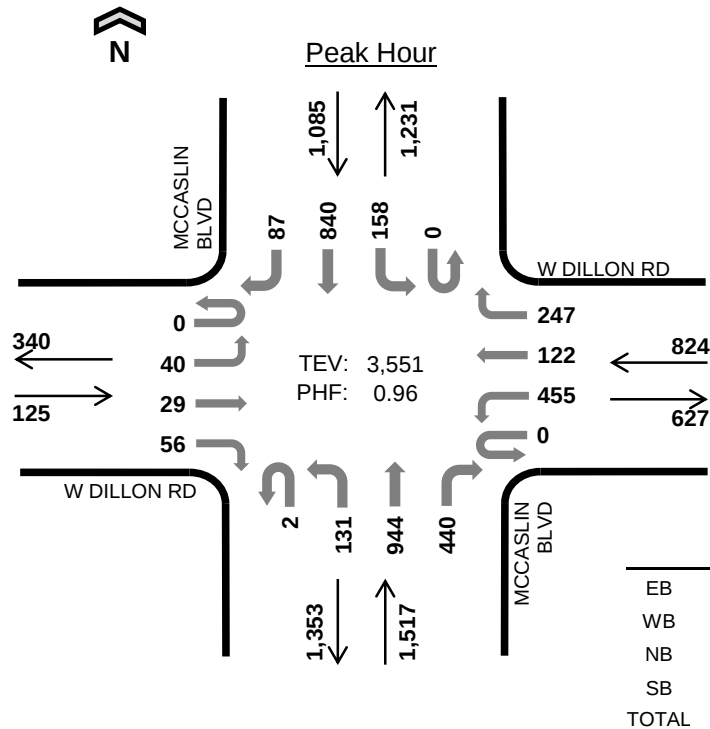
1. Mid-week average includes data between Tuesday and Thursday.

Location: S 96TH ST S/O W DILLON RD
 Date Range: 8/28/2019 - 9/3/2019
 Site Code: 03

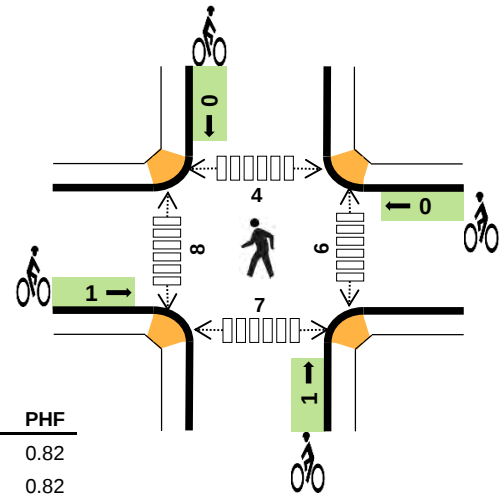
Time	Wednesday			Thursday			Friday			Saturday			Sunday			Monday			Tuesday			Mid-Week Average		
	8/28/2019			8/29/2019			8/30/2019			8/31/2019			9/1/2019			9/2/2019			9/3/2019					
	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total	NB	SB	Total
12:00 AM	-	-	-	32	42	74	58	53	111	-	-	-	-	-	-	-	-	-	-	-	-	32	42	74
1:00 AM	-	-	-	18	22	40	30	19	49	-	-	-	-	-	-	-	-	-	-	-	-	18	22	40
2:00 AM	-	-	-	23	16	39	19	21	40	-	-	-	-	-	-	-	-	-	-	-	-	23	16	39
3:00 AM	-	-	-	24	36	60	19	29	48	-	-	-	-	-	-	-	-	-	-	-	-	24	36	60
4:00 AM	-	-	-	55	71	126	51	73	124	-	-	-	-	-	-	-	-	-	-	-	-	55	71	126
5:00 AM	-	-	-	168	185	353	154	143	297	-	-	-	-	-	-	-	-	-	-	-	-	168	185	353
6:00 AM	-	-	-	512	487	999	477	384	861	-	-	-	-	-	-	-	-	-	-	-	-	512	487	999
7:00 AM	-	-	-	1,084	794	1,878	886	738	1,624	-	-	-	-	-	-	-	-	-	-	-	-	1,084	794	1,878
8:00 AM	-	-	-	1,108	950	2,058	796	813	1,609	-	-	-	-	-	-	-	-	-	-	-	-	1,108	950	2,058
9:00 AM	-	-	-	616	628	1,244	506	549	1,055	-	-	-	-	-	-	-	-	-	-	-	-	616	628	1,244
10:00 AM	-	-	-	457	585	1,042	482	560	1,042	-	-	-	-	-	-	-	-	-	-	-	-	457	585	1,042
11:00 AM	-	-	-	541	665	1,206	252	309	561	-	-	-	-	-	-	-	-	-	-	-	-	541	665	1,206
12:00 PM	0	0	0	532	621	1,153	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	266	311	577
1:00 PM	352	325	677	647	604	1,251	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	465	964
2:00 PM	644	655	1,299	628	681	1,309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	636	668	1,304
3:00 PM	733	863	1,596	761	861	1,622	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	747	862	1,609
4:00 PM	978	1,129	2,107	1,021	1,181	2,202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	1,155	2,155
5:00 PM	1,077	1,183	2,260	971	1,067	2,038	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,024	1,125	2,149
6:00 PM	624	696	1,320	619	690	1,309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	622	693	1,315
7:00 PM	432	446	878	415	444	859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	424	445	869
8:00 PM	309	342	651	319	311	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	314	327	641
9:00 PM	264	223	487	269	205	474	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	267	214	481
10:00 PM	181	147	328	172	138	310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	177	143	319
11:00 PM	107	54	161	88	73	161	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	98	64	161
Total	5,701	6,063	11,764	11,080	11,357	22,437	3,730	3,691	7,421	-	-	-	-	-	-	-	-	-	-	-	-	10,710	10,951	21,660
Percent	48%	52%	-	49%	51%	-	50%	50%	-	-	-	-	-	-	-	-	-	-	-	-	-	49%	51%	-

1. Mid-week average includes data between Tuesday and Thursday.

MCCASLIN BLVD W DILLON RD



Date: Thu, Aug 29, 2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



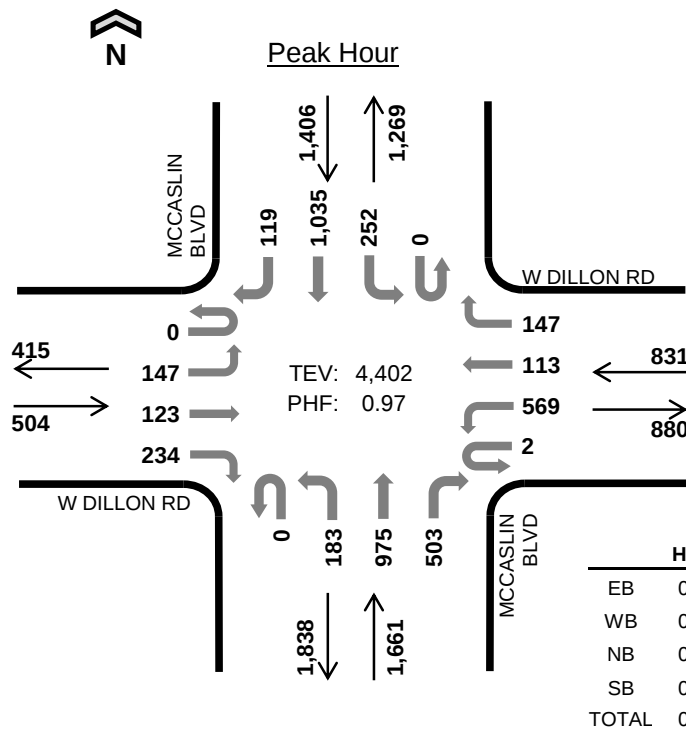
Two-Hour Count Summaries

Interval Start	W DILLON RD Eastbound				W 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	5	4	14	0	75	18	34	0	20	125	59	0	11	133	24	522	0
7:15 AM	0	5	4	9	0	98	14	30	0	14	161	69	0	18	138	18	578	0
7:30 AM	0	5	5	9	0	98	16	49	0	30	184	98	0	23	149	24	690	0
7:45 AM	0	9	5	14	0	120	28	62	1	33	258	130	0	35	214	18	927	2,717
8:00 AM	0	14	12	12	0	92	32	54	0	26	200	120	0	64	216	33	875	3,070
8:15 AM	0	9	6	12	0	111	22	51	0	36	269	106	0	37	206	16	881	3,373
8:30 AM	0	8	6	18	0	132	40	80	1	36	217	84	0	22	204	20	868	3,551
8:45 AM	0	9	13	18	0	89	36	64	2	53	211	92	0	31	161	24	803	3,427
Count Total	0	64	55	106	0	815	206	424	4	248	1,625	758	0	241	1,421	177	6,144	0
Peak Hour	0	40	29	56	0	455	122	247	2	131	944	440	0	158	840	87	3,551	0

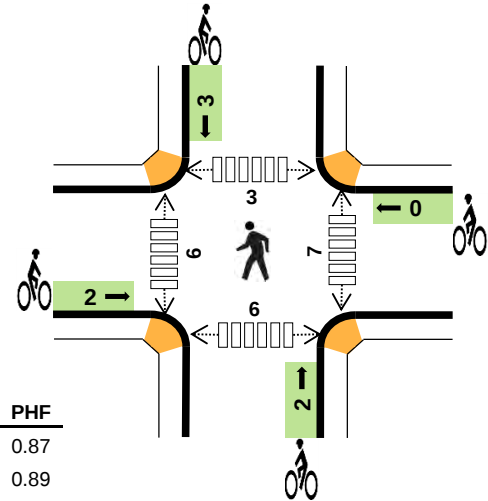
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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	8	6	3	18	2	0	0	0	2	2	2	1	2	7
7:15 AM	1	4	8	0	13	0	0	2	1	3	0	1	0	0	1
7:30 AM	1	3	5	7	16	0	0	0	0	0	0	2	3	2	7
7:45 AM	0	4	12	4	20	0	0	1	0	1	0	3	0	2	5
8:00 AM	1	3	8	6	18	1	0	0	0	1	4	3	2	1	10
8:15 AM	2	6	6	6	20	0	0	0	0	0	1	2	1	1	5
8:30 AM	0	7	9	4	20	0	0	0	0	0	1	0	1	3	5
8:45 AM	2	1	5	5	13	0	0	1	0	1	2	2	0	2	6
Count Total	8	36	59	35	138	3	0	4	1	8	10	15	8	13	46
Peak Hour	3	20	35	20	78	1	0	1	0	2	6	8	4	7	25

MCCASLIN BLVD W DILLON RD



Date: Thu, Aug 29, 2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



Two-Hour Count Summaries

Interval Start	W DILLON RD Eastbound				W 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		
4:00 PM	0	27	30	47	0	124	16	28	0	39	199	120	0	46	244	13	933	0
4:15 PM	0	20	25	52	1	125	18	45	1	43	220	148	0	72	277	20	1,067	0
4:30 PM	0	28	24	48	0	161	19	31	0	43	249	110	0	62	241	21	1,037	0
4:45 PM	0	33	26	53	1	121	24	37	0	48	258	133	0	65	235	29	1,063	4,100
5:00 PM	0	43	34	68	0	174	25	34	0	42	213	132	0	60	276	33	1,134	4,301
5:15 PM	0	31	29	53	1	151	34	37	0	44	284	110	0	62	271	23	1,130	4,364
5:30 PM	0	40	34	60	0	123	30	39	0	49	220	128	0	65	253	34	1,075	4,402
5:45 PM	0	34	35	47	2	127	18	25	0	44	240	105	0	45	215	19	956	4,295
Count Total	0	256	237	428	5	1,106	184	276	1	352	1,883	986	0	477	2,012	192	8,395	0
Peak Hour	0	147	123	234	2	569	113	147	0	183	975	503	0	252	1,035	119	4,402	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
4:00 PM	1	2	7	8	18	0	0	0	0	0	0	2	1	2	5
4:15 PM	2	3	4	9	18	0	0	0	0	0	5	1	0	1	7
4:30 PM	1	1	5	4	11	1	0	0	1	2	1	2	1	1	5
4:45 PM	1	1	2	3	7	0	0	0	0	0	0	1	0	1	2
5:00 PM	0	0	6	3	9	0	0	0	2	2	3	0	0	2	5
5:15 PM	0	0	1	2	3	1	0	1	1	3	0	3	2	0	5
5:30 PM	0	1	1	4	6	1	0	1	0	2	4	2	1	3	10
5:45 PM	1	1	0	3	5	0	0	0	1	1	3	2	1	9	15
Count Total	6	9	26	36	77	3	0	2	5	10	16	13	6	19	54
Peak Hour	1	2	10	12	25	2	0	2	3	7	7	6	3	6	22

S 88TH ST W DILLON RD

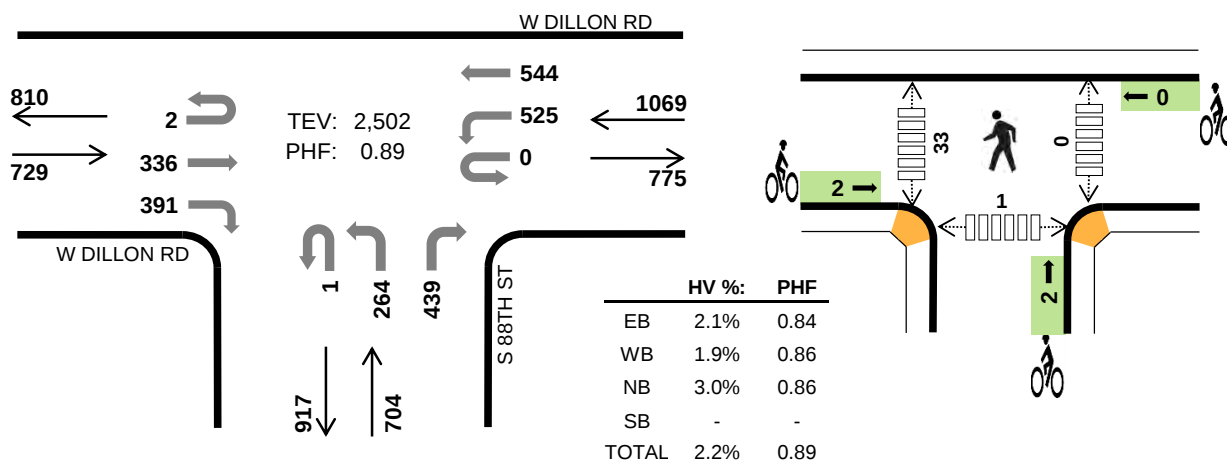


Peak Hour

Date: Thu, Aug 29, 2019

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:45 AM to 8:45 AM



Two-Hour Count Summaries

Interval Start	W DILLON RD Eastbound				W DILLON RD Westbound				S 88TH ST Northbound				0 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	49	24	0	54	90	0	0	21	0	40	0	0	0	0	278	0
7:15 AM	0	0	65	24	0	78	90	0	0	21	0	81	0	0	0	0	359	0
7:30 AM	0	0	77	64	0	117	112	0	0	30	0	74	0	0	0	0	474	0
7:45 AM	0	0	88	100	0	171	140	0	0	74	0	131	0	0	0	0	704	1,815
8:00 AM	1	0	77	139	0	139	120	0	0	71	0	113	0	0	0	0	660	2,197
8:15 AM	1	0	100	117	0	123	125	0	0	75	0	108	0	0	0	0	649	2,487
8:30 AM	0	0	71	35	0	92	159	0	1	44	0	87	0	0	0	0	489	2,502
8:45 AM	0	0	91	34	0	73	145	0	0	31	0	59	0	0	0	0	433	2,231
Count Total	2	0	618	537	0	847	981	0	1	367	0	693	0	0	0	0	4,046	0
Peak Hour	2	0	336	391	0	525	544	0	1	264	0	439	0	0	0	0	2,502	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	2	5	0	0	7	1	0	0	0	1	0	1	0	0	1
7:15 AM	2	7	0	0	9	0	0	0	0	0	0	1	1	0	2
7:30 AM	9	8	2	0	19	0	0	0	0	0	0	10	9	0	19
7:45 AM	3	6	5	0	14	0	0	0	0	0	0	9	4	0	13
8:00 AM	2	3	2	0	7	1	0	1	0	2	0	9	9	0	18
8:15 AM	8	7	10	0	25	0	0	0	0	0	0	13	9	1	23
8:30 AM	2	4	4	0	10	1	0	1	0	2	0	2	0	0	2
8:45 AM	12	4	2	0	18	0	0	0	0	0	0	0	1	0	1
Count Total	40	44	25	0	109	3	0	2	0	5	0	45	33	1	79
Peak Hr	15	20	21	0	56	2	0	2	0	4	0	33	22	1	56

S 88TH ST W DILLON RD

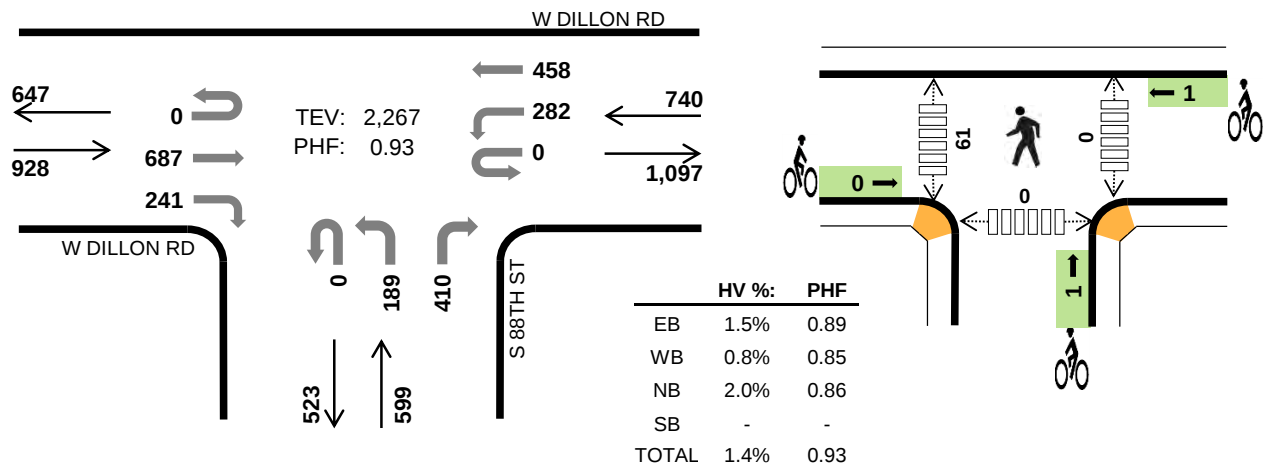


Peak Hour

Date: Thu, Aug 29, 2019

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:15 PM to 5:15 PM



Two-Hour Count Summaries

Interval Start	W DILLON RD Eastbound				W DILLON RD Westbound				S 88TH ST Northbound				S 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		
4:00 PM	0	0	136	86	0	65	106	0	0	71	0	125	0	0	0	0	589	0
4:15 PM	0	0	180	73	0	74	87	0	0	62	0	112	0	0	0	0	588	0
4:30 PM	0	0	151	43	0	55	115	0	0	47	0	109	0	0	0	0	520	0
4:45 PM	0	0	170	50	0	69	122	0	0	41	0	97	0	0	0	0	549	2,246
5:00 PM	0	0	186	75	0	84	134	0	0	39	0	92	0	0	0	0	610	2,267
5:15 PM	0	0	149	48	0	72	129	0	0	47	0	108	0	0	0	0	553	2,232
5:30 PM	0	0	144	63	0	83	106	0	0	61	0	88	0	0	0	0	545	2,257
5:45 PM	0	0	119	49	0	72	100	0	0	44	0	63	0	0	0	0	447	2,155
Count Total	0	0	1,235	487	0	574	899	0	0	412	0	794	0	0	0	0	4,401	0
Peak Hour	0	0	687	241	0	282	458	0	0	189	0	410	0	0	0	0	2,267	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
4:00 PM	5	3	8	0	16	0	0	1	0	1	0	45	47	0	92
4:15 PM	4	1	8	0	13	0	0	0	0	0	0	12	1	0	13
4:30 PM	2	2	4	0	8	0	0	0	0	0	0	48	52	0	100
4:45 PM	4	2	0	0	6	0	1	1	0	2	0	0	0	0	0
5:00 PM	4	1	0	0	5	0	0	0	0	0	0	1	0	0	1
5:15 PM	1	0	0	0	1	0	2	0	0	2	0	2	0	0	2
5:30 PM	0	1	0	0	1	0	2	0	0	2	0	3	3	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3
Count Total	20	10	20	0	50	0	5	2	0	7	0	113	104	0	217
Peak Hr	14	6	12	0	32	0	1	1	0	2	0	61	53	0	114

S 96TH ST W DILLON RD

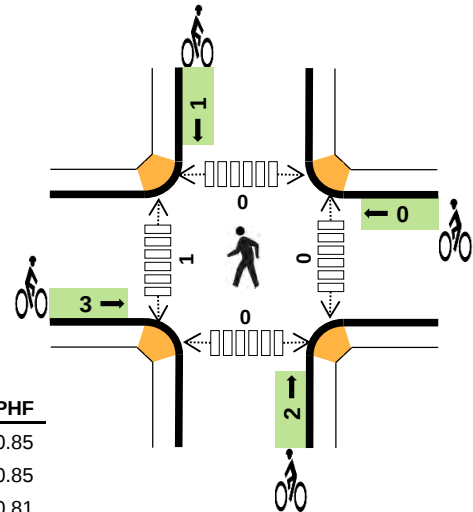
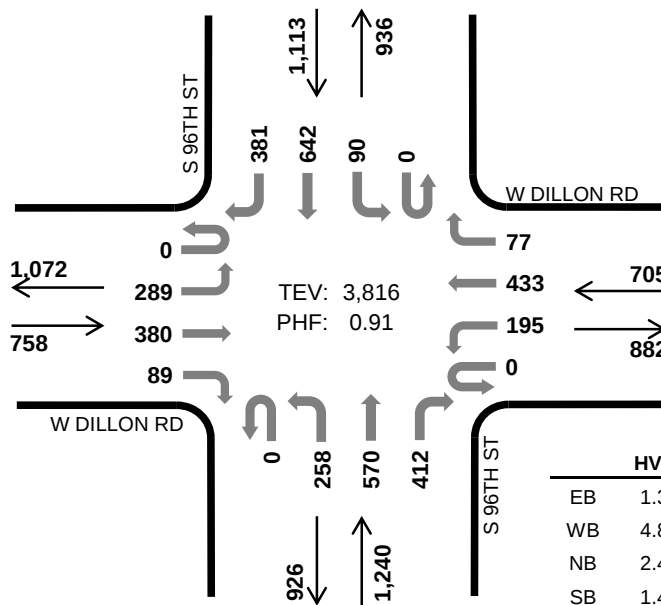


Peak Hour

Date: Thu, Aug 29, 2019

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	1.3%	0.85
WB	4.8%	0.85
NB	2.4%	0.81
SB	1.4%	0.87
TOTAL	2.4%	0.91

Two-Hour Count Summaries

Interval Start	W DILLON RD Eastbound				W DILLON RD Westbound				S 96TH ST Northbound				S 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	24	47	9	0	39	84	13	0	24	106	71	0	20	114	30	581	0
7:15 AM	0	57	64	14	0	48	98	6	0	36	108	75	0	22	139	44	711	0
7:30 AM	0	57	89	14	0	42	104	13	0	54	136	107	0	23	138	76	853	0
7:45 AM	0	72	77	27	0	42	118	14	0	82	174	127	0	21	171	128	1,053	3,198
8:00 AM	0	84	113	25	0	55	126	26	0	64	124	100	0	27	162	122	1,028	3,645
8:15 AM	0	76	101	23	0	56	85	24	0	58	136	78	0	19	171	55	882	3,816
8:30 AM	0	68	71	18	0	61	106	12	0	47	125	76	0	25	178	59	846	3,809
8:45 AM	0	56	94	16	0	56	104	18	0	72	130	74	0	31	111	49	811	3,567
Count Total	0	494	656	146	0	399	825	126	0	437	1,039	708	0	188	1,184	563	6,765	0
Peak Hour	0	289	380	89	0	195	433	77	0	258	570	412	0	90	642	381	3,816	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	2	6	3	0	11	0	0	0	1	1	0	0	0	0	0
7:15 AM	1	11	7	4	23	1	0	1	2	4	0	0	0	0	0
7:30 AM	3	8	6	5	22	0	0	1	1	2	0	0	0	0	0
7:45 AM	3	10	6	3	22	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	7	9	4	21	1	0	0	0	1	0	0	0	0	0
8:15 AM	3	9	9	4	25	2	0	1	0	3	0	1	0	0	1
8:30 AM	10	10	7	4	31	1	0	0	0	1	0	0	0	0	0
8:45 AM	9	8	11	0	28	1	0	2	0	3	0	0	0	0	0
Count Total	32	69	58	24	183	6	0	5	4	15	0	1	0	0	1
Peak Hour	10	34	30	16	90	3	0	2	1	6	0	1	0	0	1

S 96TH ST W DILLON RD

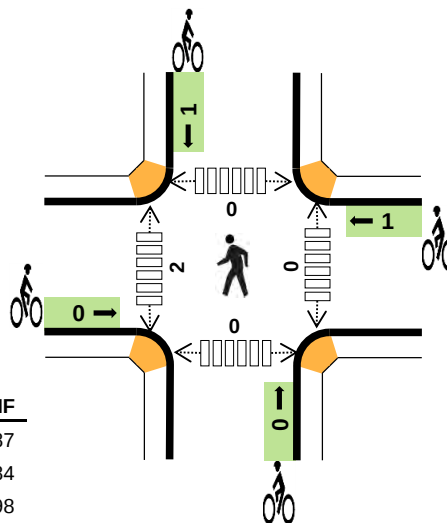
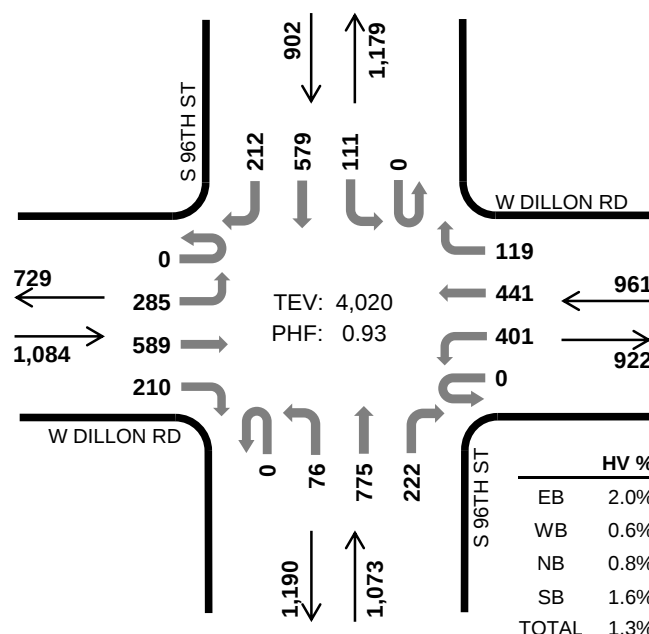


Peak Hour

Date: Thu, Aug 29, 2019

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:15 PM to 5:15 PM



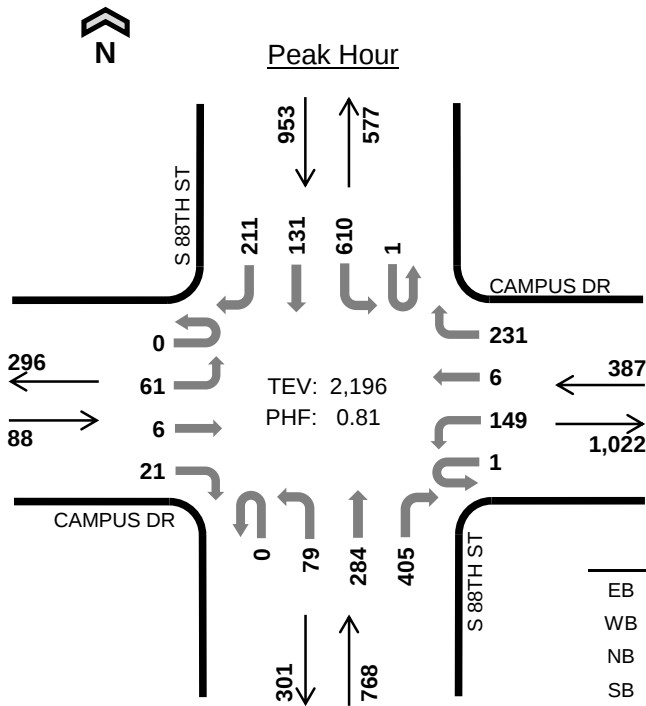
Two-Hour Count Summaries

Interval Start	W DILLON RD Eastbound				W DILLON RD Westbound				S 96TH ST Northbound				S 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	81	138	41	0	107	93	23	0	23	149	55	0	28	129	52	919	0
4:15 PM	0	89	162	59	0	86	91	22	0	21	182	62	0	27	150	50	1,001	0
4:30 PM	0	62	125	44	0	109	106	29	0	17	200	47	0	24	130	49	942	0
4:45 PM	0	67	137	57	0	106	100	25	0	20	203	52	0	26	140	63	996	3,858
5:00 PM	0	67	165	50	0	100	144	43	0	18	190	61	0	34	159	50	1,081	4,020
5:15 PM	1	74	137	54	0	61	130	22	0	12	175	54	0	35	143	70	968	3,987
5:30 PM	0	85	118	35	0	76	95	22	0	23	175	65	0	18	134	58	904	3,949
5:45 PM	0	67	94	35	0	57	76	19	0	16	130	57	0	27	130	74	782	3,735
Count Total	1	592	1,076	375	0	702	835	205	0	150	1,404	453	0	219	1,115	466	7,593	0
Peak Hour	0	285	589	210	0	401	441	119	0	76	775	222	0	111	579	212	4,020	0

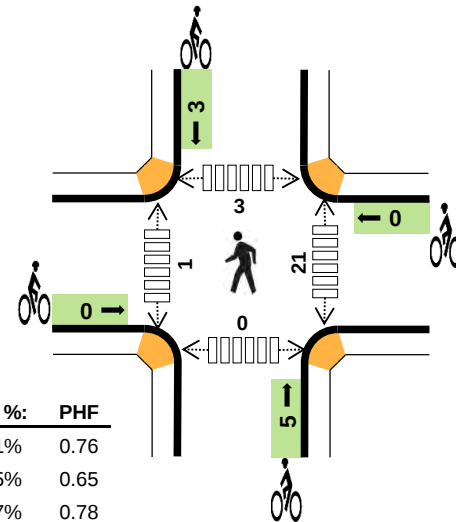
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	8	6	2	7	23	0	0	0	1	1	0	0	0	0	0
4:15 PM	8	3	1	4	16	0	0	0	1	1	0	1	0	0	1
4:30 PM	6	3	1	2	12	0	0	0	0	0	0	0	0	0	0
4:45 PM	4	0	4	5	13	0	1	0	0	1	0	1	0	0	1
5:00 PM	4	0	3	3	10	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	2	4	1	8	0	4	0	0	4	0	0	0	0	0
5:30 PM	0	3	3	1	7	0	2	2	0	4	0	0	0	0	0
5:45 PM	0	1	1	4	6	0	0	0	1	1	0	0	0	0	0
Count Total	31	18	19	27	95	0	7	2	3	12	0	2	0	0	2
Peak Hour	22	6	9	14	51	0	1	0	1	2	0	2	0	0	2

S 88TH ST CAMPUS DR



Date: Thu, Aug 29, 2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

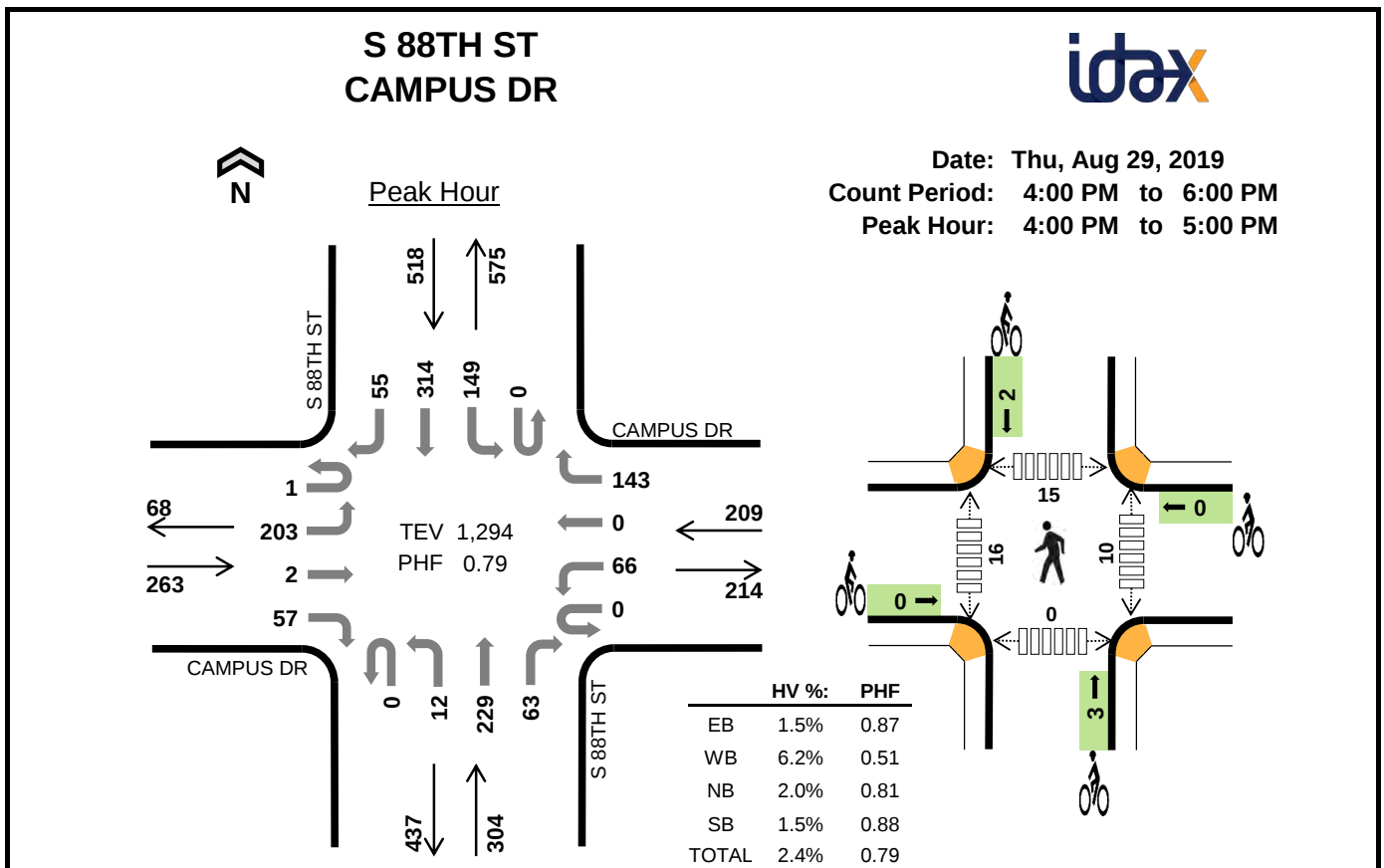


Two-Hour Count Summaries

Interval Start	CAMPUS DR Eastbound				CAMPUS DR Westbound				S 88TH ST Northbound				S 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	6	0	3	0	0	0	2	0	11	51	8	0	15	17	40	153	0
7:15 AM	0	15	0	5	0	1	0	3	0	13	83	16	0	32	24	37	229	0
7:30 AM	0	20	0	8	0	3	0	6	0	10	77	50	0	93	30	37	334	0
7:45 AM	0	9	2	2	1	54	1	44	0	23	80	102	0	142	47	68	575	1,291
8:00 AM	0	15	1	2	0	45	2	83	0	24	71	152	1	151	29	34	610	1,748
8:15 AM	0	17	3	9	0	47	3	98	0	22	56	101	0	224	25	72	677	2,196
8:30 AM	0	21	0	7	0	15	0	42	0	12	73	11	0	20	42	56	299	2,161
8:45 AM	0	15	0	8	0	1	1	7	0	14	57	2	0	14	42	46	207	1,793
Count Total	0	118	6	44	1	166	7	285	0	129	548	442	1	691	256	390	3,084	0
Peak Hour	0	61	6	21	1	149	6	231	0	79	284	405	1	610	131	211	2,196	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	0	1	1	0	0	0	2	2	1	0	0	0	1
7:15 AM	0	1	0	3	4	0	0	1	0	1	0	0	0	0	0
7:30 AM	1	0	6	10	17	0	0	0	1	1	6	0	2	0	8
7:45 AM	0	14	0	6	20	0	0	1	1	2	4	0	1	0	5
8:00 AM	0	0	2	1	3	0	0	2	0	2	8	1	0	0	9
8:15 AM	0	11	5	10	26	0	0	2	1	3	3	0	0	0	3
8:30 AM	1	4	3	3	11	0	0	2	0	2	0	0	0	0	0
8:45 AM	0	0	2	5	7	0	0	0	0	0	0	2	0	0	2
Count Total	2	30	18	39	89	0	0	8	5	13	22	3	3	0	28
Peak Hour	1	25	13	27	66	0	0	5	3	8	21	1	3	0	25



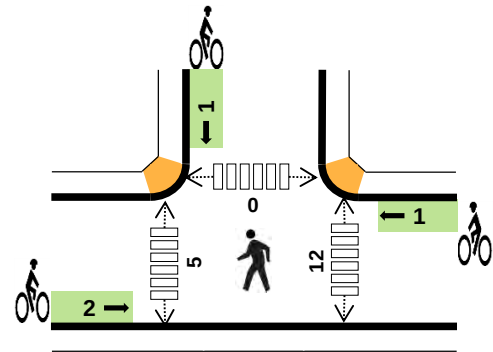
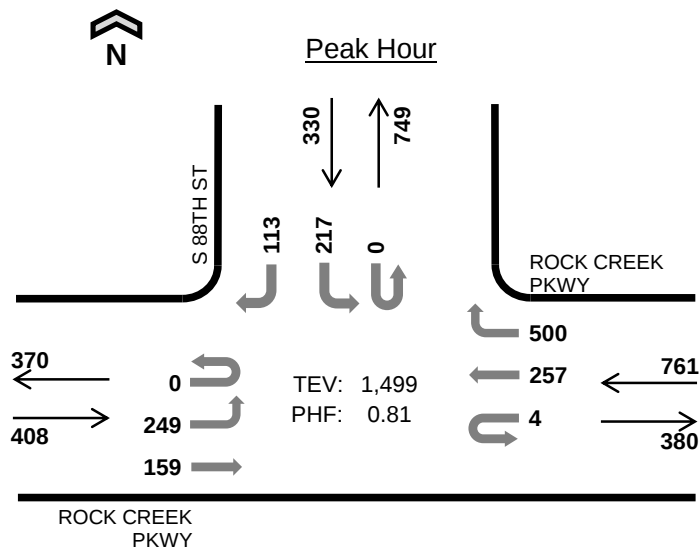
Two-Hour Count Summaries

Interval Start	CAMPUS DR Eastbound				CAMPUS DR Westbound				S 88TH ST Northbound				S 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		
4:00 PM	0	51	1	14	0	35	0	68	0	6	56	32	0	69	63	16	411	0
4:15 PM	0	49	1	5	0	17	0	35	0	1	55	17	0	40	82	18	320	0
4:30 PM	0	47	0	19	0	8	0	29	0	2	54	7	0	18	64	11	259	0
4:45 PM	1	56	0	19	0	6	0	11	0	3	64	7	0	22	105	10	304	1,294
5:00 PM	0	44	0	18	0	14	0	8	0	1	58	9	1	31	106	12	302	1,185
5:15 PM	0	58	0	17	0	33	0	35	0	2	64	9	0	22	96	3	339	1,204
5:30 PM	0	34	1	4	0	12	0	29	0	4	69	9	0	26	102	15	305	1,250
5:45 PM	0	20	1	7	0	9	0	15	0	1	56	11	1	20	80	21	242	1,188
Count Total	1	359	4	103	0	134	0	230	0	20	476	101	2	248	698	106	2,482	0
Peak Hour	1	203	2	57	0	66	0	143	0	12	229	63	0	149	314	55	1,294	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
4:00 PM	3	12	2	4	21	0	0	2	1	3	3	15	13	0	31
4:15 PM	1	0	1	2	4	0	0	0	0	0	2	0	0	0	2
4:30 PM	0	1	3	1	5	0	0	0	0	0	5	0	2	0	7
4:45 PM	0	0	0	1	1	0	0	1	1	2	0	1	0	0	1
5:00 PM	0	1	0	1	2	0	0	0	0	0	1	0	0	0	1
5:15 PM	0	0	0	1	1	2	0	0	4	6	0	0	0	0	0
5:30 PM	0	0	0	2	2	0	0	0	1	1	1	0	0	0	1
5:45 PM	0	0	1	0	1	1	0	1	0	2	0	0	0	0	0
Count Total	4	14	7	12	37	3	0	4	7	14	12	16	15	0	43
Peak Hour	4	13	6	8	31	0	0	3	2	5	10	16	15	0	41

S 88TH ST ROCK CREEK PKWY



	HV %:	PHF
EB	4.4%	0.73
WB	1.8%	0.84
NB	-	-
SB	3.9%	0.85
TOTAL	3.0%	0.81

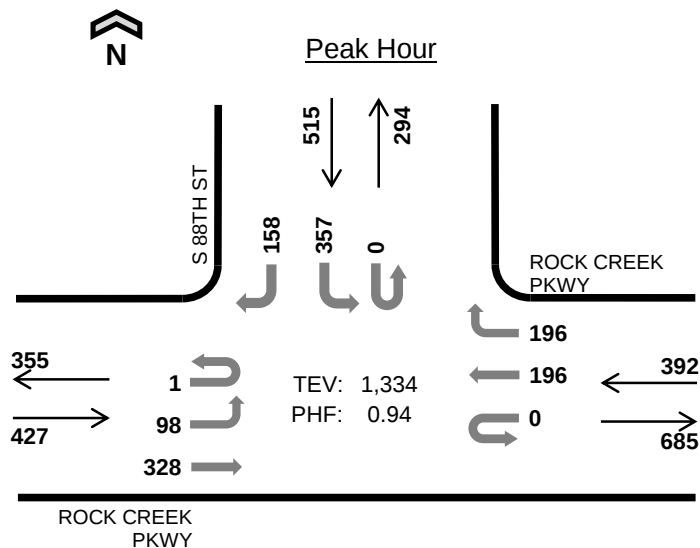
Two-Hour Count Summaries

Interval Start	ROCK CREEK PKWY Eastbound				ROCK CREEK PKWY Westbound				0 Northbound				S 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	13	20	0	0	0	30	47	0	0	0	0	0	16	0	6	132	0
7:15 AM	0	32	25	0	1	0	47	80	0	0	0	0	0	25	0	14	224	0
7:30 AM	0	30	23	0	0	0	60	104	0	0	0	0	0	21	0	23	261	0
7:45 AM	0	71	55	0	0	0	78	127	0	0	0	0	0	59	0	34	424	1,041
8:00 AM	0	89	51	0	2	0	67	157	0	0	0	0	0	67	0	30	463	1,372
8:15 AM	0	59	30	0	2	0	52	112	0	0	0	0	0	70	0	26	351	1,499
8:30 AM	0	22	24	0	0	0	58	69	0	0	0	0	0	53	0	33	259	1,497
8:45 AM	0	18	31	0	0	0	58	58	0	0	0	0	0	32	0	13	210	1,283
Count Total	0	334	259	0	5	0	450	754	0	0	0	0	0	343	0	179	2,324	0
Peak Hour	0	249	159	0	4	0	257	500	0	0	0	0	0	217	0	113	1,499	0

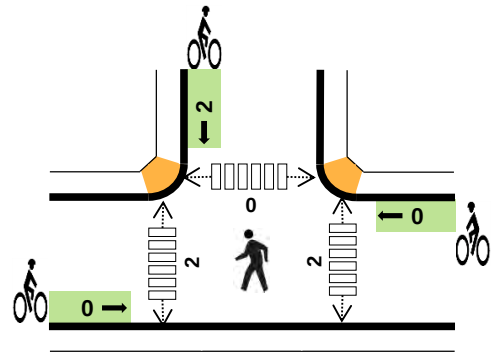
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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	2	0	1	4	0	0	0	1	1	1	0	0	1	2
7:15 AM	0	4	0	3	7	0	0	0	0	0	2	0	0	2	4
7:30 AM	6	6	0	3	15	0	0	0	0	0	6	2	0	9	17
7:45 AM	2	2	0	9	13	0	0	0	1	1	1	2	0	3	6
8:00 AM	6	1	0	1	8	0	1	0	0	1	4	1	0	5	10
8:15 AM	4	5	0	0	9	2	0	0	0	2	1	0	0	0	1
8:30 AM	3	5	0	5	13	0	1	0	0	1	1	1	0	2	4
8:45 AM	2	5	0	2	9	0	0	0	0	0	0	1	0	2	3
Count Total	24	30	0	24	78	2	2	0	2	6	16	7	0	24	47
Peak Hr	18	14	0	13	45	2	1	0	1	4	12	5	0	17	34

S 88TH ST ROCK CREEK PKWY



Date: Thu, Aug 29, 2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.7%	0.88
WB	1.3%	0.84
NB	-	-
SB	1.0%	0.91
TOTAL	1.0%	0.94

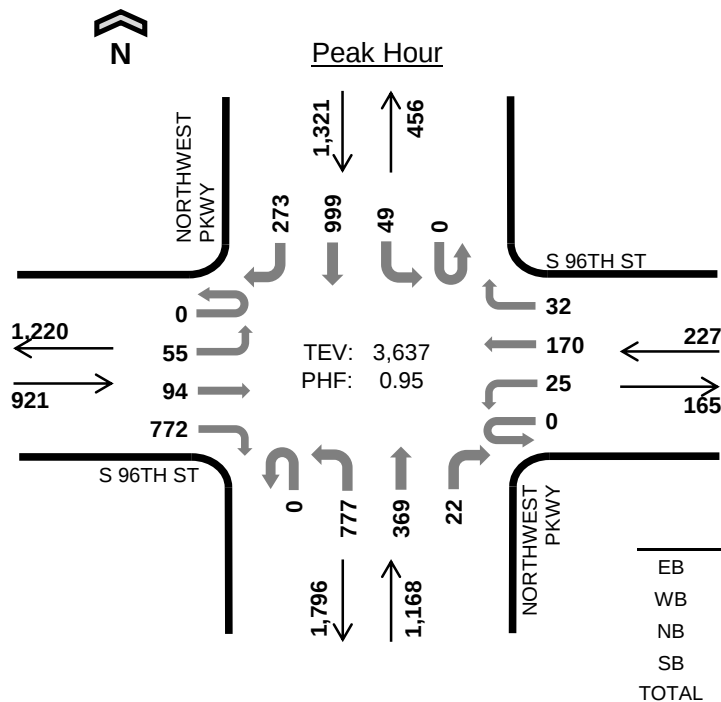
Two-Hour Count Summaries

Interval Start	ROCK CREEK PKWY				ROCK CREEK PKWY				0				S 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		
4:00 PM	0	26	68	0	0	0	42	56	0	0	0	0	0	86	0	37	315	0
4:15 PM	0	27	74	0	0	0	41	47	0	0	0	0	0	96	0	33	318	0
4:30 PM	0	20	56	0	0	0	32	42	0	0	0	0	0	76	0	23	249	0
4:45 PM	1	21	79	0	0	0	52	43	0	0	0	0	0	80	0	42	318	1,200
5:00 PM	0	22	100	0	0	0	50	44	0	0	0	0	0	87	0	53	356	1,241
5:15 PM	0	36	80	0	0	0	43	43	0	0	0	0	0	107	0	34	343	1,266
5:30 PM	0	19	69	0	0	0	51	66	0	0	0	0	0	83	0	29	317	1,334
5:45 PM	0	22	64	0	0	0	44	49	0	0	0	0	0	73	0	29	281	1,297
Count Total	1	193	590	0	0	0	355	390	0	0	0	0	0	688	0	280	2,497	0
Peak Hour	1	98	328	0	0	0	196	196	0	0	0	0	0	357	0	158	1,334	0

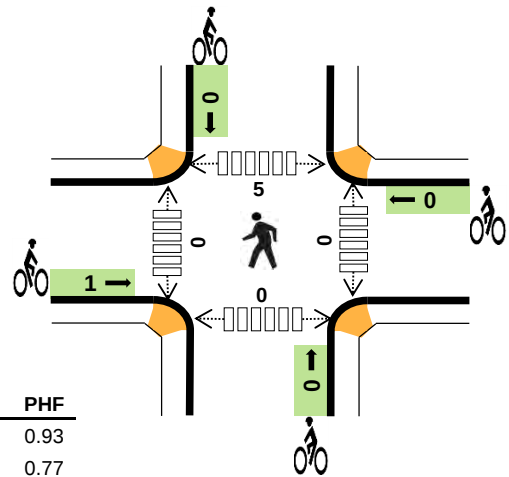
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	3	0	2	8	0	0	0	1	1	0	1	0	0	1
4:15 PM	0	1	0	6	7	0	0	0	0	0	0	0	0	1	1
4:30 PM	2	5	0	1	8	0	0	0	0	0	0	2	0	0	2
4:45 PM	0	1	0	1	2	0	0	0	0	0	1	0	0	0	1
5:00 PM	2	2	0	2	6	0	0	0	1	1	1	1	0	0	2
5:15 PM	0	0	0	2	2	0	0	0	1	1	0	1	0	1	2
5:30 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	1	1
5:45 PM	0	1	0	0	1	0	0	0	1	1	2	0	0	3	5
Count Total	8	15	0	14	37	0	0	0	4	4	4	5	0	6	15
Peak Hr	3	5	0	5	13	0	0	0	2	2	2	2	0	2	6

NORTHWEST PKWY S 96TH ST



Date: Thu, Aug 29, 2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



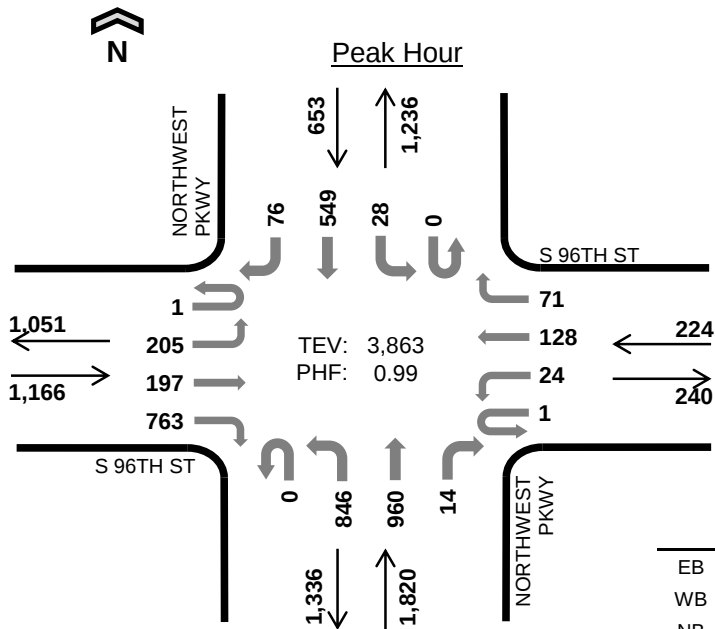
Two-Hour Count Summaries

Interval Start	S 96TH ST				S 96TH ST				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	11	7	136	0	4	22	9	0	158	74	9	0	3	182	22	637	0
7:15 AM	0	17	15	178	0	2	44	9	0	163	77	6	0	9	238	38	796	0
7:30 AM	0	17	15	174	0	8	47	5	0	200	108	6	0	9	258	59	906	0
7:45 AM	0	18	21	189	0	5	57	12	0	232	87	3	0	16	245	73	958	3,297
8:00 AM	0	11	29	199	0	4	38	5	0	184	87	8	0	9	269	84	927	3,587
8:15 AM	0	9	29	210	0	8	28	10	0	161	87	5	0	15	227	57	846	3,637
8:30 AM	0	10	36	220	0	7	39	2	0	176	82	3	0	7	219	43	844	3,575
8:45 AM	0	12	27	170	0	10	40	1	0	185	100	5	0	9	150	52	761	3,378
Count Total	0	105	179	1,476	0	48	315	53	0	1,459	702	45	0	77	1,788	428	6,675	0
Peak Hour	0	55	94	772	0	25	170	32	0	777	369	22	0	49	999	273	3,637	0

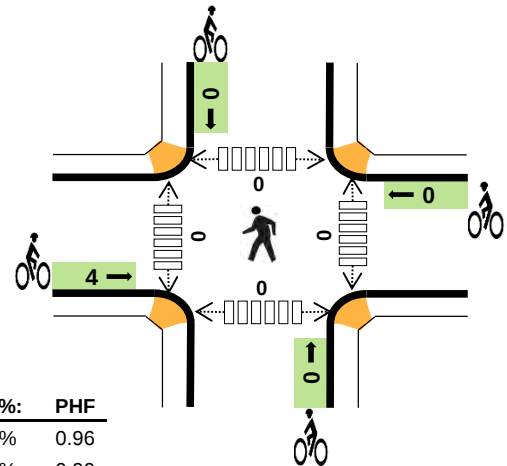
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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	0	4	8	15	0	0	0	0	0	0	0	0	0	0
7:15 AM	4	1	10	10	25	2	0	0	0	2	0	0	2	0	2
7:30 AM	4	2	8	9	23	1	0	0	0	1	0	0	1	0	1
7:45 AM	8	3	7	8	26	0	0	0	0	0	0	0	2	0	2
8:00 AM	4	1	9	9	23	0	0	0	0	0	0	0	1	0	1
8:15 AM	4	3	6	6	19	0	0	0	0	0	0	0	1	0	1
8:30 AM	10	0	8	7	25	0	0	0	0	0	0	0	1	0	1
8:45 AM	7	2	8	8	25	0	0	2	0	2	0	0	1	0	1
Count Total	44	12	60	65	181	3	0	2	0	5	0	0	9	0	9
Peak Hour	20	9	30	32	91	1	0	0	0	1	0	0	5	0	5

NORTHWEST PKWY S 96TH ST



Date: Thu, Aug 29, 2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	1.1%	0.96
WB	1.3%	0.90
NB	1.4%	0.97
SB	1.5%	0.92
TOTAL	1.3%	0.99

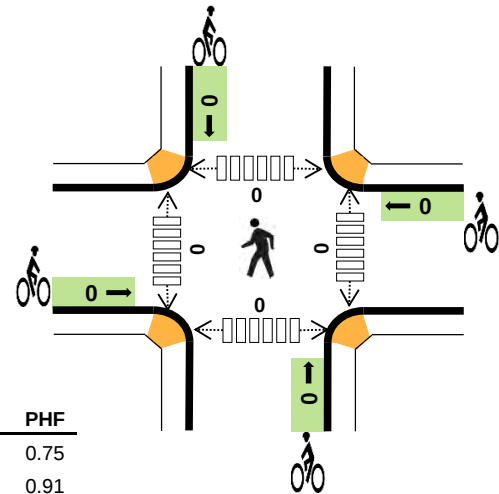
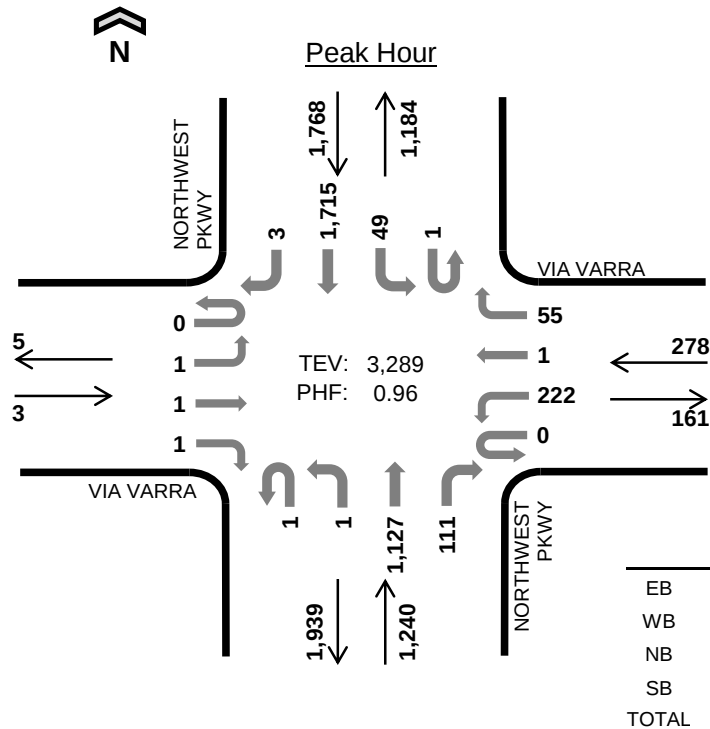
Two-Hour Count Summaries

Interval Start	S 96TH ST Eastbound				S 96TH ST 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		
4:00 PM	0	32	39	209	1	6	33	11	0	191	222	4	0	8	119	23	898	0
4:15 PM	0	46	46	198	0	2	30	14	1	221	228	2	0	9	97	20	914	0
4:30 PM	0	49	49	193	1	5	31	15	0	213	249	3	0	4	131	15	958	0
4:45 PM	1	56	54	192	0	9	27	16	0	220	219	7	0	11	145	22	979	3,749
5:00 PM	0	58	43	194	0	3	35	20	0	205	261	2	0	6	127	19	973	3,824
5:15 PM	0	42	51	184	0	7	35	20	0	208	231	2	0	7	146	20	953	3,863
5:30 PM	0	34	43	183	0	5	33	13	0	185	201	6	0	5	118	26	852	3,757
5:45 PM	0	34	32	152	0	6	31	19	1	170	185	4	0	8	107	11	760	3,538
Count Total	1	351	357	1,505	2	43	255	128	2	1,613	1,796	30	0	58	990	156	7,287	0
Peak Hour	1	205	197	763	1	24	128	71	0	846	960	14	0	28	549	76	3,863	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
4:00 PM	13	2	11	9	35	1	0	0	0	1	0	0	2	0	2
4:15 PM	4	2	1	1	8	0	0	0	0	0	0	0	1	0	1
4:30 PM	2	0	10	3	15	1	0	0	0	1	0	0	0	0	0
4:45 PM	3	1	4	3	11	1	0	0	0	1	0	0	0	0	0
5:00 PM	4	1	7	3	15	1	0	0	0	1	0	0	0	0	0
5:15 PM	4	1	5	1	11	1	0	0	0	1	0	0	0	0	0
5:30 PM	5	1	6	2	14	0	0	0	0	0	0	0	2	0	2
5:45 PM	3	1	6	5	15	0	0	0	0	0	0	0	0	0	0
Count Total	38	9	50	27	124	5	0	0	0	5	0	0	5	0	5
Peak Hour	13	3	26	10	52	4	0	0	0	4	0	0	0	0	0

NORTHWEST PKWY VIA VARRA



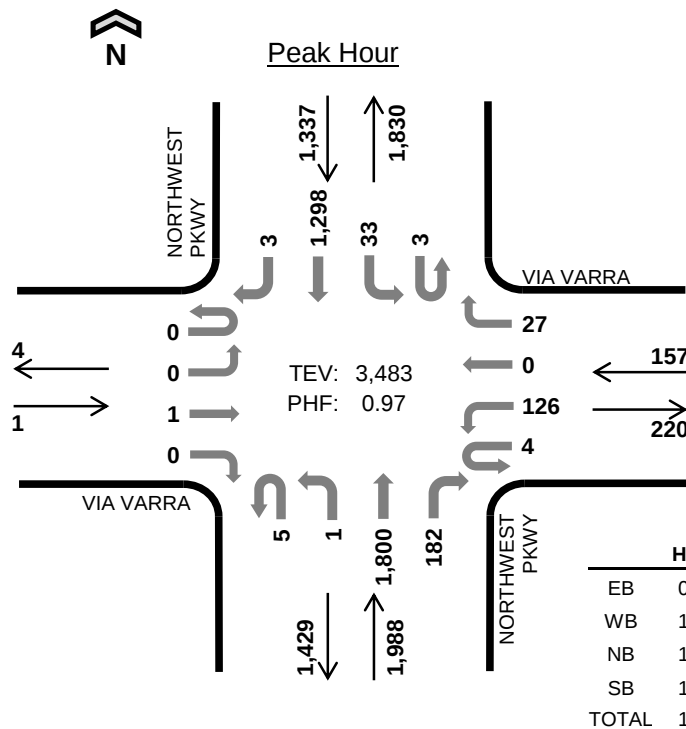
Two-Hour Count Summaries

Interval Start	VIA VARRA 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	29	0	9	0	0	232	19	0	9	302	0	600	0
7:15 AM	0	0	1	0	0	48	1	9	0	0	266	19	0	9	403	1	757	0
7:30 AM	0	0	1	0	0	62	1	13	1	0	303	29	0	11	428	0	849	0
7:45 AM	0	1	0	0	0	47	0	15	0	0	299	28	1	14	417	1	823	3,029
8:00 AM	0	0	0	1	0	56	0	13	0	1	276	25	0	14	470	1	857	3,286
8:15 AM	0	0	0	0	0	57	0	14	0	0	249	29	0	10	400	1	760	3,289
8:30 AM	0	0	0	0	0	35	0	20	0	1	273	38	0	8	429	1	805	3,245
8:45 AM	0	1	0	0	0	41	0	11	2	0	253	28	0	9	318	1	664	3,086
Count Total	0	2	2	1	0	375	2	104	3	2	2,151	215	1	84	3,167	6	6,115	0
Peak Hour	0	1	1	1	0	222	1	55	1	1	1,127	111	1	49	1,715	3	3,289	0

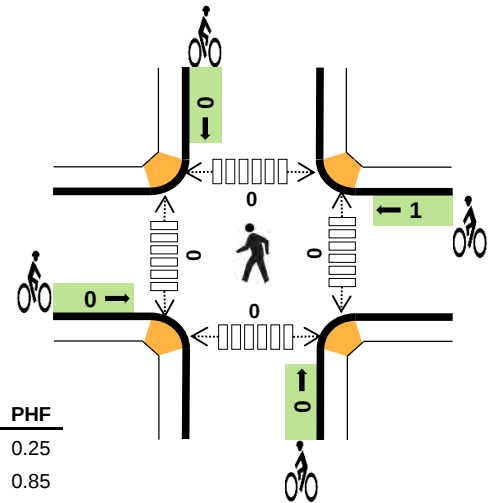
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

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	5	6	12	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	1	15	10	27	0	1	0	0	1	0	0	0	0	0
7:30 AM	0	0	8	9	17	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	4	7	11	22	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	12	7	20	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	2	6	3	11	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	12	9	21	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	3	6	6	15	0	0	2	0	2	0	0	0	0	0
Count Total	1	12	71	61	145	0	1	2	0	3	0	0	0	0	0
Peak Hour	0	7	33	30	70	0	0	0	0	0	0	0	0	0	0

NORTHWEST PKWY VIA VARRA



Date: Thu, Aug 29, 2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start	VIA VARRA 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		
4:00 PM	0	0	0	0	1	27	0	4	2	0	429	31	0	6	320	0	820	0
4:15 PM	0	0	0	0	0	37	0	11	4	1	427	37	0	7	294	0	818	0
4:30 PM	0	0	0	0	1	33	0	12	2	0	481	43	1	7	320	0	900	0
4:45 PM	0	0	0	0	0	33	0	5	0	1	434	39	1	8	332	0	853	3,391
5:00 PM	0	0	0	0	0	21	0	7	2	0	457	43	0	8	327	2	867	3,438
5:15 PM	0	0	1	0	3	39	0	3	1	0	428	57	1	10	319	1	863	3,483
5:30 PM	0	0	0	0	1	25	0	6	0	0	390	48	0	3	311	0	784	3,367
5:45 PM	0	0	0	0	0	29	0	5	1	1	339	38	1	5	251	0	670	3,184
Count Total	0	0	1	0	6	244	0	53	12	3	3,385	336	4	54	2,474	3	6,575	0
Peak Hour	0	0	1	0	4	126	0	27	5	1	1,800	182	3	33	1,298	3	3,483	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
4:00 PM	0	0	13	11	24	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	3	2	6	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	2	10	5	17	0	1	0	0	1	0	0	0	0	0
4:45 PM	0	1	4	2	7	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	7	5	12	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	7	3	10	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	7	5	13	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	8	5	13	0	0	0	0	0	0	0	0	0	0
Count Total	0	5	59	38	102	0	1	0	0	1	0	0	0	0	0
Peak Hour	0	3	28	15	46	0	1	0	0	1	0	0	0	0	0

INTERLOCKEN LOOP US 36 NORTH RAMPS (WB)

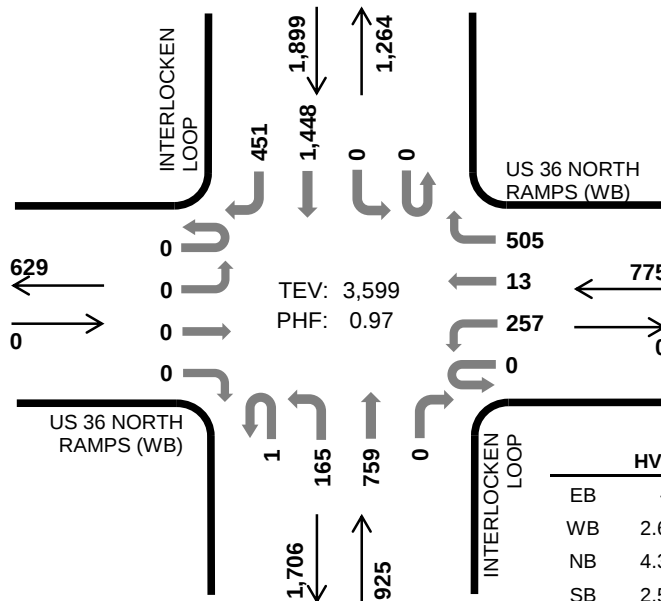


Peak Hour

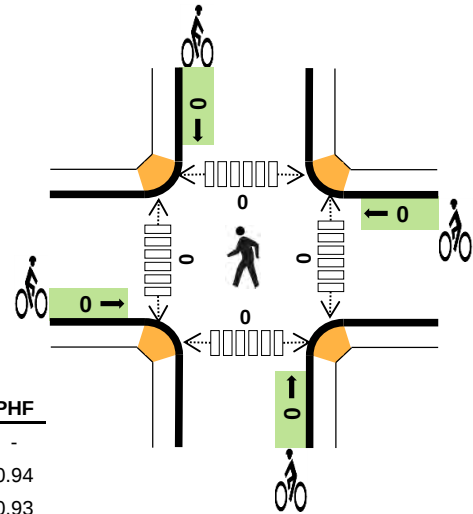
Date: Thu, Aug 29, 2019

Count Period: 7:00 AM to 9:00 AM

Peak Hour: 7:30 AM to 8:30 AM

TEV: 3,599
PHF: 0.97

	HV %:	PHF
EB	-	-
WB	2.6%	0.94
NB	4.3%	0.93
SB	2.5%	0.96
TOTAL	3.0%	0.97



Two-Hour Count Summaries

Interval Start	US 36 NORTH RAMPS (WB)				US 36 NORTH RAMPS (WB)				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	0	0	0	0	44	2	114	0	49	141	0	0	0	262	61	673	0
7:15 AM	0	0	0	0	0	51	3	119	0	47	173	0	0	0	347	101	841	0
7:30 AM	0	0	0	0	0	53	1	133	0	45	204	0	0	0	380	113	929	0
7:45 AM	0	0	0	0	0	58	5	133	0	36	199	0	0	0	344	105	880	3,323
8:00 AM	0	0	0	0	0	75	4	127	0	43	183	0	0	0	378	118	928	3,578
8:15 AM	0	0	0	0	0	71	3	112	1	41	173	0	0	0	346	115	862	3,599
8:30 AM	0	0	0	0	0	59	12	118	1	35	197	0	0	0	371	106	899	3,569
8:45 AM	0	0	0	0	0	72	5	124	0	37	165	0	0	0	315	68	786	3,475
Count Total	0	0	0	0	0	483	35	980	2	333	1,435	0	0	0	2,743	787	6,798	0
Peak Hour	0	0	0	0	0	257	13	505	1	165	759	0	0	0	1,448	451	3,599	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	6	3	8	17	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	13	7	14	34	0	0	0	1	1	0	0	0	0	0
7:30 AM	0	4	6	12	22	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	4	10	14	28	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	8	17	13	38	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	4	7	9	20	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	11	10	12	33	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	8	5	12	25	0	0	2	0	2	0	0	0	0	0
Count Total	0	58	65	94	217	0	0	2	1	3	0	0	0	0	0
Peak Hour	0	20	40	48	108	0	0	0	0	0	0	0	0	0	0

INTERLOCKEN LOOP US 36 NORTH RAMPS (WB)

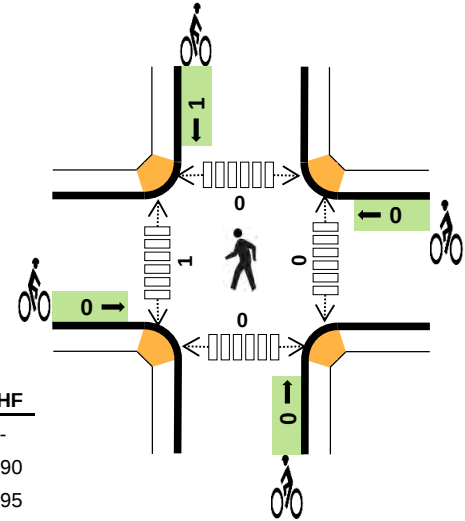
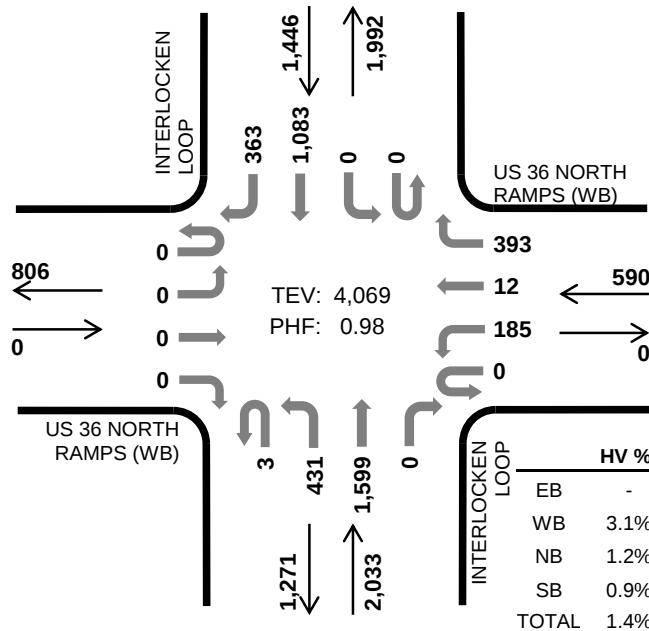


Peak Hour

Date: Thu, Aug 29, 2019

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	-	-
WB	3.1%	0.90
NB	1.2%	0.95
SB	0.9%	0.94
TOTAL	1.4%	0.98

Two-Hour Count Summaries

Interval Start	US 36 NORTH RAMPS (WB)				US 36 NORTH RAMPS (WB)				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		
4:00 PM	0	0	0	0	0	47	2	66	0	65	395	0	0	0	290	73	938	0
4:15 PM	0	0	0	0	0	40	2	82	0	102	386	0	0	0	265	65	942	0
4:30 PM	0	0	0	0	0	36	2	120	1	87	410	0	0	0	270	100	1,026	0
4:45 PM	0	0	0	0	0	52	2	110	2	112	367	0	0	0	261	97	1,003	3,909
5:00 PM	0	0	0	0	0	46	4	77	0	118	418	0	0	0	265	70	998	3,969
5:15 PM	0	0	0	0	0	51	4	86	0	114	404	0	0	0	287	96	1,042	4,069
5:30 PM	0	0	0	0	0	30	2	81	0	72	356	0	0	0	245	80	866	3,909
5:45 PM	0	0	0	0	0	41	4	82	1	59	304	0	0	0	231	60	782	3,688
Count Total	0	0	0	0	0	343	22	704	4	729	3,040	0	0	0	2,114	641	7,597	0
Peak Hour	0	0	0	0	0	185	12	393	3	431	1,599	0	0	0	1,083	363	4,069	0

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

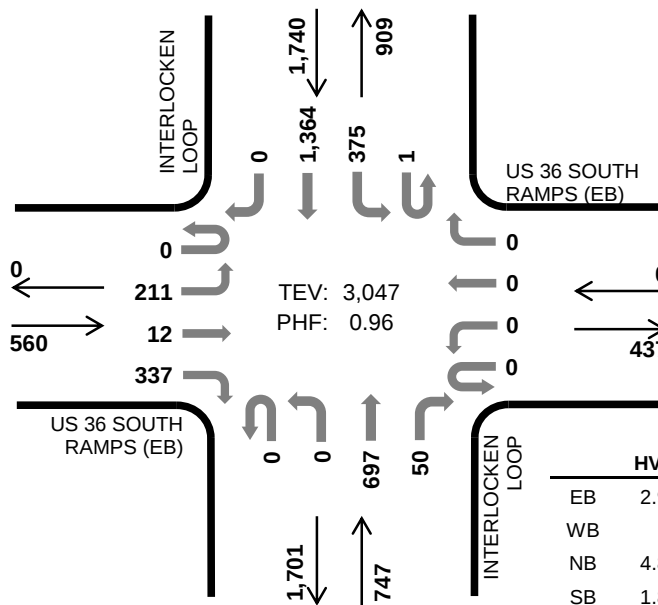
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	5	12	12	29	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	3	4	3	10	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	6	9	5	20	0	0	0	1	1	0	0	0	0	0
4:45 PM	0	5	1	3	9	0	0	0	0	0	0	1	0	0	1
5:00 PM	0	4	7	3	14	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	3	7	2	12	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	4	5	6	15	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	5	7	6	18	0	0	0	0	0	0	0	0	0	0
Count Total	0	35	52	40	127	0	0	0	1	1	0	1	0	0	1
Peak Hour	0	18	24	13	55	0	0	0	1	1	0	1	0	0	1

INTERLOCKEN LOOP US 36 SOUTH RAMPS (EB)



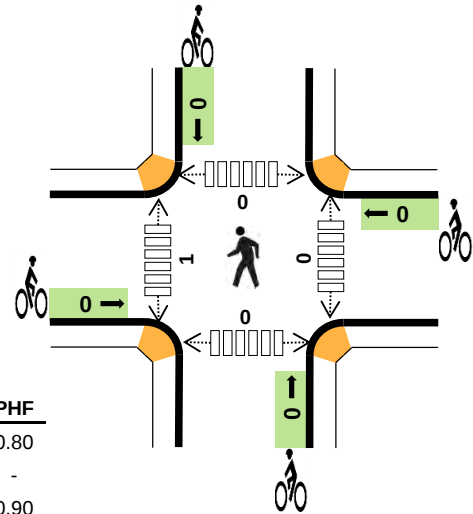
Peak Hour

Date: Thu, Aug 29, 2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



TEV: 3,047
PHF: 0.96

	HV %:	PHF
EB	2.9%	0.80
WB	-	-
NB	4.8%	0.90
SB	1.8%	0.92
TOTAL	2.8%	0.96



Two-Hour Count Summaries

Interval Start	US 36 SOUTH RAMPS (EB)				US 36 SOUTH RAMPS (WB)				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	41	2	34	0	0	0	0	0	0	152	13	0	83	216	0	541	0
7:15 AM	0	51	3	44	0	0	0	0	0	0	168	16	0	109	298	0	689	0
7:30 AM	0	53	5	75	0	0	0	0	0	0	195	12	0	116	309	0	765	0
7:45 AM	0	52	2	66	0	0	0	0	0	0	174	16	0	76	336	0	722	2,717
8:00 AM	0	45	2	86	0	0	0	0	0	0	173	11	0	100	374	0	791	2,967
8:15 AM	0	61	3	110	0	0	0	0	0	0	155	11	1	83	345	0	769	3,047
8:30 AM	0	67	1	90	0	0	0	0	0	0	161	9	0	78	354	0	760	3,042
8:45 AM	0	58	2	104	0	0	0	0	0	0	136	12	0	76	309	0	697	3,017
Count Total	0	428	20	609	0	0	0	0	0	0	1,314	100	1	721	2,541	0	5,734	0
Peak Hour	0	211	12	337	0	0	0	0	0	0	697	50	1	375	1,364	0	3,047	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	0	2	10	15	0	0	0	0	0	0	0	0	0	0
7:15 AM	4	0	8	13	25	0	0	0	1	1	0	2	0	0	2
7:30 AM	6	0	6	5	17	0	0	0	0	0	0	0	0	0	0
7:45 AM	2	0	11	10	23	0	0	0	0	0	0	0	0	0	0
8:00 AM	5	0	12	10	27	0	0	0	0	0	0	1	0	0	1
8:15 AM	3	0	7	7	17	0	0	0	0	0	0	0	0	0	0
8:30 AM	5	0	6	12	23	0	0	0	0	0	0	1	0	0	1
8:45 AM	6	0	4	11	21	0	0	2	0	2	0	2	0	0	2
Count Total	34	0	56	78	168	0	0	2	1	3	0	6	0	0	6
Peak Hour	16	0	36	32	84	0	0	0	0	0	0	1	0	0	1

INTERLOCKEN LOOP US 36 SOUTH RAMPS (EB)

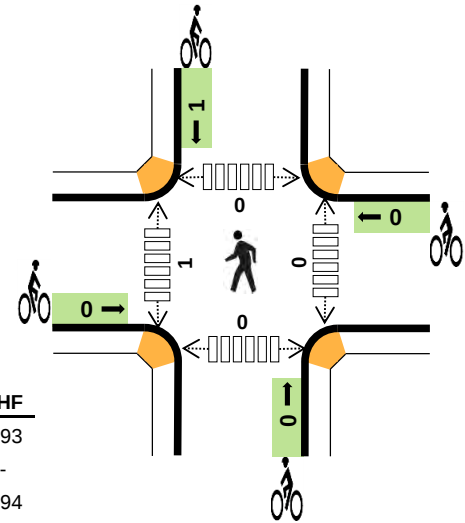
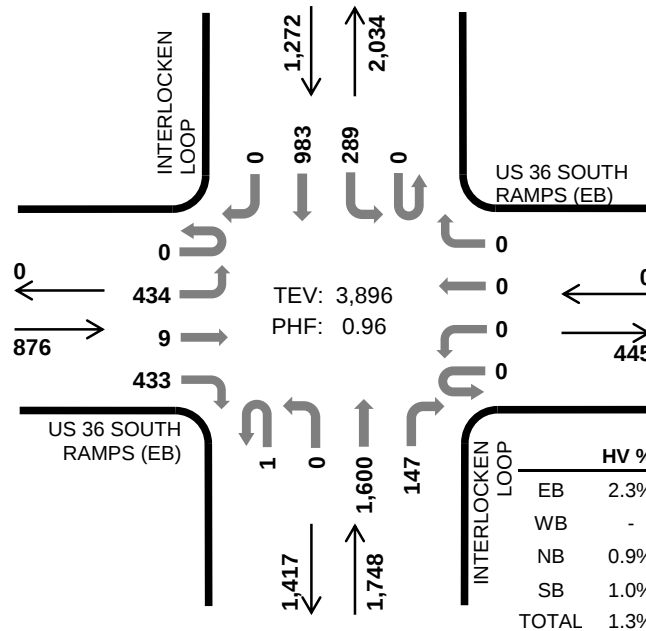


Peak Hour

Date: Thu, Aug 29, 2019

Count Period: 4:00 PM to 6:00 PM

Peak Hour: 4:30 PM to 5:30 PM



Two-Hour Count Summaries

Interval Start	US 36 SOUTH RAMPS (EB)				US 36 SOUTH RAMPS (WB)				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		
4:00 PM	0	113	3	75	0	0	0	0	0	0	375	46	0	118	221	0	951	0
4:15 PM	0	81	3	98	0	0	0	0	0	0	389	43	0	101	203	0	918	0
4:30 PM	0	108	1	104	0	0	0	0	0	0	398	50	0	81	227	0	969	0
4:45 PM	0	110	4	101	0	0	0	0	1	0	369	34	0	61	248	0	928	3,766
5:00 PM	0	108	1	126	0	0	0	0	0	0	432	35	0	75	239	0	1,016	3,831
5:15 PM	0	108	3	102	0	0	0	0	0	0	401	28	0	72	269	0	983	3,896
5:30 PM	0	118	3	102	0	0	0	0	0	0	310	26	0	64	202	0	825	3,752
5:45 PM	0	78	3	85	0	0	0	0	0	0	277	25	0	58	213	0	739	3,563
Count Total	0	824	21	793	0	0	0	0	1	0	2,951	287	0	630	1,822	0	7,329	0
Peak Hour	0	434	9	433	0	0	0	0	1	0	1,600	147	0	289	983	0	3,896	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
4:00 PM	7	0	7	12	26	0	0	0	0	0	0	0	0	0	0
4:15 PM	3	0	6	3	12	0	0	0	0	0	0	0	0	0	0
4:30 PM	7	0	5	5	17	0	0	0	1	1	0	0	0	0	0
4:45 PM	6	0	1	3	10	0	0	0	0	0	0	1	0	0	1
5:00 PM	1	0	5	2	8	0	0	0	0	0	0	0	0	0	0
5:15 PM	6	0	5	3	14	0	0	0	0	0	0	0	0	0	0
5:30 PM	5	0	3	5	13	0	0	0	0	0	0	0	0	0	0
5:45 PM	7	0	5	3	15	0	0	0	0	0	0	0	0	0	0
Count Total	42	0	37	36	115	0	0	0	1	1	0	1	0	0	1
Peak Hour	20	0	16	13	49	0	0	0	1	1	0	1	0	0	1



B - 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 2010 Highway Capacity Manual criteria.

C - Level of Service by Movement and Queuing Summary Tables

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

Intersection and Lanes Groups	Existing (Year 2019)				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		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		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																								
Dillon Road and McCaslin Boulevard	31	C	32	C	25	C	32	C					27	C	35	D	27	C	38	D				
Eastbound Left	84	F	51	D	49	D	51	D					53	D	65	E	56	E	74	E				
Eastbound Through	72	E	51	D	53	D	54	D					48	D	63	E	53	D	75	E				
Eastbound Right	2	A	4	A	2	A	4	A					2	A	4	A	2	A	5	A				
Westbound Left	74	E	51	D	39	D	51	D					43	D	56	E	41	D	59	E				
Westbound Through	53	D	40	D	33	C	41	D					37	D	41	D	36	D	44	D				
Westbound Right	3	A	3	A	3	A	3	A					3	A	3	A	4	A	3	A				
Northbound Left	72	E	66	E	47	D	67	E					52	D	61	E	52	D	65	E				
Northbound Through	23	C	36	D	29	C	37	D					30	C	41	D	32	C	40	D				
Northbound Right	3	A	4	A	4	A	4	A					4	A	5	A	5	A	6	A				
Southbound Left	76	E	54	D	51	D	54	D					51	D	58	E	55	D	67	E				
Southbound Through	20	C	27	C	24	C	27	C					25	C	31	C	23	C	31	C				
Southbound Right	3	A	4	A	3	A	4	A					3	A	5	A	3	A	6	A				
Dillon Road and 88th Street	77	E	43	D	97	F	57	E	18	B	28	C	19	B	30	C	27	C	42	D	25	C	15	B
Eastbound Through	27	C	86	F	>3 min	F	>2 min	F	27	C	53	D	28	C	60	E	66	E	94	F	42	D	18	B
Eastbound Right	3	A	6	A	17	B	14	B	7	A	3	A	8	A	3	A	9	A	6	A	12	B	4	A
Westbound Left	>2 min	F	53	D	>3 min	F	42	D	37	D	49	D	34	C	46	D	43	D	56	E	47	D	37	D
Westbound Through	54	D	11	B	74	E	8	A	7	A	7	A	7	A	7	A	9	A	7	A	13	B	7	A
Northbound Left	>3 min	F	86	F	60	E	40	D	39	D	46	D	42	D	44	D	42	D	51	D	45	D	35	C
Northbound Right	31	C	2	A	3	A	2	A	2	A	2	A	3	A	2	A	3	A	3	A	3	A	2	A
Dillon Road and 96th Street	32	C	52	D	62	E	55	D	36	D	41	D	40	D	42	D	59	E	53	D	38	D	38	D
Eastbound Left	32	C	31	C	95	F	58	E	82	F	61	E	63	E	57	E	105	F	85	F	67	E	49	D
Eastbound Through	28	C	42	D	37	D	55	E	38	D	50	D	36	D	52	D	45	D	53	D	34	C	41	D
Eastbound Right	7	A	8	A	9	A	11	B	12	B	17	B	14	B	20	B	15	B	23	C	15	B	21	C
Westbound Left	26	C	114	F	42	D	>2 min	F	58	E	62	E	64	E	61	E	71	E	73	E	51	D	50	D
Westbound Through	33	C	32	C	77	E	48	D	47	D	42	D	51	D	42	D	76	E	50	D	39	D	32	C
Westbound Right	7	A	13	B	9	A	16	B	11	B	15	B	10	B	18	B	18	B	22	C	17	B	18	B
Northbound Left	48	D	43	D	87	F	40	D	52	D	36	D	77	E	42	D	>2 min	F	50	D	68	E	58	E
Northbound Through	35	C	87	F	34	C	57	E	33	C	57	E	37	D	56	E	52	D	87	F	34	C	49	D
Northbound Right	2	A	4	A	2	A	2	A	9	A	3	A	10	A	3	A	16	B	7	A	3	A	4	A
Southbound Left	32	C	43	D	50	D	49	D	26	C	38	D	30	C	43	D	43	D	48	D	56	E	59	E
Southbound Through	68	E	56	E	>2 min	F	48	D	36	D	33	C	45	D	34	C	66	E	38	D	45	D	35	C
Southbound Right	12	B	8	A	39	D	9	A	13	B	9	A	14	B	9	A	23	C	11	B	18	B	12	B

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

Intersection and Lanes Groups	Existing (Year 2019)				Year 2025 Bkgd				Year 2025 Bkgd (With Improvements)				Year 2030 Bkgd				Year 2040 Bkgd				Year 2040 Bkgd (With Improvements)			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		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
88th Street and Campus Drive	99	F	30	C	113	F	33	C	35	C	27	C	37	D	28	C	40	D	30	C				
Eastbound Left	63	E	57	E	49	D	63	E	55	E	52	D	48	D	46	D	61	E	52	D				
Eastbound Through	65	E	111	F	63	E	84	F	77	E	47	D	74	E	51	D	78	E	53	D				
Eastbound Right	9	A	17	B	14	B	17	B	19	B	16	B	23	C	15	B	27	C	20	B				
Westbound Left	46	D	38	D	59	E	38	D	45	D	36	D	46	D	39	D	51	D	40	D				
Westbound Through	57	E	0	A	78	E	0	A	54	D	0	A	52	D	0	A	42	D	0	A				
Westbound Right	23	C	13	B	40	D	12	B	14	B	9	A	17	B	10	A	16	B	10	A				
Northbound Left	58	E	30	C	88	F	33	C	21	C	22	C	23	C	25	C	27	C	25	C				
Northbound Through	93	F	37	D	118	F	40	D	43	D	30	C	45	D	32	C	48	D	33	C				
Northbound Right	47	D	6	A	76	E	9	A	26	C	5	A	24	C	5	A	34	C	6	A				
Southbound Left	>3 min	F	32	C	>3 min	F	26	C	55	D	21	C	62	E	23	C	61	E	21	C				
Southbound Through	82	F	26	C	81	F	31	C	21	C	25	C	20	B	30	C	22	C	30	C				
Southbound Right	70	E	7	A	56	E	8	A	7	A	8	A	8	A	8	A	8	A	9	A				
Northwest Parkway and 96th Street/Via Varra	51	D	24	C	74	E	28	C	41	D	24	C	57	E	24	C	89	F	36	D	52	D	35	D
Eastbound Left - 96th Street	59	E	46	D	88	F	44	D	77	E	45	D	70	E	43	D	89	F	60	E	71	E	67	E
Eastbound Through - 96th Street	63	E	40	D	103	F	50	D	96	F	47	D	110	F	50	D	>2 min	F	84	F	115	F	87	F
Eastbound Right - 96th Street	4	A	3	A	4	A	3	A	5	A	4	A	6	A	5	A	7	A	6	A	6	A	6	A
Westbound Left - Via Varra	47	D	39	D	59	E	38	D	60	E	39	D	61	E	38	D	91	F	61	E	71	E	65	E
Westbound Through - Via Varra	48	D	41	D	72	E	42	D	78	E	40	D	74	E	39	D	>2 min	F	64	E	91	F	67	E
Westbound Right - Via Varra	1	A	1	A	1	A	1	A	3	A	1	A	3	A	2	A	15	B	2	A	6	A	2	A
Northbound Left - NWP	95	F	50	D	>3 min	F	59	E	78	E	48	D	103	F	44	D	>2 min	F	64	E	109	F	62	E
Northbound Through - NWP	6	A	8	A	11	B	9	A	3	A	8	A	5	A	7	A	5	A	10	A	6	A	9	A
Northbound Right - NWP	1	A	1	A	15	B	1	A	1	A	1	A	1	A	1	A	1	A	1	A	1	A	1	A
Southbound Left - NWP	58	E	51	D	75	E	45	D	81	F	46	D	77	E	45	D	101	F	70	E	87	F	77	E
Southbound Through - NWP	83	F	29	C	75	E	34	C	49	D	24	C	84	F	28	C	119	F	41	D	53	D	33	C
Southbound Right - NWP	4	A	1	A	4	A	1	A	3	A	1	A	6	A	1	A	14	B	2	A	4	A	8	A
Northwest Parkway and Tape Drive/Via Varra	14	B	11	B	16	B	13	B					19	B	13	B	27	C	14	B	15	B	15	B
Eastbound Left	63	E	0	A	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A
Eastbound Through	40	D	36	D	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A
Eastbound Right	0	A	0	A	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A
Westbound Left	40	D	42	D	48	D	41	D					43	D	41	D	49	D	58	E	51	D	64	E
Westbound Through	32	C	0	A	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A
Westbound Right	6	A	7	A	7	A	8	A					6	A	7	A	7	A	8	A	7	A	8	A
Northbound Left	60	E	29	C	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A
Northbound Through	10	B	14	B	17	B	16	B					12	B	13	B	16	B	15	B	8	A	16	B
Northbound Right	3	A	6	A	6	A	6	A					4	A	6	A	5	A	7	A	3	A	8	A
Southbound Left	43	D	48	D	59	E	45	D					58	E	43	D	73	E	77	E	66	E	74	E
Southbound Through	13	B	5	A	11	B	6	A					19	B	9	A	29	C	6	A	11	B	6	A
Southbound Right	9	A	5	A	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A

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

Intersection and Lanes Groups	Existing (Year 2019)				Year 2025 Bkgd				Year 2025 Bkgd (With Improvements)				Year 2030 Bkgd				Year 2040 Bkgd				Year 2040 Bkgd (With Improvements)			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		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
Northwest Parkway and US 36 North Ramps (WB)	12	B	16	B	12	B	17	B					12	B	14	B	13	B	19	B				
Westbound Left	63	E	52	D	58	E	45	D					50	D	44	D	61	E	66	E				
Westbound Through	61	E	54	D	62	E	43	D					52	D	45	D	62	E	66	E				
Westbound Right	2	A	2	A	2	A	2	A					2	A	2	A	2	A	2	A				
Northbound Left	20	C	26	C	22	C	28	C					24	C	34	C	31	C	50	D				
Northbound Through	6	A	15	B	8	A	16	B					8	A	10	B	8	A	17	B				
Southbound Through	9	A	15	B	11	B	16	B					10	A	13	B	12	B	14	B				
Southbound Right	7	A	7	A	8	A	8	A					8	A	10	A	9	A	9	A				
Northwest Parkway and US 36 South Ramps (EB)	15	B	25	C	19	B	29	C					17	B	34	C	19	B	56	E				
Eastbound Left	43	D	45	D	51	D	47	D					51	D	100	F	62	E	74	E				
Eastbound Through	45	D	51	D	50	D	48	D					51	D	116	F	64	E	72	E				
Eastbound Right	2	A	3	A	2	A	3	A					2	A	13	B	2	A	7	A				
Northbound Through	12	B	33	C	14	B	39	D					17	B	38	D	18	B	83	F				
Northbound Right	3	A	11	B	4	A	12	B					4	A	13	B	4	A	54	D				
Southbound Left	56	E	61	E	66	E	62	E					53	D	35	C	61	E	101	F				
Southbound Through	5	A	6	A	6	A	6	A					5	A	10	A	6	A	10	A				
Roundabout Controlled																								
88th Street and Rock Creek Parkway	8	A	6	A	9	A	7	A					10	A	7	A	11	B	7	A				
Eastbound Left	7	A	7	A	8	A	8	A					8	A	8	A	9	A	8	A				
Eastbound Through	5	A	7	A	6	A	8	A					6	A	8	A	6	A	8	A				
Westbound Through	7	A	5	A	8	A	5	A					8	A	5	A	9	A	5	A				
Westbound Right	12	B	5	A	15	B	5	A					15	C	6	A	17	C	6	A				
Southbound Left	7	A	7	A	7	A	8	A					7	A	8	A	8	A	9	A				
Southbound Right	5	A	5	A	5	A	5	A					5	A	5	A	5	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 C.2 - 95th Percentile Queuing Summary (Existing and Background Conditions)

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Existing (Year 2019)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Imp.)		Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Signalized Control													
Dillon Road and McCaslin Boulevard													
Eastbound Left	425'	82'	157'	15'	154'			80'	172'	82'	204'		
Eastbound Through	425'	76'	162'	76'	178'			76'	212'	71'	245'		
Eastbound Right	120'	0'	45'	65'	64'			0'	116'	0'	158'		
Westbound Left	500'	453'	342'	268'	342'			279'	402'	276'	411'		
Westbound Through	500'	180'	149'	153'	139'			162'	152'	172'	162'		
Westbound Right	280'	0'	0'	0'	0'			0'	0'	0'	0'		
Northbound Left	540'	170'	179'	138'	187'			149'	193'	110'	149'		
Northbound Through	870'	385'	400'	383'	411'			372'	463'	397'	589'		
Northbound Right	190'	71'	107'	82'	123'			78'	148'	135'	160'		
Southbound Left	240'	199'	188'	172'	204'			186'	228'	175'	235'		
Southbound Through	410'	271'	284'	239'	280'			257'	304'	220'	296'		
Southbound Right	110'	58'	123'	45'	104'			64'	157'	51'	196'		
Dillon Road and 88th Street													
Eastbound Through	965'	304'	1193'	1603'	1726'	344'	825'	331'	939'	825'	1406'	297'	245'
Eastbound Right	270'	73'	499'	1022'	1571'	199'	224'	233'	316'	345'	863'	267'	79'
Westbound Left	400'	593'	369'	624'	346'	323'	212'	292'	198'	374'	228'	399'	195'
Westbound Through	5500'	2333'	199'	5362'	211'	271'	241'	276'	254'	371'	238'	305'	145'
Northbound Left	1250'	1399'	196'	220'	126'	157'	139'	179'	135'	178'	145'	179'	128'
Northbound Right	200'	374'	23'	60'	0'	0'	0'	0'	0'	0'	0'	0'	0'
Dillon Road and 96th Street													
Eastbound Left	415'	257'	256'	588'	429'	296'	233'	264'	219'	480'	328'	316'	217'
Eastbound Through	5500'	220'	347'	575'	338'	229'	356'	221'	332'	419'	363'	230'	314'
Eastbound Right	415'	63'	91'	111'	119'	73'	143'	92'	170'	94'	171'	94'	188'
Westbound Left	425'	172'	658'	324'	699'	171'	265'	180'	279'	199'	329'	158'	235'
Westbound Through	1350'	222'	767'	466'	2229'	272'	263'	295'	262'	359'	296'	222'	205'
Westbound Right	425'	62'	88'	242'	103'	92'	104'	80'	118'	122'	130'	105'	121'
Northbound Left	350'	279'	282'	427'	110'	340'	234'	433'	204'	532'	460'	240'	205'
Northbound Through	1900'	297'	544'	1647'	426'	345'	491'	498'	463'	838'	1022'	364'	483'
Northbound Right	325'	0'	336'	179'	69'	0'	223'	8'	124'	93'	508'	0'	295'
Southbound Left	335'	138'	178'	527'	184'	93'	139'	110'	168'	224'	182'	106'	120'
Southbound Through	3100'	405'	368'	1478'	351'	313'	281'	362'	298'	546'	344'	371'	292'
Southbound Right	350'	143'	86'	554'	111'	188'	103'	188'	114'	431'	140'	278'	132'

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

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Existing (Year 2019)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Imp.)		Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
88th Street and Campus Drive													
Eastbound Left	150'	107'	190'	105'	192'	113'	195'	104'	184'	119'	194'		
Eastbound Through+Right	150'	58'	269'	61'	326'	74'	261'	94'	208'	104'	299'		
Westbound Left	240'	193'	93'	264'	95'	216'	86'	220'	104'	235'	113'		
Westbound Through+Right	415'	227'	111'	521'	87'	196'	74'	257'	85'	234'	86'		
Northbound Left	190'	158'	54'	239'	79'	96'	25'	113'	38'	109'	36'		
Northbound Through	1300'	979'	250'	1740'	284'	297'	137'	252'	131'	454'	161'		
Northbound Right	190' (Ex); 500' (2025)	303'	101'	349'	105'	385'	51'	351'	54'	450'	57'		
Southbound Left	400'	667'	140'	673'	89'	677'	87'	911'	120'	806'	94'		
Southbound Through	600'	1905'	325'	1968'	357'	265'	355'	560'	334'	481'	373'		
Southbound Right	215'	80'	130'	295'	156'	75'	171'	81'	149'	86'	165'		
Northwest Parkway and 96th Street/Via Varra													
Eastbound Left - 96th Street	370'	69'	119'	87'	119'	70'	115'	68'	117'	82'	146'	71'	195'
Eastbound Through - 96th Street	725'	87'	111'	146'	143'	136'	133'	192'	174'	286'	288'	218'	320'
Eastbound Right - 96th Street	400'	0'	0'	0'	0'	0'	0'	11'	0'	85'	0'	0'	119'
Westbound Left - Via Varra	265'	49'	44'	66'	60'	57'	54'	89'	67'	194'	71'	163'	86'
Westbound Through - Via Varra	485'	168'	111'	230'	136'	206'	118'	256'	140'	508'	185'	419'	196'
Westbound Right - Via Varra	250'	0'	0'	0'	0'	0'	0'	0'	0'	196'	0'	129'	0'
Northbound Left - NWP	725'	688'	380'	1073'	436'	437'	277'	598'	251'	909'	341'	686'	344'
Northbound Through - NWP	1450'	416'	143'	2837'	158'	78'	138'	394'	137'	847'	201'	399'	198'
Northbound Right - NWP	320'	0'	0'	0'	0'	0'	0'	0'	0'	4'	0'	0'	0'
Southbound Left - NWP	500'	253'	54'	277'	56'	94'	49'	454'	57'	834'	80'	118'	87'
Southbound Through - NWP	7600'	771'	202'	753'	216'	570'	190'	911'	209'	2020'	328'	519'	224'
Southbound Right - NWP	500'	474'	0'	397'	0'	78'	31'	598'	28'	1000'	35'	97'	62'

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

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Existing (Year 2019)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Imp.)		Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Northwest Parkway and Tape Drive/Via Varra													
Eastbound Left	130'	10'	0'	0'	0'			0'	0'	0'	0'	0'	0'
Eastbound Through	240'	12'	8'	0'	0'			0'	0'	0'	0'	0'	0'
Eastbound Right	200'	0'	0'	0'	0'			0'	0'	0'	0'	0'	0'
Westbound Left	520'	170'	125'	212'	127'			239'	148'	297'	204'	298'	232'
Westbound Through	520'	8'	0'	0'	0'			0'	0'	0'	0'	0'	0'
Westbound Right	520'	45'	40'	51'	44'			50'	46'	58'	49'	56'	47'
Northbound Left	450'	8'	4'	0'	0'			0'	0'	0'	0'	0'	0'
Northbound Through	1800'	230'	338'	409'	358'			290'	342'	399'	406'	219'	445'
Northbound Right	250'	50'	135'	143'	90'			58'	163'	120'	197'	96'	218'
Southbound Left	660'	66'	61'	80'	64'			155'	67'	192'	88'	104'	80'
Southbound Through	3000'	294'	139'	259'	165'			494'	214'	709'	150'	278'	165'
Southbound Right	600'	0'	0'	0'	0'			0'	0'	0'	0'	0'	0'
Northwest Parkway and US 36 North Ramps (WB)													
Westbound Left	325'	169'	118'	178'	110'			186'	136'	197'	175'		
Westbound Left+Through	850'	285'	225'	306'	196'			203'	165'	219'	203'		
Westbound Right	1700'	86'	0'	0'	0'			0'	0'	0'	0'		
Northbound Left	200'	135'	309'	141'	326'			175'	289'	184'	375'		
Northbound Through	515'	108'	313'	168'	317'			182'	138'	189'	482'		
Southbound Through	1800'	167'	192'	244'	202'			231'	226'	304'	255'		
Southbound Right	250'	172'	142'	175'	167'			184'	194'	228'	190'		
Northwest Parkway and US 36 South Ramps (EB)													
Eastbound Left	370'	121'	210'	150'	227'			167'	485'	192'	419'		
Eastbound Left+Through	1300'	148'	235'	174'	248'			190'	709'	217'	534'		
Eastbound Right	190'	0'	77'	0'	42'			0'	364'	38'	351'		
Northbound Through	570'	195'	585'	233'	632'			277'	641'	300'	1637'		
Northbound Right	300'	0'	224'	12'	322'			14'	334'	7'	501'		
Southbound Left	515'	187'	164'	241'	172'			235'	165'	285'	383'		
Southbound Through	515'	122'	125'	128'	112'			123'	240'	144'	237'		

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

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Existing (Year 2019)		Year 2025 Bkgrd		Year 2025 Bkgrd (With Imp.)		Year 2030 Bkgrd		Year 2040 Bkgrd		Year 2040 Bkgrd (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Roundabout Controlled													
88th Street and Rock Creek Parkway													
Eastbound Left+Through	825'	50'	25'	50'	25'			50'	25'	50'	50'		
Eastbound Through	825'	25'	25'	25'	50'			25'	50'	25'	50'		
Westbound Through	400'	25'	25'	50'	25'			50'	25'	50'	25'		
Westbound Through+Right	400'	100'	25'	150'	25'			150'	25'	175'	25'		
Southbound Left	550'	25'	50'	25'	50'			25'	50'	50'	50'		
Southbound Right	60'	0'	25'	25'	25'			25'	25'	25'	25'		

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

Table C.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		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		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																				
Dillon Road and McCaslin Boulevard	25	C	33	C					27	C	34	C	28	C	40	D				
Eastbound Left	50	D	54	D					48	D	57	E	52	D	69	E				
Eastbound Through	49	D	54	D					51	D	56	E	55	E	65	E				
Eastbound Right	2	A	4	A					2	A	4	A	2	A	4	A				
Westbound Left	40	D	49	D					41	D	50	D	43	D	57	E				
Westbound Through	34	C	38	D					34	C	37	D	37	D	42	D				
Westbound Right	3	A	3	A					3	A	3	A	4	A	3	A				
Northbound Left	47	D	70	E					50	D	70	E	51	D	64	E				
Northbound Through	29	C	39	D					31	C	42	D	33	C	50	D				
Northbound Right	4	A	4	A					4	A	5	A	5	A	8	A				
Southbound Left	50	D	56	E					56	E	58	E	55	D	72	E				
Southbound Through	23	C	29	C					23	C	30	C	24	C	38	D				
Southbound Right	3	A	4	A					3	A	5	A	3	A	7	A				
Dillon Road and 88th Street	20	B	20	B					21	C	21	C	25	C	28	C				
Eastbound Through	33	C	27	C					41	D	31	C	36	D	41	D				
Eastbound Right	3	A	2	A					4	A	2	A	4	A	3	A				
Westbound Left	27	C	35	D					32	C	30	C	56	E	37	D				
Westbound Through	16	B	9	A					16	B	8	A	16	B	8	A				
Northbound Left	37	D	52	D					37	D	6	A	55	E	68	E				
Northbound Right	2	A	2	A					2	A	2	A	2	A	2	A				
Dillon Road and 96th Street	64	E	85	F	35	D	37	D	37	D	40	D	44	D	43	D				
Eastbound Left	50	D	60	E	68	E	51	D	68	E	52	D	75	E	55	E				
Eastbound Through	55	D	>3min	F	58	E	63	E	54	D	67	E	62	E	68	E				
Eastbound Right	7	A	17	B	21	C	19	B	25	C	21	C	32	C	23	C				
Westbound Left	65	E	99	F	70	E	57	E	73	E	58	E	86	F	70	E				
Westbound Through	45	D	43	D	49	D	40	D	50	D	41	D	56	E	43	D				
Westbound Right	9	A	17	B	13	B	17	B	13	B	21	C	22	C	24	C				
Northbound Left	51	D	55	D	47	D	28	C	55	E	36	D	61	E	36	D				
Northbound Through	32	C	103	F	28	C	38	D	27	C	45	D	31	C	48	D				
Northbound Right	2	A	10	B	7	A	8	A	7	A	9	A	8	A	12	B				
Southbound Left	103	F	91	F	28	C	35	D	31	C	42	D	37	D	48	D				
Southbound Through	>3min	F	94	F	36	D	29	C	42	D	32	C	53	D	32	C				
Southbound Right	38	D	12	B	9	A	9	A	10	B	10	A	12	B	12	B				

Table C.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		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
88th Street and Campus Drive	33	C	33	C	30	C	32	C	35	D	24	C	37	D	23	C				
Eastbound Left	49	D	46	D	43	D	43	D	46	D	35	C	47	D	34	C				
Eastbound Through	78	E	55	E	65	E	61	E	78	E	46	D	66	E	48	D				
Eastbound Right	40	D	35	D	31	C	37	D	46	D	28	C	38	D	29	C				
Westbound Left	45	D	48	D	45	D	49	D	45	D	39	D	46	D	36	D				
Westbound Through	41	D	52	D	40	D	54	D	42	D	45	D	42	D	43	D				
Westbound Right	30	C	18	B	28	C	18	B	33	C	16	B	35	C	16	B				
Northbound Left	36	D	34	C	32	C	31	C	35	C	20	B	34	C	21	C				
Northbound Through	46	D	40	D	43	D	37	D	45	D	24	C	45	D	26	C				
Northbound Right	19	B	9	A	23	C	7	A	16	B	5	A	19	B	5	A				
Southbound Left	47	D	28	C	32	C	27	C	61	E	18	B	66	E	19	B				
Southbound Through	18	B	33	C	16	B	31	C	24	C	19	B	26	C	18	B				
Southbound Right	6	A	6	A	6	A	6	A	8	A	5	A	8	A	5	A				
96th Street and Campus Drive	39	D	27	C	22	C	14	B	23	C	21	C	31	C	27	C				
Eastbound Left	55	D	57	E	51	D	58	E	62	E	54	D	59	E	48	D				
Eastbound Right	14	B	19	B	20	B	20	B	21	C	31	C	24	C	37	D				
Northbound Left	79	E	80	E	63	E	101	F	55	E	95	F	83	F	91	F				
Northbound Through	52	D	35	D	14	B	9	A	10	A	10	A	16	B	12	B				
Southbound Through	23	C	15	B	22	C	9	A	22	C	16	B	29	C	28	C				
Southbound Right	8	A	4	A	8	A	3	A	13	B	5	A	22	C	8	A				
Northwest Parkway and 96th Street/Via Varra	90	F	32	C	38	D	29	C	51	D	30	C	100	F	34	C	52	D	32	C
Eastbound Left - 96th Street	63	E	69	E	70	E	60	E	87	F	62	E	92	F	54	D	78	E	55	D
Eastbound Through - 96th Street	66	E	73	E	80	E	65	E	102	F	61	E	>2min	F	70	E	109	F	64	E
Eastbound Right - 96th Street	8	A	7	A	8	A	6	A	7	A	7	A	83	F	11	B	9	A	10	B
Westbound Left - Via Varra	63	E	59	E	57	E	58	E	73	E	60	E	75	E	58	E	64	E	52	D
Westbound Through - Via Varra	79	E	60	E	64	E	61	E	78	E	60	E	103	F	59	E	79	E	57	E
Westbound Right - Via Varra	3	A	1	A	2	A	1	A	2	A	2	A	3	A	2	A	2	A	2	A
Northbound Left - NWP	199	F	51	D	64	E	53	D	109	F	48	D	>3min	F	53	D	98	F	53	D
Northbound Through - NWP	6	A	9	A	9	A	7	A	14	B	10	A	16	B	13	B	22	C	14	B
Northbound Right - NWP	1	A	1	A	1	A	1	A	1	A	1	A	1	A	1	A	1	A	1	A
Southbound Left - NWP	77	E	64	E	70	E	67	E	88	F	62	E	85	F	61	E	89	F	65	E
Southbound Through - NWP	127	F	43	D	44	D	30	C	47	D	35	C	80	E	46	D	51	D	37	D
Southbound Right - NWP	11	B	1	A	11	B	9	A	15	B	9	A	21	C	10	A	20	C	10	A

Table C.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		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Northwest Parkway and Rockcross Drive/Via Varra	21	C	9	A					42	D	16	B	>2min	F	24	C	52	D	25	C
Eastbound Left	85	F	68	E					76	E	65	E	80	F	66	E	79	E	63	E
Eastbound Through	0	A	1	A					0	A	0	A	0	A	0	A	0	A	0	A
Eastbound Right	0	A	1	A					1	A	2	A	1	A	3	A	1	A	3	A
Westbound Left	80	E	71	E					92	F	83	F	>3min	F	79	E	78	E	75	E
Westbound Through	0	A	0	A					0	A	0	A	0	A	0	A	0	A	0	A
Westbound Right	7	A	8	A					7	A	9	A	52	D	10	A	9	A	10	B
Northbound Left	58	E	60	E					65	E	71	E	>3min	F	82	F	82	F	83	F
Northbound Through	11	B	6	A					15	B	17	B	95	F	32	C	41	D	36	D
Northbound Right	4	A	3	A					6	A	10	A	78	E	25	C	27	C	28	C
Southbound Left	54	D	67	E					71	E	69	E	>2min	F	63	E	63	E	67	E
Southbound Through	17	B	6	A					53	D	5	A	>3min	F	9	A	52	D	7	A
Southbound Right	7	A	5	A					17	B	4	A	>2min	F	5	A	10	B	4	A
Northwest Parkway and US 36 North Ramps (WB)	9	A	15	B					12	B	29	C	--	--	--	--	--	--	--	--
Westbound Left	57	E	62	E					56	E	62	E	--	--	--	--	--	--	--	--
Westbound Through	51	D	69	E					56	E	66	E	--	--	--	--	--	--	--	--
Westbound Right	3	A	2	A					6	A	2	A	--	--	--	--	--	--	--	--
Northbound Left	36	D	38	D					56	E	61	E	--	--	--	--	--	--	--	--
Northbound Through	4	A	8	A					7	A	10	A	--	--	--	--	--	--	--	--
Southbound Through	5	A	14	B					10	A	49	D	--	--	--	--	--	--	--	--
Southbound Right	7	A	10	B					7	A	16	B	--	--	--	--	--	--	--	--
Northwest Parkway and US 36 South Ramps (EB)	18	B	34	C					18	B	82	F	--	--	--	--	--	--	--	--
Eastbound Left	56	E	79	E					55	D	>2min	F	--	--	--	--	--	--	--	--
Eastbound Through	57	E	98	F					55	E	>2min	F	--	--	--	--	--	--	--	--
Eastbound Right	2	A	6	A					2	A	39	D	--	--	--	--	--	--	--	--
Northbound Through	25	C	42	D					29	C	112	F	--	--	--	--	--	--	--	--
Northbound Right	4	A	17	B					5	A	74	E	--	--	--	--	--	--	--	--
Southbound Left	37	D	49	D					26	C	94	F	--	--	--	--	--	--	--	--
Southbound Through	6	A	9	A					6	A	14	B	--	--	--	--	--	--	--	--
Roundabout Controlled																				
88th Street and Rock Creek Parkway	10	A	7	A					10	B	7	A	12	B	7	A				
Eastbound Left	8	A	8	A					9	A	8	A	9	A	9	A				
Eastbound Through	6	A	8	A					6	A	8	A	6	A	8	A				
Westbound Through	8	A	5	A					8	A	5	A	9	A	5	A				
Westbound Right	15	B	6	A					16	C	6	A	19	C	6	A				
Southbound Left	7	A	8	A					7	A	8	A	8	A	9	A				
Southbound Right	5	A	5	A					5	A	5	A	5	A	5	A				

Table C.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		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Stop-Controlled																				
88th Street and Rockcress Drive									3	A	3	A	3	A	3	A				
Westbound Left									16	C	11	B	15	C	12	B				
Westbound Right									7	A	4	A	8	A	6	A				
Northbound Through									2	A	2	A	2	A	3	A				
Northbound Right									2	A	1	A	2	A	2	A				
Southbound Left									9	A	5	A	9	A	5	A				
Southbound Through									3	A	3	A	3	A	3	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 C.4 - 95th Percentile Queuing Summary (With Project Conditions)

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Imp.)		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Signalized Control											
Dillon Road and McCaslin Boulevard											
Eastbound Left	425'	78'	162'			84'	176'	86'	195'		
Eastbound Through	425'	65'	173'			81'	193'	85'	210'		
Eastbound Right	120'	0'	55'			0'	83'	0'	107'		
Westbound Left	500'	270'	368'			286'	385'	321'	483'		
Westbound Through	500'	147'	138'			142'	151'	151'	160'		
Westbound Right	280'	0'	0'			0'	0'	0'	0'		
Northbound Left	540'	142'	186'			139'	195'	156'	240'		
Northbound Through	870'	383'	419'			399'	440'	415'	542'		
Northbound Right	190'	97'	127'			115'	137'	154'	168'		
Southbound Left	240'	171'	216'			202'	227'	232'	305'		
Southbound Through	410'	236'	290'			238'	308'	266'	382'		
Southbound Right	110'	36'	121'			42'	139'	52'	208'		
Dillon Road and 88th Street											
Eastbound Through	965'	387'	558'			467'	641'	520'	837'		
Eastbound Right	270'	67'	90'			74'	94'	124'	258'		
Westbound Left	400'	172'	209'			209'	180'	315'	211'		
Westbound Through	5500'	215'	171'			222'	161'	268'	174'		
Northbound Left	1250'	164'	157'			165'	181'	214'	236'		
Northbound Right	200'	0'	0'			0'	0'	0'	47'		
Dillon Road and 96th Street											
Eastbound Left	415'	314'	622'	192'	182'	188'	182'	281'	206'		
Eastbound Through	5500'	214'	1550'	183'	329'	183'	356'	184'	332'		
Eastbound Right	415'	55'	527'	68'	131'	101'	151'	123'	172'		
Westbound Left	425'	519'	666'	305'	302'	322'	301'	430'	351'		
Westbound Through	1350'	408'	1662'	216'	216'	214'	225'	278'	205'		
Westbound Right	425'	73'	118'	87'	110'	89'	120'	125'	137'		
Northbound Left	350'	223'	540'	326'	88'	262'	200'	289'	235'		
Northbound Through	1900'	352'	1839'	335'	444'	334'	509'	414'	607'		
Northbound Right	325'	0'	630'	0'	166'	0'	267'	93'	408'		
Southbound Left	335'	694'	508'	118'	134'	153'	151'	303'	171'		
Southbound Through	3100'	3907'	1232'	389'	271'	460'	298'	715'	328'		
Southbound Right	350'	690'	444'	104'	87'	177'	88'	222'	124'		

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

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Imp.)		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
88th Street and Campus Drive											
Eastbound Left	150'	59'	161'	63'	162'	69'	145'	70'	141'		
Eastbound Through+Right	150'	149'	205'	138'	210'	156'	190'	166'	180'		
Westbound Left	240'	257'	204'	271'	212'	277'	196'	290'	194'		
Westbound Through+Right	415'	226'	134'	234'	126'	258'	144'	268'	142'		
Northbound Left	190'	116'	29'	120'	32'	123'	44'	147'	54'		
Northbound Through	1300'	376'	212'	293'	200'	235'	198'	267'	233'		
Northbound Right	190' (Ex); 500' (2025)	283'	90'	403'	70'	317'	66'	379'	70'		
Southbound Left	400'	302'	80'	246'	81'	381'	77'	536'	75'		
Southbound Through	600'	160'	280'	140'	275'	393'	219'	732'	214'		
Southbound Right	215'	65'	89'	66'	61'	76'	48'	120'	48'		
96th Street and Campus Drive											
Eastbound Left	1000'	279'	232'	195'	173'	240'	244'	254'	279'		
Eastbound Right	1000'	50'	84'	56'	87'	80'	206'	101'	307'		
Northbound Left	250'	481'	264'	180'	65'	229'	82'	331'	103'		
Northbound Through	725'	901'	689'	357'	263'	311'	198'	501'	327'		
Southbound Through	630'	508'	414'	545'	372'	581'	474'	615'	545'		
Southbound Right	450'	369'	173'	395'	133'	460'	261'	510'	369'		
Northwest Parkway and 96th Street/Via Varra											
Eastbound Left - 96th Street	370'	79'	163'	71'	159'	91'	199'	166'	207'	89'	211'
Eastbound Through - 96th Street	725'	110'	178'	117'	176'	151'	187'	870'	330'	230'	239'
Eastbound Right - 96th Street	400'	26'	0'	16'	6'	0'	0'	435'	90'	0'	0'
Westbound Left - Via Varra	265'	64'	63'	64'	61'	95'	80'	163'	80'	129'	81'
Westbound Through - Via Varra	485'	259'	177'	187'	140'	257'	162'	396'	189'	348'	182'
Westbound Right - Via Varra	250'	0'	0'	0'	0'	39'	0'	129'	0'	95'	0'
Northbound Left - NWP	725'	1117'	483'	463'	328'	747'	328'	1059'	334'	759'	350'
Northbound Through - NWP	1450'	2250'	195'	121'	173'	576'	213'	2555'	283'	589'	298'
Northbound Right - NWP	320'	0'	0'	0'	0'	0'	0'	0'	0'	0'	0'
Southbound Left - NWP	500'	578'	69'	85'	63'	109'	62'	461'	64'	120'	73'
Southbound Through - NWP	7600'	1613'	286'	488'	246'	607'	272'	1106'	371'	524'	252'
Southbound Right - NWP	500'	868'	0'	165'	68'	219'	74'	678'	80'	280'	75'

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

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Imp.)		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Northwest Parkway and Rockcress Drive/Via Varra											
Eastbound Left	130'	12'	43'			32'	80'	36'	106'	37'	113'
Eastbound Through	240'	0'	0'			0'	0'	0'	0'	0'	0'
Eastbound Right	200'	0'	0'			0'	0'	0'	0'	0'	6'
Westbound Left	520'	228'	162'			333'	213'	834'	236'	328'	234'
Westbound Through	520'	0'	0'			0'	0'	731'	0'	0'	0'
Westbound Right	520'	50'	41'			54'	52'	169'	57'	72'	59'
Northbound Left	450'	104'	35'			287'	88'	740'	124'	390'	153'
Northbound Through	1800'	231'	241'			269'	308'	3107'	392'	948'	450'
Northbound Right	200'	51'	76'			55'	98'	164'	158'	103'	214'
Southbound Left	660'	78'	69'			415'	79'	835'	86'	262'	81'
Southbound Through	3000'	382'	158'			1117'	117'	2963'	235'	785'	169'
Southbound Right	600'	0'	0'			332'	0'	806'	0'	307'	0'
Northwest Parkway and US 36 North Ramps (WB)											
Westbound Left	325'	178'	169'			190'	162'				
Westbound Left+Through	850'	199'	188'			207'	185'				
Westbound Right	1700'	0'	18'			23'	0'				
Northbound Left	200'	206'	341'			216'	374'				
Northbound Through	515'	32'	255'			54'	441'				
Southbound Through	1800'	149'	274'			217'	2030'				
Southbound Right	250'	180'	211'			186'	337'				
Northwest Parkway and US 36 South Ramps (EB)											
Eastbound Left	370'	174'	368'			220'	535'				
Eastbound Left+Through	1300'	200'	487'			221'	1035'				
Eastbound Right	190'	0'	322'			30'	430'				
Northbound Through	570'	311'	637'			356'	1739'				
Northbound Right	300'	1'	377'			14'	534'				
Southbound Left	515'	232'	261'			220'	667'				
Southbound Through	515'	175'	229'			185'	365'				
Roundabout Controlled											
88th Street and Rock Creek Parkway											
Eastbound Left+Through	825'	50'	25'			50'	50'	75'	50'		
Eastbound Through	825'	25'	50'			25'	50'	25'	50'		
Westbound Through	400'	50'	25'			50'	25'	50'	25'		
Westbound Through+Right	400'	150'	25'			150'	25'	200'	25'		
Southbound Left	550'	25'	50'			50'	50'	50'	75'		
Southbound Right	60'	25'	25'			25'	25'	25'	25'		

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

Intersection and Lane Groups	Storage or Dist. To Adj. Int	Year 2025 Bkgrd+Project		Year 2025 Bkgrd+Project (With Imp.)		Year 2030 Bkgrd+Project		Year 2040 Bkgrd+Project		Year 2040 Bkgrd+Project (With Imp.)	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Stop-Controlled											
88th Street and Rockcress Drive											
Westbound Left+Right	1000'					27'	48'	30'	62'		
Northbound Through	1200'					0'	0'	0'	0'		
Northbound Right	150'					4'	0'	9'	0'		
Southbound Left	150'					51'	21'	61'	22'		
Southbound Through	1300'					0'	0'	0'	0'		

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



D - Travel Demand Management Plan



MEMORANDUM

To: Jordan Swisher
Brue Baukol Capital Partners

From: Bill Fox, PE and Emily Kotz, PE

Date: January 27, 2021

Project: Redtail Ridge

Subject: Transportation Demand Management Plan for GDP Submittal

1. Overview

Brue Baukol Capital Partners (BB) and its development partners are proposing to build a mix of office, industrial, retail and commercial buildings on the former StorageTek campus as detailed in the *Redtail Ridge Traffic and Mobility Study (Study)*, dated January 27, 2021. This Transportation Demand Management (TDM) Plan was requested by City of Louisville staff as a supplemental submittal to the *Study* to outline possible strategies to reduce Single Occupant Vehicle (SOV) traffic generated by the proposed development.

BB and its development partners are planning the site to support employee use of non-SOV transportation to and from the development. They have expressed interest and financial support of TDM programs that are outlined in the City of Louisville's new *Transportation Master Plan (TMP)*. To this end, we have prepared non-SOV year 2040 goals for all trips to and from the project. In the coming years TDM programs, incentives and funding details will be implemented to achieve the goals.

The following text discusses possible TDM measures for the City of Louisville's General Development Plan (GDP) submittal and review. The GDP provides a high-level planning review of the propose development. Future submittals beyond GDP will include additional details on programmed land uses, possible tenants, parking requirements, multimodal access, and TDM contributions. It is anticipated that a supplemental TDM memo will be revised and resubmitted with additional details at each of the City of Louisville's development review submittals.

2. Current and future non-SOV mode share goals

The new *City of Louisville TMP* documented how commuters in Louisville and nearby communities travel to work. This data is based on US Census American Community Survey

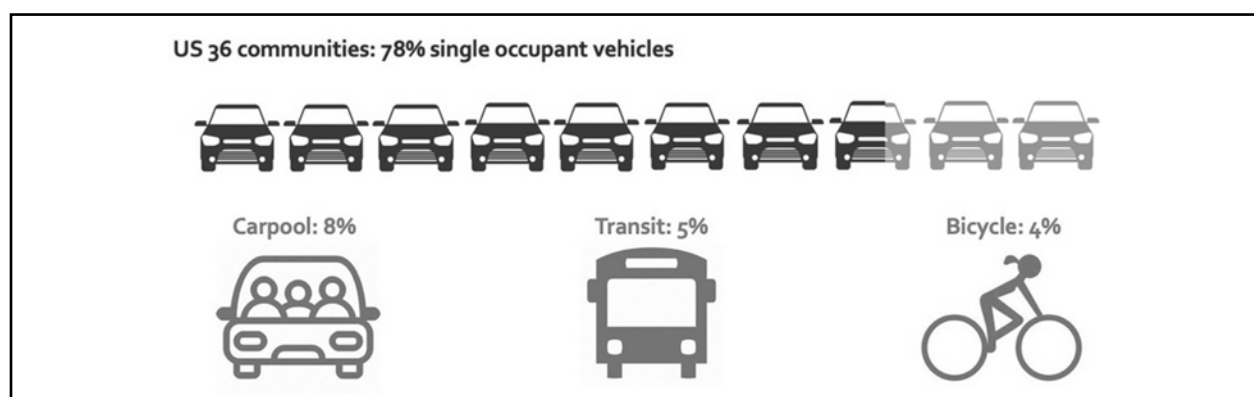
(<https://www.census.gov/programs-surveys/acs>). This data is commonly used by agencies across the Denver region as a baseline for TDM programs. The current data is shown below as year 2012 to 2016 estimates. Based on this data, approximately 28% of people who work in Louisville travel to work by non-SOV modes.

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 as year 2012 to 2016 estimates. 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)



Additional trip generation and mode share peer data and study references are provided in Appendix X.

TDM programs are targeted and evaluated based on their direct ability to serve commuters of different types of land uses. For the general office, industrial and retail land uses, the goal of the project is to have 12 percent or more non-SOV trips during the peak periods during all

development phases. These participation levels would be well within the current program enrollment in the US 36 corridor.

While the project team believes that the TDM plan will result in greater automobile trip reductions, the traffic analysis has assumed this conservative TDM trip reduction of 12 percent of SOV trips for all site uses based on feedback provided by City staff.

3. TDM Program Overview

TDM is an all-encompassing term for activities that 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 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 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 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. 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 trips.

Cycling Trips

Cycling trips will increase in the future as the Complete Street and trail network is completed. 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. The cycling trips will be approximately 4 to 6 miles and up to a 20-minute ride.

Carpool, Vanpool and Shared Ride Trips

Large and small employers will have access to programs that match people to carpool programs and on-demand rideshares. 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.lonetreeelink.com>).

Telecommute/Work From Home

Commuting trips that do not occur during peak travel hours as a result of people who telecommute or work from their residence for part or the entire day are included in the non-SOV goals.

4. TDM Program Tools

Listed below are the TDM programs, tools and funding sources that could be used to achieve the project non-SOV mode share goals. They 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 partner with others to facilitate these programs.

Note that all vertical 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. 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.

- Shuttles to High Capacity Transit: The Project should contribute operating funds and seek additional public and private partners (including adjacent neighboring entities such as

Avista, Crocs, CTC, etc.) for shuttle service that connects to the Flatiron Flyer BRT station and downtown Louisville. The shuttle service could be operated with an on-demand app and/or fixed route

- Employee EcoPasses: RTD EcoPasses, in partnership with employers ecopasses should be made available to all on-site employees at a discounted charge. Consider also including the Guaranteed Ride Home Program as an optional benefit that can be added to the EcoPasses.
- TDM Coordinator: Hire, in partnership with others, a coordinator or work with a local transportation management organization to manage the transportation needs, barriers, incentives, programs, etc. This staff member or support organization should 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 and residents. They should assist in working toward 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 and resident travel behavior to evaluate the TDM Plan. The survey is designed to collect anonymous travel information and takes less than 10 minutes to complete.
 - Employee Carpools and Vanpools: work with vertical developer/employers to implement this program on-site.
 - 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).
 - Orientation packets: prepare electronic orientation packets to employers and residents that will include non-SOV program information and incentives. This information will be located on the district website.
- Bicycle Access: Bicycle access to the site should be provided via Complete Streets and multi-use trails as shown on the GDP submittal maps.
- Flexible work schedules and telecommuting: work with employers to encourage this program. This program will also be supported by the TDM Coordinator.

- *Bicycle Parking:* Future site plans should include outdoor short-term bicycle parking at a ratio of 1 per 4,000 square feet of commercial use. Long-term bicycle parking inside buildings or in covered parking areas should 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.
- *On-Site Bicycle Commuter Amenities:* Office buildings over 100,000 square feet should include showers and changing facilities for employees within the building. Future submittals should include detailed designs and access.
- *Carshare:* Office buildings over 100,000 square feet should allocate three parking spaces for carshare programs. The utilization of this service should be monitored to determine the appropriate number of spaces to allocate for carshare.



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 Bellevue 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:

- Bellevue Station
 - o Extended Stay Hotel (158 rooms)
 - o One Bellevue Office Building (318,000 square feet) –*first floor retail*
 - o Camden Bellevue Station Apartments (270 dwelling units)
 - o Cielo Apartments (201 dwelling units)
- Arapahoe at Village Center
 - o Residence Inn (128 rooms)
 - o 6312, 6363, 6399, 6501, 6340, 6360, 6380, and 6400 Fiddlers Green Offices (approximately 2,287,000 square feet of office)
- Lincoln Station
 - o 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).

DTC Trip Generation Summary

January 10, 2020

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.

F - Intersection Capacity Worksheets (SimTraffic)
Existing

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.4	3.9	0.5	0.6	2.9	2.2	0.2	0.3	2.3	0.2	2.2
Total Del/Veh (s)	84.3	72.2	2.3	73.8	53.2	3.1	71.7	22.9	3.3	75.5	20.1	3.2

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	30.7

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	0.2	82.5	43.7	26.3	0.0	23.3	34.2
Total Del/Veh (s)	26.9	3.1	62.4	10.3	221.0	72.4	7.9	43.2

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	31.7	27.7	7.0	25.5	33.1	6.5	48.3	34.7	1.8	31.7	67.5	11.6

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	32.3

20: 88th Street Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.4	0.3	2.2	0.4	0.6	8.5	10.8	10.5	24.4	7.6	16.3
Total Del/Veh (s)	58.6	64.7	9.4	45.5	56.7	23.3	49.5	82.4	36.2	176.9	74.5	53.9

20: 88th Street Performance by movement

Movement	All
Denied Del/Veh (s)	12.8
Total Del/Veh (s)	85.9

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.5	0.1	3.5	3.3	3.5	11.3	0.0	0.0	0.0
Total Del/Veh (s)	58.6	62.7	4.0	47.3	48.2	1.3	95.1	6.0	1.0	58.1	82.5	3.8

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	1.2
Total Del/Veh (s)	50.6

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.2	0.1		0.9	0.1	3.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	62.9	40.3		39.7	31.6	5.9	59.8	10.2	3.3	43.3	12.5	8.8

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	13.7

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	63.4	60.8	2.0	20.4	6.4	8.6	6.8	11.5

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.3	1.1	3.1	0.2	2.5	0.0	0.0	0.5
Total Del/Veh (s)	43.2	44.6	1.5	12.3	2.9	55.7	5.2	15.1

45: 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.2	0.3	0.5	3.6	0.5
Total Del/Veh (s)	4.9	4.8	5.5	4.9	4.9	3.9	4.9

Total Network Performance

Movement	All
Denied Del/Veh (s)	9.8
Total Del/Veh (s)	81.6

Queuing and Blocking Report

09/04/2019

Existing - AM

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	35	98	108	344	556	220	159	186	436	391	112	196
Average Queue (ft)	4	36	30	206	262	94	38	101	218	195	17	61
95th Queue (ft)	21	82	76	343	453	180	122	170	385	358	71	155
Link Distance (ft)		750	750		1028	1028			893	893	893	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)		0	1	3	10				0			0
Queuing Penalty (veh)		0	0	7	23				0			1

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	265	322	317	222	150
Average Queue (ft)	107	152	139	87	6
95th Queue (ft)	199	271	254	198	58
Link Distance (ft)		1296	1296	1296	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	1	4		6	
Queuing Penalty (veh)	4	6		6	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B9	B19	NB	NB	NB	B12
Directions Served	T	R	L	T	T	T	T	L	L	R	T
Maximum Queue (ft)	356	126	490	578	507	2190	188	324	417	324	908
Average Queue (ft)	146	23	317	251	115	457	10	231	292	123	280
95th Queue (ft)	304	73	593	649	354	1843	122	347	455	374	1075
Link Distance (ft)	1552	1552		490	490	4320	601		324		1558
Upstream Blk Time (%)			11	13	0			0	21	1	2
Queuing Penalty (veh)			0	74	1			0	121	0	13
Storage Bay Dist (ft)			400					200		200	
Storage Blk Time (%)			29	0				44	53	1	
Queuing Penalty (veh)			82	1				251	303	3	

Queuing and Blocking Report

09/04/2019

Existing - AM

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	B9	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	R	T	L	T	T	R	L	T	T
Maximum Queue (ft)	280	257	238	85	502	198	248	237	75	326	303	271
Average Queue (ft)	148	120	81	27	46	95	149	117	33	159	186	135
95th Queue (ft)	257	220	175	63	281	172	222	194	62	279	297	238
Link Distance (ft)		601	601		490		648	648			483	483
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					1							
Storage Bay Dist (ft)	415			415		420			420	330		
Storage Blk Time (%)										0	0	
Queuing Penalty (veh)										1	0	

Intersection: 15: 96th St & Dillon Rd

Movement	B38	B38	B38	SB	SB	SB	SB
Directions Served	T			L	T	T	R
Maximum Queue (ft)	746	700	146	228	425	381	189
Average Queue (ft)	213	113	5	55	274	223	72
95th Queue (ft)	677	512	107	138	405	352	143
Link Distance (ft)	732	732	732		682	682	
Upstream Blk Time (%)	0	0	0				
Queuing Penalty (veh)	1	0	0				
Storage Bay Dist (ft)				335			335
Storage Blk Time (%)					7	1	
Queuing Penalty (veh)					6	4	

Intersection: 20: 88th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B12
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R	T
Maximum Queue (ft)	142	89	251	322	203	892	270	460	520	1639	96	392
Average Queue (ft)	51	17	99	97	57	356	157	338	379	800	48	91
95th Queue (ft)	107	58	193	227	158	979	303	589	667	1905	80	341
Link Distance (ft)		564		1723		1354				1558		324
Upstream Blk Time (%)						5				12		4
Queuing Penalty (veh)						0				92		15
Storage Bay Dist (ft)	125		210		170		170	400	400		200	
Storage Blk Time (%)	2		1	2		25	5	29	42	0		
Queuing Penalty (veh)	1		3	4		122	20	100	145	1		

Intersection: 20: 88th Street

Movement	B12
Directions Served	
Maximum Queue (ft)	278
Average Queue (ft)	27
95th Queue (ft)	177
Link Distance (ft)	324
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 23: Bend

Movement	NB
Directions Served	T
Maximum Queue (ft)	346
Average Queue (ft)	12
95th Queue (ft)	128
Link Distance (ft)	682
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

09/04/2019

Existing - AM

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	B22	B22	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T		L	L	T	T	L	L
Maximum Queue (ft)	56	74	129	122	489	323	38	58	208	181	659	702
Average Queue (ft)	12	36	46	39	87	12	5	18	93	45	377	374
95th Queue (ft)	41	69	87	86	377	123	24	49	168	125	671	688
Link Distance (ft)			732	732	483	483			1056	1056		
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	280	280					180	180			700	700
Storage Blk Time (%)									1	0	4	5
Queuing Penalty (veh)									0	0	7	9

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	B39	B39	SB	SB	SB	SB	SB	B33	B33
Directions Served	T	T	T	T	L	L	T	T	R	T	T
Maximum Queue (ft)	448	209	34	364	70	244	767	769	480	42	42
Average Queue (ft)	84	36	1	13	12	54	403	403	80	3	2
95th Queue (ft)	416	79	24	266	43	253	766	771	474	40	37
Link Distance (ft)	941	941	2050	2050			877	877		1436	1436
Upstream Blk Time (%)	0					0	1	1			
Queuing Penalty (veh)	1					0	0	0			
Storage Bay Dist (ft)					600	600			600		
Storage Blk Time (%)	0						13	13			
Queuing Penalty (veh)	0						7	35			

Queuing and Blocking Report

09/04/2019

Existing - AM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	R	L	T	T	R	L
Maximum Queue (ft)	23	5	17	162	179	15	55	18	269	244	57	47
Average Queue (ft)	1	0	1	53	104	1	20	1	128	98	20	9
95th Queue (ft)	10	4	12	119	170	8	45	8	230	189	50	35
Link Distance (ft)			716		680	680			623	623		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125	125		250			500	455			250	550
Storage Blk Time (%)										0		
Queuing Penalty (veh)										0		

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	B39	B39	B39
Directions Served	L	T	T	T	T	
Maximum Queue (ft)	72	375	384	954	955	188
Average Queue (ft)	34	144	156	107	133	13
95th Queue (ft)	66	286	294	600	670	197
Link Distance (ft)		2050	2050	941	941	941
Upstream Blk Time (%)				0	0	0
Queuing Penalty (veh)				1	1	0
Storage Bay Dist (ft)	550					
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	L	T	T	T	T	T	R
Maximum Queue (ft)	221	316	117	172	128	123	167	186	193	251
Average Queue (ft)	54	183	4	73	62	49	73	95	101	66
95th Queue (ft)	169	285	86	135	108	100	138	158	167	172
Link Distance (ft)		1442	1442		556	556		370	370	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	330			190			300			300
Storage Blk Time (%)		0		0						0
Queuing Penalty (veh)		0		0						0

Queuing and Blocking Report

09/04/2019

Existing - AM

Intersection: 37: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	453	204
Average Queue (ft)	24	7
95th Queue (ft)	209	109
Link Distance (ft)	648	648
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	T	T	L	L	T	T
Maximum Queue (ft)	154	169	214	175	202	216	119	127
Average Queue (ft)	65	90	124	82	103	125	64	77
95th Queue (ft)	121	148	195	159	167	187	106	122
Link Distance (ft)		1037	1760	1760		556	556	556
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	330				180			
Storage Blk Time (%)		1			0	3		
Queuing Penalty (veh)		4			1	5		

Intersection: 45: 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	94	12	76	131	80	67
Average Queue (ft)	41	0	32	38	32	10
95th Queue (ft)	78	6	66	98	69	44
Link Distance (ft)	807	807	1051	1051	793	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						50
Storage Blk Time (%)					2	0
Queuing Penalty (veh)					2	0

Network Summary

Network wide Queuing Penalty: 1489

Intersection						
Intersection Delay, s/veh	8.3					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	577		938		414	
Demand Flow Rate, veh/h	588		957		423	
Vehicles Circulating, veh/h	284		363		319	
Vehicles Exiting, veh/h	458		509		1000	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.990		1.000	
Approach Delay, s/veh	6.4		10.6		5.9	
Approach LOS	A		B		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	0.617	0.383	0.333	0.667	0.671	0.329
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	363	225	319	638	284	139
Cap Entry Lane, veh/h	1039	1115	967	1043	1007	1083
Entry HV Adj Factor	0.981	0.980	0.980	0.980	0.979	0.978
Flow Entry, veh/h	356	221	313	625	278	136
Cap Entry, veh/h	1015	1089	939	1012	985	1059
V/C Ratio	0.351	0.203	0.333	0.618	0.282	0.128
Control Delay, s/veh	7.2	5.2	7.4	12.2	6.5	4.5
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	1	4	1	0

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.7	3.4	0.5	0.5	2.8	2.2	0.3	0.3	2.1	0.2	2.0
Total Del/Veh (s)	51.1	51.3	3.5	50.7	39.5	2.9	66.1	35.7	3.8	53.7	27.4	3.8

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	31.8

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	86.1	5.6	53.4	11.2	85.5	2.5	2.3	42.6

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.0	0.0	0.0
Total Del/Veh (s)	31.2	42.2	7.9	114.0	31.7	12.5	43.1	87.3	3.5	42.7	55.9	7.7

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	51.5

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.7	1.0	0.7	2.4	0.4	3.3	0.4	3.4	0.4	0.1	0.3	1.1
Total Del/Veh (s)	56.9	110.7	16.6	37.7	13.2	30.4	37.0	6.0	32.2	25.6	6.8	30.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.3	0.1	3.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	45.7	39.8	3.2	39.1	40.8	1.1	49.8	8.1	1.0	51.1	29.4	1.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	24.3

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBT	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.9	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	35.9	42.0	7.3	29.1	13.7	5.6	47.9	5.3	4.6	11.4

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	51.5	53.7	1.5	26.0	14.5	15.2	6.9	15.8

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.6	1.2	3.0	0.6	1.8	0.0	0.0	0.8
Total Del/Veh (s)	45.2	51.0	2.5	32.6	10.9	61.4	6.3	25.3

45: Rock Creek Pkwy & 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.1	0.2	0.7	3.3	0.7
Total Del/Veh (s)	6.1	5.5	3.8	2.9	6.1	4.6	5.0

Total Network Performance

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)				0.9			
Total Del/Veh (s)				70.7			

Queuing and Blocking Report

09/06/2019

Existing - PM

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	128	164	196	128	331	415	192	165	194	434	431	133
Average Queue (ft)	22	93	96	3	198	239	75	56	113	278	258	37
95th Queue (ft)	80	157	162	45	295	342	149	145	179	400	391	107
Link Distance (ft)		750	750			1028	1028			893	893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	0	3	8		0	3				0		
Queuing Penalty (veh)	0	2	19		0	9				0		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	167	220	323	300	259	190
Average Queue (ft)	86	123	202	186	150	23
95th Queue (ft)	162	188	284	266	239	123
Link Distance (ft)			1296	1296	1296	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190				100
Storage Blk Time (%)	0	0	9		13	
Queuing Penalty (veh)	0	1	23		16	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B9	B19	NB	NB	NB
Directions Served	T	R	L	T	T	T	T	L	L	R
Maximum Queue (ft)	1302	988	420	257	194	43	249	180	218	31
Average Queue (ft)	634	95	204	74	73	2	9	96	120	1
95th Queue (ft)	1193	499	369	199	165	35	109	168	196	23
Link Distance (ft)	1552	1552		490	490	4320	601		324	
Upstream Blk Time (%)			0	0						
Queuing Penalty (veh)			0	0						
Storage Bay Dist (ft)			400					200		200
Storage Blk Time (%)			1					0	1	
Queuing Penalty (veh)			3					1	7	

Queuing and Blocking Report

09/06/2019

Existing - PM

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	B37	NB
Directions Served	L	T	T	R	T		L	T	T	R	T	L
Maximum Queue (ft)	301	373	305	107	506	290	578	697	574	108	712	381
Average Queue (ft)	145	227	183	48	146	14	393	335	181	47	170	86
95th Queue (ft)	256	347	297	91	515	145	658	767	490	88	779	282
Link Distance (ft)		601	601		490	490		648	648		1613	
Upstream Blk Time (%)					1	0		14	0			0
Queuing Penalty (veh)					5	0		0	0			0
Storage Bay Dist (ft)	415			415			420			420		330
Storage Blk Time (%)							34	0				0
Queuing Penalty (veh)							72	0				0

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	B22	B38	B38	SB	SB	SB	SB
Directions Served	T	T	R	T	T		L	T	T	R
Maximum Queue (ft)	521	519	290	364	580	522	316	425	354	119
Average Queue (ft)	379	350	65	51	78	23	74	241	193	39
95th Queue (ft)	543	544	336	279	381	203	178	368	316	86
Link Distance (ft)	483	483		2061	732	732		682	682	
Upstream Blk Time (%)	5	3	0		0	0				
Queuing Penalty (veh)	24	14	0		0	0				
Storage Bay Dist (ft)			330				335			335
Storage Blk Time (%)	30	19					0	3	0	
Queuing Penalty (veh)	22	42					0	4	1	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B12
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R	T
Maximum Queue (ft)	174	330	136	161	86	299	144	185	192	410	219	70
Average Queue (ft)	124	85	40	51	11	133	27	37	61	161	35	2
95th Queue (ft)	190	269	93	111	54	250	101	123	140	325	130	51
Link Distance (ft)		564		1723		1354				1558		324
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	125		210		170		170	400	400		200	
Storage Blk Time (%)	18	0		0		6				6		
Queuing Penalty (veh)	12	0		0		6				17		

Queuing and Blocking Report

09/06/2019

Existing - PM

Intersection: 23: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	652	560
Average Queue (ft)	239	68
95th Queue (ft)	683	333
Link Distance (ft)	682	682
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	B22	B22	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T		L	L	T	T	L	L
Maximum Queue (ft)	127	139	113	140	506	437	35	51	132	97	407	408
Average Queue (ft)	65	77	62	66	136	29	4	17	68	22	264	259
95th Queue (ft)	107	119	102	111	480	201	20	44	111	61	380	378
Link Distance (ft)			732	732	483	483			1056	1056		
Upstream Blk Time (%)					0	0						
Queuing Penalty (veh)					3	0						
Storage Bay Dist (ft)	280	280					180	180			700	700
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	T	L	L	T	T
Maximum Queue (ft)	156	173	32	56	224	228
Average Queue (ft)	71	79	3	23	136	131
95th Queue (ft)	135	143	19	54	200	202
Link Distance (ft)	941	941			877	877
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			600	600		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report

09/06/2019

Existing - PM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	B29	B29	SB	SB
Directions Served	T	L	L	R	L	T	T	R	T	T	L	L
Maximum Queue (ft)	16	88	150	49	10	383	406	244	379	378	33	67
Average Queue (ft)	1	26	67	15	0	201	188	36	26	27	4	28
95th Queue (ft)	8	67	125	40	4	338	332	135	184	189	21	61
Link Distance (ft)	716		680			623	623		370	370		
Upstream Blk Time (%)									0	0		
Queuing Penalty (veh)									1	2		
Storage Bay Dist (ft)		250		500	455			250			550	550
Storage Blk Time (%)							2					
Queuing Penalty (veh)							4					

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	B39
Directions Served	T	T	T
Maximum Queue (ft)	156	177	182
Average Queue (ft)	57	70	6
95th Queue (ft)	122	139	133
Link Distance (ft)	2050	2050	941
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	175	258	332	383	388	185	192	211	184
Average Queue (ft)	33	133	195	181	182	98	113	128	63
95th Queue (ft)	118	225	309	313	312	169	181	192	142
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)				0					
Queuing Penalty (veh)				0					
Storage Bay Dist (ft)	330		190			300		300	
Storage Blk Time (%)		0	8	4					
Queuing Penalty (veh)		0	64	18					

Queuing and Blocking Report

09/06/2019

Existing - PM

Intersection: 37: Bend

Movement	EB	EB	EB
Directions Served	T		
Maximum Queue (ft)	567	386	124
Average Queue (ft)	94	38	9
95th Queue (ft)	426	266	127
Link Distance (ft)	648	648	648
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	0	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	222	273	119	638	613	323	165	178	115	130
Average Queue (ft)	132	157	6	347	314	38	97	110	63	77
95th Queue (ft)	210	235	77	585	552	224	151	164	103	125
Link Distance (ft)		1037		1760	1760			556	556	556
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)		12			7		0	1		
Queuing Penalty (veh)		81			12		0	2		

Intersection: 45: Rock Creek Pkwy & 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	127	22	54	28	147	68
Average Queue (ft)	48	1	14	1	42	12
95th Queue (ft)	94	11	44	12	99	51
Link Distance (ft)	807	807	1051	1051	793	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					50	
Storage Blk Time (%)					4	0
Queuing Penalty (veh)					7	1

Network Summary

Network wide Queuing Penalty: 498

Intersection						
Intersection Delay, s/veh	6.2					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	544		474		641	
Demand Flow Rate, veh/h	555		483		654	
Vehicles Circulating, veh/h	439		147		213	
Vehicles Exiting, veh/h	428		847		417	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	7.0		4.8		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	0.470	0.530	0.441	0.559	0.671	0.329
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	261	294	213	270	439	215
Cap Entry Lane, veh/h	901	978	1179	1253	1110	1185
Entry HV Adj Factor	0.980	0.981	0.980	0.981	0.979	0.981
Flow Entry, veh/h	256	288	209	265	430	211
Cap Entry, veh/h	882	958	1154	1228	1087	1163
V/C Ratio	0.290	0.301	0.181	0.216	0.396	0.181
Control Delay, s/veh	7.2	6.9	4.7	4.8	7.4	4.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	1	1	2	1

***F - Intersection Capacity Worksheets (SimTraffic)
Year 2025 Background***

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.1	0.0	0.0	0.2	0.2
Total Del/Veh (s)	27.3	6.8	37.0	6.9	39.4	1.2	2.4	18.2

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	82.2	37.6	11.8	58.2	47.2	11.0	51.7	32.7	8.7	26.1	35.8	12.5

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	36.4

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.3	0.4	2.8	1.3	2.7	0.3	0.1	0.3	0.2	0.0	0.1
Total Del/Veh (s)	55.2	76.8	19.4	45.4	53.6	14.1	20.6	43.0	25.8	54.9	20.7	6.5

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	35.0

25: Northwest Pkwy & 96th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	3.7	0.1	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	76.5	96.0	5.0	60.4	78.4	3.4	78.2	3.3	0.9	81.4	49.2	3.2

25: Northwest Pkwy & 96th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	41.4

Total Zone Performance

Movement	All
Denied Del/Veh (s)	1.4
Total Del/Veh (s)	1377.3

Queuing and Blocking Report

01/17/2020

2025 Bkgd - AM

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B9	B19	B19	NB	NB
Directions Served	T	R	L	L	T	T	T		L	L
Maximum Queue (ft)	419	283	390	386	352	47	392	111	166	177
Average Queue (ft)	170	74	172	167	122	2	29	4	85	95
95th Queue (ft)	344	199	323	320	271	34	216	81	148	157
Link Distance (ft)	1553	1553			490	4320	602	602		318
Upstream Blk Time (%)				0	0		0			
Queuing Penalty (veh)				0	1		0			
Storage Bay Dist (ft)			400	400					200	
Storage Blk Time (%)			0	1	0				0	0
Queuing Penalty (veh)			1	4	0				0	0

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T		L	L	T	T	R
Maximum Queue (ft)	316	295	256	218	115	403	201	165	195	294	284	128
Average Queue (ft)	185	163	148	109	32	35	7	82	109	181	150	46
95th Queue (ft)	296	277	229	192	73	246	104	142	171	272	242	92
Link Distance (ft)			602	602		490	490			648	648	
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						1	0					
Storage Bay Dist (ft)	415	415			415			420	420			420
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	B38	B38	B38	SB	SB	SB	SB
Directions Served	L	T	T	T	T		L	T	T	R
Maximum Queue (ft)	420	376	351	139	365	98	120	289	326	235
Average Queue (ft)	176	202	153	13	34	4	49	166	209	95
95th Queue (ft)	340	345	299	161	261	72	93	270	313	188
Link Distance (ft)		2594	2594	720	720	720		676	676	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	330						335			335
Storage Blk Time (%)	3	1	0					0	0	
Queuing Penalty (veh)	9	2	0					0	2	

Queuing and Blocking Report

01/17/2020

2025 Bkgd - AM

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	127	121	261	309	76	144	400	374	471	519	1071	561
Average Queue (ft)	54	25	108	53	53	42	116	124	160	193	242	80
95th Queue (ft)	113	74	216	196	87	96	297	278	385	455	677	265
Link Distance (ft)		564		1711			1326				1547	1547
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125		210		50	170		500	500	400		
Storage Blk Time (%)	2	0	2	2	12	0	4	1	1	7	8	0
Queuing Penalty (veh)	0	0	7	12	25	0	27	1	2	23	30	1

Intersection: 20: 88th Street & Campus Dr

Movement	SB
Directions Served	R
Maximum Queue (ft)	98
Average Queue (ft)	37
95th Queue (ft)	75
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

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2025 Bkgd - AM

Intersection: 25: Northwest Pkwy & 96th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	L	T
Maximum Queue (ft)	69	82	164	163	38	75	243	235	442	482	486	90
Average Queue (ft)	18	36	68	70	6	22	122	101	225	256	256	14
95th Queue (ft)	51	70	132	136	26	57	206	188	394	435	437	56
Link Distance (ft)			720	720			1056	1056				941
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			700	700	700	
Storage Blk Time (%)							5	3				
Queuing Penalty (veh)							2	1				

Intersection: 25: Northwest Pkwy & 96th St

Movement	NB	SB	SB	SB	SB	SB
Directions Served	T	L	L	T	T	R
Maximum Queue (ft)	104	75	104	585	584	128
Average Queue (ft)	25	18	48	322	323	24
95th Queue (ft)	78	57	94	570	570	78
Link Distance (ft)	941			864	864	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		600	600			600
Storage Blk Time (%)				3	3	
Queuing Penalty (veh)				2	7	

Zone Summary

Zone wide Queuing Penalty: 163

Intersection						
Intersection Delay, s/veh	9.4					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	622		992		484	
Demand Flow Rate, veh/h	635		1011		493	
Vehicles Circulating, veh/h	327		401		329	
Vehicles Exiting, veh/h	495		561		1083	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.991		1.000	
Approach Delay, s/veh	7.2		12.4		6.3	
Approach LOS	A		B		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	0.631	0.369	0.325	0.675	0.663	0.337
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	401	234	329	682	327	166
Cap Entry Lane, veh/h	999	1075	933	1010	997	1074
Entry HV Adj Factor	0.980	0.980	0.980	0.981	0.982	0.982
Flow Entry, veh/h	393	229	323	669	321	163
Cap Entry, veh/h	975	1050	907	982	979	1054
V/C Ratio	0.403	0.218	0.356	0.681	0.328	0.155
Control Delay, s/veh	8.2	5.5	7.9	14.5	7.1	4.8
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	2	6	1	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.3	3.9	0.6	0.6	2.8	2.1	0.2	0.4	2.3	0.2	2.2
Total Del/Veh (s)	49.3	53.3	2.1	39.4	32.8	3.0	47.0	28.8	3.7	51.1	23.6	3.1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	25.2

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	119.4	66.1	1.0	0.0	0.4	39.1
Total Del/Veh (s)	217.3	17.3	75.1	7.8	60.1	4.0	2.5	58.2

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	95.2	37.0	9.0	42.1	76.6	8.8	86.9	34.3	2.2	50.0	132.7	38.6

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	61.8

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.9	0.4	0.3	2.3	0.5	0.6	1.1	0.6	0.8	15.7	5.6	21.8
Total Del/Veh (s)	48.9	62.5	14.0	59.3	77.6	40.0	87.6	117.6	76.3	191.5	81.3	56.4

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	7.1
Total Del/Veh (s)	106.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.4	0.1	3.2	18.1	6.5	14.2	0.0	0.0	0.0
Total Del/Veh (s)	87.8	103.3	4.0	59.0	72.4	1.4	209.0	4.4	1.0	74.7	74.6	3.8

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	4.5
Total Del/Veh (s)	74.4

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.8	3.6	0.1	0.0	0.0	0.0	0.2
Total Del/Veh (s)	48.1	6.7	17.2	5.5	59.1	10.5	16.3

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	58.0	62.0	2.0	22.2	7.9	10.8	8.0	12.4

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.3	1.2	3.4	0.2	2.4	0.0	0.0	0.6
Total Del/Veh (s)	50.9	49.5	1.7	14.4	3.6	65.7	5.5	18.5

Total Zone Performance

Movement	All
Denied Del/Veh (s)	20.0
Total Del/Veh (s)	1544.2

Queuing and Blocking Report

01/16/2020

2025 Bkgd - AM

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	32	101	85	256	282	173	132	163	411	390	113	170
Average Queue (ft)	2	35	28	148	192	80	20	81	242	214	21	53
95th Queue (ft)	15	76	68	240	268	153	72	138	383	358	82	135
Link Distance (ft)		750	750		1028	1028			893	893	893	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)		0		0	0				0			0
Queuing Penalty (veh)		0		0	1				0			0

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	195	267	249	202	101
Average Queue (ft)	98	164	145	97	4
95th Queue (ft)	172	239	223	191	45
Link Distance (ft)		1296	1296	1296	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	0	4		6	
Queuing Penalty (veh)	1	7		6	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	B2	B2	WB	WB	WB	B9	B19	B19	NB	NB
Directions Served	T	R	T	T	L	T	T	T	T		L	L
Maximum Queue (ft)	1590	1372	111	72	490	577	520	3976	549	396	224	242
Average Queue (ft)	725	289	8	5	378	343	111	1461	145	111	117	125
95th Queue (ft)	1603	1022	77	67	624	744	347	4406	552	498	208	220
Link Distance (ft)	1529	1529	1895	1895		490	490	4320	601	601		324
Upstream Blk Time (%)	6	1			19	23	0	13	6	4	0	0
Queuing Penalty (veh)	0	0			0	135	1	142	32	22	0	0
Storage Bay Dist (ft)					400						200	
Storage Blk Time (%)					40	0					3	4
Queuing Penalty (veh)					121	0					16	23

Intersection: 10: 88th Street & Dillon Rd

Movement	NB
Directions Served	R
Maximum Queue (ft)	125
Average Queue (ft)	4
95th Queue (ft)	60
Link Distance (ft)	
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	B19	B9	B9	WB	WB	WB	WB	B37
Directions Served	L	T	T	R	T	T		L	T	T	R	T
Maximum Queue (ft)	521	480	345	165	398	505	84	284	414	416	169	275
Average Queue (ft)	347	235	120	33	85	76	3	142	232	209	60	71
95th Queue (ft)	588	575	322	111	570	368	67	324	466	445	242	608
Link Distance (ft)		601	601		4320	490	490		648	648		1613
Upstream Blk Time (%)		7	0			0	0		4	1		3
Queuing Penalty (veh)		33	0			2	0		0	0		0
Storage Bay Dist (ft)	415			415				420			420	
Storage Blk Time (%)	20	0						0	6	6		
Queuing Penalty (veh)	42	0						0	12	5		

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B22	B38	B38	B38	SB	SB	SB	SB
Directions Served	L	T	T	R	T	T			L	T	T	R
Maximum Queue (ft)	410	418	367	161	719	755	757	383	438	672	659	467
Average Queue (ft)	220	237	178	20	198	417	333	27	190	464	441	246
95th Queue (ft)	427	458	369	179	1164	926	877	258	527	738	763	554
Link Distance (ft)		483	483		2061	732	732	732		682	682	
Upstream Blk Time (%)	6	7	0	0	5	2	2	1		5	7	
Queuing Penalty (veh)	0	42	1	0	60	8	7	3		0	0	
Storage Bay Dist (ft)	330			330					335			335
Storage Blk Time (%)	14	0	0						0	52	31	6
Queuing Penalty (veh)	43	0	0						0	54	132	21

Intersection: 15: 96th St & Dillon Rd

Movement	B23
Directions Served	T
Maximum Queue (ft)	623
Average Queue (ft)	146
95th Queue (ft)	796
Link Distance (ft)	2350
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B12
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R	T
Maximum Queue (ft)	132	109	329	671	269	1718	270	460	520	1652	107	381
Average Queue (ft)	50	21	126	162	88	709	209	357	400	902	47	134
95th Queue (ft)	105	61	264	521	239	1740	349	596	673	2043	85	410
Link Distance (ft)		565		1724		3909				1558		324
Upstream Blk Time (%)										19		8
Queuing Penalty (veh)										175		44
Storage Bay Dist (ft)	125		210		170		170	400	400		200	
Storage Blk Time (%)	1	0	3	9	0	44	6	34	48	1		
Queuing Penalty (veh)	0	0	9	17	0	226	26	132	186	3		

Intersection: 20: 88th Street & Campus Dr

Movement	B12
Directions Served	
Maximum Queue (ft)	376
Average Queue (ft)	65
95th Queue (ft)	295
Link Distance (ft)	324
Upstream Blk Time (%)	5
Queuing Penalty (veh)	30
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	B22	B22	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T		L	L	T	T	L	L
Maximum Queue (ft)	86	108	164	169	510	496	40	90	256	238	787	870
Average Queue (ft)	25	43	75	68	185	74	7	26	140	100	615	663
95th Queue (ft)	69	87	146	143	550	340	28	66	230	212	947	1073
Link Distance (ft)			732	732	483	483			1056	1056		
Upstream Blk Time (%)					1	0						
Queuing Penalty (veh)					4	0						
Storage Bay Dist (ft)	280	280					180	180			700	700
Storage Blk Time (%)			0	1					7	1	37	41
Queuing Penalty (veh)			0	6					3	1	71	80

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	B39	B39	B39	SB	SB	SB	SB	SB	B33	B33
Directions Served	T	T	T	T	T	L	L	T	T	R	T	T
Maximum Queue (ft)	972	173	1291	1203	1078	98	488	808	820	533	38	55
Average Queue (ft)	485	34	567	490	345	18	69	414	420	57	2	3
95th Queue (ft)	1298	111	1896	1799	1409	61	277	746	753	397	24	31
Link Distance (ft)	941	941	2050	2050	2050			877	877		1436	1436
Upstream Blk Time (%)	26		4	2	1		0	2	2			
Queuing Penalty (veh)	110		18	7	3		0	0	0			
Storage Bay Dist (ft)						600	600			600		
Storage Blk Time (%)	6							8	8			
Queuing Penalty (veh)	50							6	23			

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B41	B41	B29	B29	SB	SB
Directions Served	L	L	R	T	T	R	T	T	T	T	L	L
Maximum Queue (ft)	191	230	65	378	345	161	139	135	45	96	64	86
Average Queue (ft)	82	132	26	153	131	31	30	29	4	6	14	46
95th Queue (ft)	170	212	51	409	387	143	263	262	54	67	44	80
Link Distance (ft)		680		623	623		713	713	370	370		
Upstream Blk Time (%)				4	3		2	2				
Queuing Penalty (veh)				26	21		12	11				
Storage Bay Dist (ft)	250		500			250					550	550
Storage Blk Time (%)		0		5	4							
Queuing Penalty (veh)		0		0	6							

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	B39	B39	B39
Directions Served	T	T	T	T	
Maximum Queue (ft)	324	328	944	957	309
Average Queue (ft)	122	128	112	131	11
95th Queue (ft)	247	259	602	659	177
Link Distance (ft)	2050	2050	941	941	941
Upstream Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	1	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	244	335	180	181	183	250	273	280	227
Average Queue (ft)	52	191	77	87	84	112	135	139	75
95th Queue (ft)	178	306	141	168	166	216	239	244	175
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)						0	0	0	
Queuing Penalty (veh)						0	0	0	
Storage Bay Dist (ft)	330		190			300			300
Storage Blk Time (%)	0	2	0	0			0	0	0
Queuing Penalty (veh)	0	2	1	1			0	0	1

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	T	T	R	L	L	T	T
Maximum Queue (ft)	160	187	290	246	26	243	263	129	157
Average Queue (ft)	88	119	147	106	1	148	169	53	69
95th Queue (ft)	150	174	233	205	12	221	241	106	128
Link Distance (ft)		1037	1760	1760			556	556	556
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330				300	180			
Storage Blk Time (%)		3		0		6	14		
Queuing Penalty (veh)		14		0		12	30		

Zone Summary

Zone wide Queuing Penalty: 2344

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	52.8	3.0	49.1	7.1	45.7	0.8	2.3	28.1

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	61.2	50.0	17.3	61.5	41.9	15.2	36.2	56.9	3.3	38.2	33.2	8.7

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	41.3

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.7	0.6	0.7	2.5	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.7
Total Del/Veh (s)	52.0	47.0	15.8	35.5	9.2	22.4	30.3	4.9	20.5	25.2	8.3	26.5

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.2	0.2	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	45.4	47.4	4.3	38.5	39.8	1.3	47.7	8.4	0.9	46.1	24.2	1.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	24.0

Total Zone Performance

Movement	All
Denied Del/Veh (s)	1.9
Total Del/Veh (s)	1921.4

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Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B19	NB	NB	B12
Directions Served	T	R	L	L	T	T	L	L	T
Maximum Queue (ft)	968	441	212	234	285	236	148	165	9
Average Queue (ft)	452	46	124	141	106	6	65	87	0
95th Queue (ft)	825	224	197	212	241	86	116	139	6
Link Distance (ft)	1525	1525			490	602		318	1558
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			400	400			200		
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T		L	L	T	T	R
Maximum Queue (ft)	255	240	378	329	178	519	198	272	292	279	269	136
Average Queue (ft)	157	135	241	199	80	181	14	165	183	187	163	58
95th Queue (ft)	233	216	356	311	143	574	144	246	265	263	243	104
Link Distance (ft)			602	602		490	490			648	648	
Upstream Blk Time (%)						2	0					
Queuing Penalty (veh)						10	0					
Storage Bay Dist (ft)	415	415			415			420	420			420
Storage Blk Time (%)			0	0								
Queuing Penalty (veh)			1	0								

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B22	B22	B38	SB	SB	SB	SB
Directions Served	L	T	T	R	T	T	T	L	T	T	R
Maximum Queue (ft)	403	528	527	382	100	116	244	159	265	330	127
Average Queue (ft)	74	327	295	31	7	7	9	79	160	190	56
95th Queue (ft)	234	491	471	223	61	65	130	139	237	281	103
Link Distance (ft)		477	477		2061	2061	720		676	676	
Upstream Blk Time (%)	0	2	1	0			0				
Queuing Penalty (veh)	0	14	8	0			0				
Storage Bay Dist (ft)	330			330				335			335
Storage Blk Time (%)		13	6						0	0	
Queuing Penalty (veh)		11	15						0	1	

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Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	L	T	R
Maximum Queue (ft)	174	327	112	114	32	137	147	57	88	101	417	268
Average Queue (ft)	127	86	44	41	7	74	80	22	31	54	179	40
95th Queue (ft)	195	261	86	74	25	124	137	51	73	87	355	171
Link Distance (ft)		564		1711		1326				1558	1558	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125		210		170		500	500	400			200
Storage Blk Time (%)	21	0		0		0					9	
Queuing Penalty (veh)	13	0		0		0					6	

Intersection: 20: 88th Street & Campus Dr

Movement	B12
Directions Served	T
Maximum Queue (ft)	4
Average Queue (ft)	0
95th Queue (ft)	3
Link Distance (ft)	318
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	L	T
Maximum Queue (ft)	134	136	136	140	34	63	126	100	267	289	287	167
Average Queue (ft)	64	70	67	81	5	23	71	39	181	207	195	71
95th Queue (ft)	112	115	117	133	24	54	118	79	254	277	260	138
Link Distance (ft)			720	720			1056	1056				941
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			700	700	700	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	SB	SB	SB	SB	SB
Directions Served	T	L	L	T	T	R
Maximum Queue (ft)	160	23	66	214	193	44
Average Queue (ft)	79	4	21	124	115	9
95th Queue (ft)	138	16	49	190	176	31
Link Distance (ft)	941			864	864	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		600	600		600	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 79

Intersection						
Intersection Delay, s/veh	6.7					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	591		536		710	
Demand Flow Rate, veh/h	603		546		724	
Vehicles Circulating, veh/h	479		180		222	
Vehicles Exiting, veh/h	467		902		504	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	7.7		5.2		7.0	
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	0.407	0.593	0.662	0.338
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	283	320	222	324	479	245
Cap Entry Lane, veh/h	869	945	1144	1219	1101	1176
Entry HV Adj Factor	0.981	0.978	0.980	0.981	0.981	0.980
Flow Entry, veh/h	278	313	218	318	470	240
Cap Entry, veh/h	851	923	1119	1194	1080	1152
V/C Ratio	0.326	0.339	0.194	0.266	0.435	0.208
Control Delay, s/veh	7.9	7.6	5.0	5.4	8.1	5.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	2	1	1	2	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.7	3.4	0.5	0.5	2.8	2.1	0.3	0.4	2.1	0.2	2.0
Total Del/Veh (s)	51.2	54.4	3.5	51.3	40.7	2.8	67.0	36.7	4.4	54.0	27.1	3.9

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	32.1

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	2.5	2.2	0.0	0.0	0.0	0.0	0.0	1.0
Total Del/Veh (s)	147.5	13.8	41.8	7.7	40.2	1.2	2.3	56.5

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	58.1	55.2	10.8	177.0	48.2	16.0	39.7	56.8	2.4	49.3	47.9	9.2

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	55.0

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.8	1.1	0.5	2.2	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.7
Total Del/Veh (s)	62.8	84.0	17.4	38.0	11.8	33.1	39.6	8.6	25.7	30.6	7.7	32.6

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.4	0.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	43.7	49.9	3.3	38.0	42.4	1.2	58.5	9.1	0.8	44.6	33.6	1.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	28.2

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.8	3.9	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	40.8	8.2	15.6	6.4	45.1	6.1	12.8

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	44.9	42.8	1.6	27.6	16.3	15.9	8.1	16.5

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.6	2.0	3.0	0.6	1.7	0.0	0.0	0.8
Total Del/Veh (s)	46.5	47.5	2.8	39.3	11.7	61.5	6.4	28.6

Total Zone Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	1945.9

Queuing and Blocking Report

01/09/2020

2025 Bkgd - PM

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	140	172	217	126	329	386	159	180	204	409	390	154
Average Queue (ft)	30	97	101	6	217	256	75	66	119	284	265	44
95th Queue (ft)	102	154	178	64	310	342	139	162	187	411	387	123
Link Distance (ft)		750	750			1028	1028			893	893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	0	3	10		0	4				0		
Queuing Penalty (veh)	0	3	26		1	12				0		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	194	230	297	284	234	186
Average Queue (ft)	99	134	208	194	152	17
95th Queue (ft)	181	204	280	266	232	104
Link Distance (ft)			1296	1296	1296	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190			100	
Storage Blk Time (%)	0	1	10		16	
Queuing Penalty (veh)	1	3	28		19	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B9	B19	NB	NB
Directions Served	T	R	L	T	T	T	T	L	L
Maximum Queue (ft)	1386	1198	368	264	244	34	394	137	135
Average Queue (ft)	965	502	194	71	66	2	21	62	81
95th Queue (ft)	1726	1571	346	211	164	26	188	116	126
Link Distance (ft)	1552	1552		490	490	4320	601		324
Upstream Blk Time (%)	11	5	1	0	0				
Queuing Penalty (veh)	0	0	0	2	0				
Storage Bay Dist (ft)			400					200	
Storage Blk Time (%)			2	0					
Queuing Penalty (veh)			7	0					

Queuing and Blocking Report

01/09/2020

2025 Bkgd - PM

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	B37	NB
Directions Served	L	T	T	R	T		L	T	T	R	T	L
Maximum Queue (ft)	444	371	329	151	508	369	580	739	678	126	1627	157
Average Queue (ft)	255	246	208	60	157	20	506	518	290	52	555	54
95th Queue (ft)	429	338	306	119	534	173	699	926	689	103	1581	110
Link Distance (ft)		601	601		490	490		648	648		1613	
Upstream Blk Time (%)					1	0		33	1		9	
Queuing Penalty (veh)					5	0		0	0		0	
Storage Bay Dist (ft)	415			415			420			420		330
Storage Blk Time (%)	2						63	0				
Queuing Penalty (veh)	6						152	0				

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	B38	B38	SB	SB	SB	SB
Directions Served	T	T	R	T		L	T	T	R
Maximum Queue (ft)	437	428	94	649	658	257	378	359	148
Average Queue (ft)	321	285	3	63	45	94	250	207	56
95th Queue (ft)	426	418	69	352	316	184	351	312	111
Link Distance (ft)	483	483		732	732		682	682	
Upstream Blk Time (%)		0	0	0	0				
Queuing Penalty (veh)		0	0	0	0				
Storage Bay Dist (ft)			330			335		335	
Storage Blk Time (%)	11	4				0	1	0	
Queuing Penalty (veh)	10	9				0	2	0	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B12
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R	T
Maximum Queue (ft)	174	371	117	112	130	320	223	87	103	429	270	145
Average Queue (ft)	125	105	46	46	15	168	31	28	54	197	40	5
95th Queue (ft)	192	326	95	87	79	284	105	70	89	357	156	76
Link Distance (ft)		565		1724		3909				1558		324
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	125		210		170		170	400	400		200	
Storage Blk Time (%)	23	0				11				11		
Queuing Penalty (veh)	15	0				9				23		

Queuing and Blocking Report

01/09/2020

2025 Bkgd - PM

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	B22	B22	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	T		L	L	T	T	L	L
Maximum Queue (ft)	125	139	152	160	500	449	30	84	155	122	477	472
Average Queue (ft)	66	76	84	89	125	39	4	25	83	35	306	294
95th Queue (ft)	112	119	131	143	466	243	20	60	136	81	436	424
Link Distance (ft)			732	732	483	483			1056	1056		
Upstream Blk Time (%)					1	0						
Queuing Penalty (veh)					4	0						
Storage Bay Dist (ft)	280	280					180	180			700	700
Storage Blk Time (%)									0			
Queuing Penalty (veh)									0			

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	B39	SB	SB	SB	SB
Directions Served	T	T	T	L	L	T	T
Maximum Queue (ft)	170	194	407	43	68	234	233
Average Queue (ft)	77	87	15	5	28	144	143
95th Queue (ft)	140	158	297	25	56	211	216
Link Distance (ft)	941	941	2050			877	877
Upstream Blk Time (%)			0				
Queuing Penalty (veh)			0				
Storage Bay Dist (ft)				600	600		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

01/09/2020

2025 Bkgd - PM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B29	B29	SB	SB	SB	SB
Directions Served	L	L	R	T	T	R	T	T	L	L	T	T
Maximum Queue (ft)	113	142	53	386	372	128	303	414	38	72	183	206
Average Queue (ft)	32	74	20	222	207	34	31	44	4	31	75	81
95th Queue (ft)	80	127	44	358	340	90	196	245	23	64	149	165
Link Distance (ft)		680		623	623		370	370			2050	2050
Upstream Blk Time (%)							0	0				
Queuing Penalty (veh)							0	3				
Storage Bay Dist (ft)	250		500			250			550	550		
Storage Blk Time (%)				0	3							
Queuing Penalty (veh)				0	7							

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	B39	B39	B39
Directions Served	T	T	
Maximum Queue (ft)	518	366	188
Average Queue (ft)	19	18	7
95th Queue (ft)	226	224	137
Link Distance (ft)	941	941	941
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	184	213	342	406	376	199	208	212	215
Average Queue (ft)	31	121	209	198	205	107	121	134	76
95th Queue (ft)	110	197	326	316	317	184	190	202	167
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330		190			300		300	
Storage Blk Time (%)			10	5					
Queuing Penalty (veh)			86	23					

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	244	269	118	718	694	390	191	198	120	114
Average Queue (ft)	148	176	2	403	360	74	104	117	64	75
95th Queue (ft)	227	248	42	632	598	322	161	172	107	112
Link Distance (ft)		1037		1760	1760			556	556	556
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)		19			13		0	2		
Queuing Penalty (veh)		126			20		0	2		

Zone Summary

Zone wide Queuing Penalty: 604

F - Intersection Capacity Worksheets (SimTraffic)
Year 2030 Background

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

Intersection						
Intersection Delay, s/veh	9.8					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	636		1010		496	
Demand Flow Rate, veh/h	649		1031		506	
Vehicles Circulating, veh/h	334		408		336	
Vehicles Exiting, veh/h	508		575		1103	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.991		1.000	
Approach Delay, s/veh	7.3		12.9		6.5	
Approach LOS	A		B		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	0.629	0.371	0.326	0.674	0.660	0.340
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	408	241	336	695	334	172
Cap Entry Lane, veh/h	993	1069	927	1004	991	1067
Entry HV Adj Factor	0.980	0.980	0.980	0.980	0.979	0.983
Flow Entry, veh/h	400	236	329	681	327	169
Cap Entry, veh/h	969	1044	901	975	970	1049
V/C Ratio	0.413	0.226	0.366	0.699	0.337	0.161
Control Delay, s/veh	8.4	5.6	8.1	15.3	7.3	4.9
LOS	A	A	A	C	A	A
95th %tile Queue, veh	2	1	2	6	1	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.3	3.8	0.5	0.6	2.9	2.2	0.3	0.4	2.2	0.2	2.2
Total Del/Veh (s)	53.1	47.9	2.1	42.7	37.3	2.9	52.0	29.9	3.7	50.7	25.2	3.3

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	26.8

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	0.3	0.1	0.0	0.1	0.0	0.2	0.2
Total Del/Veh (s)	28.2	7.5	34.4	7.1	42.4	0.9	2.5	18.5

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	62.5	36.2	14.2	63.7	51.1	10.3	76.5	37.2	9.8	30.0	44.8	14.1

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	39.6

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.4	0.3	2.7	0.8	2.7	0.3	0.2	0.3	1.4	0.6	0.1
Total Del/Veh (s)	47.9	74.3	23.3	46.0	51.8	17.1	22.6	44.5	23.5	62.2	19.8	7.5

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	1.1
Total Del/Veh (s)	37.3

25: Northwest Pkwy & 96th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	3.5	0.2	3.5	0.2	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	69.6	110.0	5.6	60.6	73.8	3.0	103.3	4.8	1.0	76.8	84.2	5.5

25: Northwest Pkwy & 96th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	56.6

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.8	3.4	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	43.1	5.9	12.3	3.9	57.5	18.5	18.6

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	49.9	52.3	2.1	23.9	7.8	9.8	7.6	11.5

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.4	1.3	3.4	0.2	2.3	0.0	0.0	0.5
Total Del/Veh (s)	51.3	51.1	1.7	16.6	3.7	53.3	5.0	16.9

Total Zone Performance

Movement	All
Denied Del/Veh (s)	1.1
Total Del/Veh (s)	1365.4

Queuing and Blocking Report

01/16/2020

2030 Bkgd - AM

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	30	86	92	250	300	213	148	169	419	390	147	177
Average Queue (ft)	3	37	32	158	204	86	32	89	248	225	22	60
95th Queue (ft)	18	80	76	245	279	162	100	149	372	344	78	144
Link Distance (ft)		750	750		1028	1028			893	893	893	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)			0	0	1	0						0
Queuing Penalty (veh)			0	0	2	1						0

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	244	291	250	207	109
Average Queue (ft)	104	174	161	110	7
95th Queue (ft)	186	257	238	201	64
Link Distance (ft)		1296	1296	1296	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	0	5		7	
Queuing Penalty (veh)	1	11		7	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B9	B19	B19	NB	NB
Directions Served	T	R	L	L	T	T	T		L	L
Maximum Queue (ft)	410	369	335	357	398	16	515	83	190	215
Average Queue (ft)	181	81	172	165	127	1	67	6	98	108
95th Queue (ft)	331	233	292	287	276	12	341	85	169	179
Link Distance (ft)	1553	1553			490	4320	602	602		318
Upstream Blk Time (%)				0	0		0			
Queuing Penalty (veh)				0	1		0			
Storage Bay Dist (ft)			400	400					200	
Storage Blk Time (%)					0				0	1
Queuing Penalty (veh)					1				0	1

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T		L	L	T	T	R
Maximum Queue (ft)	281	270	261	218	119	507	272	156	199	319	288	104
Average Queue (ft)	172	151	145	113	42	98	6	82	110	201	175	42
95th Queue (ft)	264	243	221	191	92	421	95	150	180	295	268	80
Link Distance (ft)			602	602		490	490			648	648	
Upstream Blk Time (%)						1						
Queuing Penalty (veh)						4						
Storage Bay Dist (ft)	415	415			415			420	420			420
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B38	B38	B38	SB	SB	SB	SB
Directions Served	L	T	T	R	T	T		L	T	T	R
Maximum Queue (ft)	458	638	574	11	362	335	94	130	331	411	236
Average Queue (ft)	240	244	192	0	27	31	3	58	206	250	102
95th Queue (ft)	433	498	443	8	218	227	69	110	311	362	188
Link Distance (ft)		2594	2594		720	720	720		676	676	
Upstream Blk Time (%)					0						
Queuing Penalty (veh)					0						
Storage Bay Dist (ft)	330			330				335			335
Storage Blk Time (%)	11	2	0						0	2	
Queuing Penalty (veh)	39	6	1						0	9	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	133	144	256	347	76	170	244	320	450	491	1076	859
Average Queue (ft)	52	28	110	64	53	45	110	123	153	211	307	137
95th Queue (ft)	104	94	220	257	86	113	203	252	351	487	911	560
Link Distance (ft)		564		1711			1326				1547	1547
Upstream Blk Time (%)												1
Queuing Penalty (veh)												3
Storage Bay Dist (ft)	125		210		50	170		500	500	400		
Storage Blk Time (%)	1	1	2	2	14		4	0	0	8	11	0
Queuing Penalty (veh)	1	1	9	13	31		28	0	1	34	45	0

Intersection: 20: 88th Street & Campus Dr

Movement	SB	B12	B12
Directions Served	R	T	T
Maximum Queue (ft)	106	45	45
Average Queue (ft)	38	3	2
95th Queue (ft)	81	42	33
Link Distance (ft)		318	318
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 25: Northwest Pkwy & 96th St

Movement	EB	EB	EB	EB	EB	B38	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	T	L	L	T	T	L	L
Maximum Queue (ft)	68	82	218	224	11	4	71	122	320	288	604	645
Average Queue (ft)	18	33	88	94	1	0	8	37	141	118	274	308
95th Queue (ft)	51	68	188	192	11	3	40	89	256	237	540	588
Link Distance (ft)			720	720		2594			1056	1056		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			250		180	180			700	700
Storage Blk Time (%)			1	1				0	8	8	1	3
Queuing Penalty (veh)			0	11				0	4	6	2	6

Intersection: 25: Northwest Pkwy & 96th St

Movement	NB	NB	NB	B39	SB	SB	SB	SB	SB	B33	B33
Directions Served	L	T	T	T	L	L	T	T	R	T	T
Maximum Queue (ft)	645	423	135	42	98	714	902	914	663	146	135
Average Queue (ft)	318	71	32	2	23	107	503	500	139	14	13
95th Queue (ft)	598	394	97	31	67	454	910	911	598	89	81
Link Distance (ft)		941	941	2050			864	864		1436	1436
Upstream Blk Time (%)		1				0	5	5			
Queuing Penalty (veh)		4				0	0	0			
Storage Bay Dist (ft)	700				600	600			600		
Storage Blk Time (%)	3	0					16	16			
Queuing Penalty (veh)	7	1					13	46			

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B29	B29	B29	SB	SB	SB
Directions Served	L	L	R	T	T	R	T	T		L	L	T
Maximum Queue (ft)	224	264	63	342	328	62	137	142	69	72	223	575
Average Queue (ft)	113	159	26	161	131	28	2	2	0	20	56	205
95th Queue (ft)	205	239	50	290	253	58	47	47	0	54	155	473
Link Distance (ft)		680		623	623		370	370	370			2050
Upstream Blk Time (%)							0	0				
Queuing Penalty (veh)							0	0				
Storage Bay Dist (ft)	250		500			250				550	550	
Storage Blk Time (%)	0	0			1							1
Queuing Penalty (veh)	0	0			1							1

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	B39	B39	B39
Directions Served	T	T	T	
Maximum Queue (ft)	577	963	969	957
Average Queue (ft)	220	169	203	48
95th Queue (ft)	494	753	831	391
Link Distance (ft)	2050	941	941	941
Upstream Blk Time (%)		0	0	0
Queuing Penalty (veh)		1	2	1
Storage Bay Dist (ft)				
Storage Blk Time (%)	1			
Queuing Penalty (veh)	0			

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	206	227	205	219	203	244	252	285	272
Average Queue (ft)	99	135	99	85	77	102	135	137	78
95th Queue (ft)	186	203	175	182	173	189	220	231	184
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)									0
Queuing Penalty (veh)									0
Storage Bay Dist (ft)	330		190			300			300
Storage Blk Time (%)			1	0			0	0	
Queuing Penalty (veh)			2	1			0	1	

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	T	T	R	L	L	T	T
Maximum Queue (ft)	191	206	306	291	33	276	280	136	173
Average Queue (ft)	94	124	168	131	1	120	142	30	45
95th Queue (ft)	167	190	277	251	14	219	235	101	123
Link Distance (ft)		1037	1760	1760			556	556	556
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330				300	180			
Storage Blk Time (%)		4		0		3	8		
Queuing Penalty (veh)		21		0		8	18		

Zone Summary

Zone wide Queuing Penalty: 408

Intersection						
Intersection Delay, s/veh	6.9					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	605		547		723	
Demand Flow Rate, veh/h	617		557		738	
Vehicles Circulating, veh/h	486		188		227	
Vehicles Exiting, veh/h	479		915		518	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	7.9		5.3		7.1	
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	0.470	0.530	0.408	0.592	0.659	0.341
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	290	327	227	330	486	252
Cap Entry Lane, veh/h	863	939	1135	1210	1095	1171
Entry HV Adj Factor	0.980	0.980	0.980	0.982	0.979	0.980
Flow Entry, veh/h	284	320	223	324	476	247
Cap Entry, veh/h	845	919	1111	1186	1073	1148
V/C Ratio	0.336	0.349	0.200	0.273	0.444	0.215
Control Delay, s/veh	8.1	7.7	5.1	5.5	8.2	5.1
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	2	1	1	2	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.8	3.3	0.5	0.6	2.7	2.1	0.3	0.4	2.1	0.2	2.0
Total Del/Veh (s)	65.2	62.8	4.3	56.2	41.4	2.7	61.2	41.0	4.8	58.0	31.1	4.6

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	35.3

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	60.1	3.0	46.4	7.2	43.9	0.7	2.4	29.8

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	57.2	52.4	19.6	61.3	41.5	17.8	42.3	55.9	3.0	42.5	33.8	9.3

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	41.5

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.7	0.8	0.7	2.4	0.3	0.1	0.1	0.3	0.0	0.0	0.0	0.7
Total Del/Veh (s)	46.3	50.6	15.1	39.3	9.8	24.7	32.1	5.4	23.4	30.0	8.4	27.5

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.1	0.2	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	42.9	49.9	4.5	37.9	39.1	1.5	43.9	7.2	0.9	44.7	28.2	1.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	23.8

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.8	3.7	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	41.1	7.3	12.9	5.5	42.6	9.3	12.7

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	43.8	45.2	1.5	33.9	10.4	13.2	9.6	14.2

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.8	1.3	3.1	0.7	1.8	0.0	0.0	0.9
Total Del/Veh (s)	100.4	115.8	13.1	38.0	13.2	34.8	9.9	34.4

45: Rock Creek Pkwy & 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.1	0.2	0.1	0.0	0.5	0.2
Total Del/Veh (s)	7.0	6.3	3.9	3.0	9.1	1.4	8.1	6.5

Total Network Performance

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)				0.9				
Total Del/Veh (s)				72.3				

Queuing and Blocking Report

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	153	184	301	215	344	437	180	186	213	488	452	185
Average Queue (ft)	45	112	117	18	239	287	84	76	125	319	302	53
95th Queue (ft)	129	172	212	116	340	402	152	172	193	463	439	148
Link Distance (ft)		750	750			1028	1028			893	893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	0	7	14		1	9				0		
Queuing Penalty (veh)	0	5	36		3	27				1		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	218	259	341	320	298	190
Average Queue (ft)	115	151	220	207	171	37
95th Queue (ft)	202	228	304	288	266	157
Link Distance (ft)			1296	1296	1296	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190				100
Storage Blk Time (%)	0	2	13		18	
Queuing Penalty (veh)	1	7	39		24	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B19	B19	NB	NB
Directions Served	T	R	L	L	T	T		L	L
Maximum Queue (ft)	1070	629	198	229	350	275	70	146	159
Average Queue (ft)	515	58	112	130	101	6	0	69	84
95th Queue (ft)	939	316	180	198	254	81	0	125	135
Link Distance (ft)	1525	1525			490	602	602		318
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			400	400				200	
Storage Blk Time (%)					0				0
Queuing Penalty (veh)					1				0

Queuing and Blocking Report

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T		L	L	T	T	R
Maximum Queue (ft)	241	225	356	356	198	518	393	275	303	281	265	140
Average Queue (ft)	152	134	245	206	92	239	21	171	189	185	155	64
95th Queue (ft)	219	201	332	305	170	650	181	256	279	262	234	118
Link Distance (ft)			602	602		490	490			648	648	
Upstream Blk Time (%)						2	0					
Queuing Penalty (veh)						15	0					
Storage Bay Dist (ft)	415	415			415			420	420			420
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B22	B22	B38	SB	SB	SB	SB
Directions Served	L	T	T	R	T	T	T	L	T	T	R
Maximum Queue (ft)	253	485	486	95	13	5	147	204	291	334	135
Average Queue (ft)	73	328	301	10	1	0	5	93	181	211	58
95th Queue (ft)	204	463	448	124	13	5	100	168	265	298	114
Link Distance (ft)		477	477		2061	2061	720		676	676	
Upstream Blk Time (%)	0	0	0	0							
Queuing Penalty (veh)	0	2	2	0							
Storage Bay Dist (ft)	330			330				335			335
Storage Blk Time (%)		14	5						0	0	
Queuing Penalty (veh)		14	12						0	1	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	L	T	R
Maximum Queue (ft)	175	280	126	114	50	149	151	63	126	160	375	266
Average Queue (ft)	117	70	50	45	13	75	78	24	37	65	179	41
95th Queue (ft)	184	208	104	85	38	131	131	54	92	120	334	149
Link Distance (ft)		564		1711		1326				1558	1558	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125		210		170		500	500	400			200
Storage Blk Time (%)	14	0				0					12	
Queuing Penalty (veh)	10	0				0					8	

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Intersection: 23: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	677	668
Average Queue (ft)	441	236
95th Queue (ft)	831	665
Link Distance (ft)	676	676
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	B22	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	T	L	L	T	T	L	L	L
Maximum Queue (ft)	131	140	170	187	108	39	89	159	130	261	288	257
Average Queue (ft)	66	71	91	107	4	6	28	84	57	160	186	172
95th Queue (ft)	115	117	153	174	79	28	67	140	109	227	251	235
Link Distance (ft)			720	720	477			1056	1056			
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	280	280				180	180			700	700	700
Storage Blk Time (%)								0				
Queuing Penalty (veh)								0				

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	L	L	T	T	R
Maximum Queue (ft)	165	167	40	78	224	224	40
Average Queue (ft)	58	74	7	27	143	136	8
95th Queue (ft)	130	137	26	57	209	204	28
Link Distance (ft)	941	941			864	864	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			600	600		600	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

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2030 Bkgd - PM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B29	B29	SB	SB	SB	SB
Directions Served	L	L	R	T	T	R	T	T	L	L	T	T
Maximum Queue (ft)	139	183	59	384	379	190	224	299	39	76	237	240
Average Queue (ft)	37	88	21	172	160	44	17	21	6	35	112	122
95th Queue (ft)	94	148	46	342	321	163	143	164	27	67	203	214
Link Distance (ft)		680		623	623		370	370			2050	2050
Upstream Blk Time (%)							0	0				
Queuing Penalty (veh)							0	1				
Storage Bay Dist (ft)	250		500			250			550	550		
Storage Blk Time (%)		0		0	2							
Queuing Penalty (veh)		0		0	6							

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	B39	B39
Directions Served	T	T
Maximum Queue (ft)	565	366
Average Queue (ft)	27	13
95th Queue (ft)	284	192
Link Distance (ft)	941	941
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	150	185	310	167	161	216	238	258	247
Average Queue (ft)	67	114	183	65	69	96	108	120	88
95th Queue (ft)	136	165	289	138	129	200	201	226	194
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)								0	
Queuing Penalty (veh)								0	
Storage Bay Dist (ft)	330		190			300			300
Storage Blk Time (%)			10	0			0		0
Queuing Penalty (veh)			90	0			0		1

Queuing and Blocking Report

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2030 Bkgd - PM

Intersection: 37: Bend

Movement	EB	EB	EB
Directions Served	T		
Maximum Queue (ft)	616	590	130
Average Queue (ft)	144	58	5
95th Queue (ft)	542	333	95
Link Distance (ft)	648	648	648
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	398	681	300	697	682	390	174	186	257	262
Average Queue (ft)	273	352	122	402	373	80	93	109	112	129
95th Queue (ft)	485	709	364	641	617	334	149	165	232	240
Link Distance (ft)		1037		1760	1760			556	556	556
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)	8	55			14		0	0		
Queuing Penalty (veh)	56	386			22		0	1		

Intersection: 45: Rock Creek Pkwy & 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	138	38	45	45	220	75
Average Queue (ft)	56	1	15	8	70	38
95th Queue (ft)	107	19	43	32	165	96
Link Distance (ft)	807	807	1051	1051	764	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					50	
Storage Blk Time (%)					9	0
Queuing Penalty (veh)					16	1

Network Summary

Network wide Queuing Penalty: 791

F - Intersection Capacity Worksheets (SimTraffic)
Year 2040 Background

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

Intersection						
Intersection Delay, s/veh	10.6					
Intersection LOS	B					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	664		1047		515	
Demand Flow Rate, veh/h	677		1068		525	
Vehicles Circulating, veh/h	347		429		348	
Vehicles Exiting, veh/h	526		595		1149	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.991		1.000	
Approach Delay, s/veh	7.7		14.3		6.7	
Approach LOS	A		B		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	0.634	0.366	0.326	0.674	0.661	0.339
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	429	248	348	720	347	178
Cap Entry Lane, veh/h	981	1057	910	986	980	1056
Entry HV Adj Factor	0.981	0.980	0.980	0.981	0.980	0.983
Flow Entry, veh/h	421	243	341	706	340	175
Cap Entry, veh/h	959	1032	884	959	960	1039
V/C Ratio	0.439	0.236	0.386	0.737	0.354	0.168
Control Delay, s/veh	8.9	5.7	8.5	17.1	7.6	5.0
LOS	A	A	A	C	A	A
95th %tile Queue, veh	2	1	2	7	2	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.4	3.9	0.5	0.5	2.1	1.2	0.2	0.2	1.4	0.1	1.2
Total Del/Veh (s)	56.1	53.3	2.0	41.4	35.8	3.6	51.9	32.3	4.8	54.8	23.1	3.4

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	26.7

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.7	0.2	0.0	0.0	0.1	0.2
Total Del/Veh (s)	65.6	8.5	43.4	8.5	41.7	1.4	2.8	26.7

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	104.8	44.9	15.4	70.6	75.5	17.6	129.7	52.4	15.7	42.7	65.8	22.9

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	59.0

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.9	0.3	0.4	2.6	0.8	2.7	0.7	0.2	0.5	0.2	0.0	0.1
Total Del/Veh (s)	61.2	77.5	26.6	50.5	41.6	16.4	26.9	47.9	33.7	60.7	22.4	8.2

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	39.9

25: Northwest Pkwy & 96th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.5	0.2	3.2	1.5	0.3	4.9	0.0	0.0	0.0
Total Del/Veh (s)	88.5	154.9	7.1	90.9	129.1	14.8	179.2	4.6	1.1	100.9	119.1	14.4

25: Northwest Pkwy & 96th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	88.7

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.0	3.2	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	49.2	6.5	16.4	5.0	73.0	29.4	26.6

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	61.1	61.8	2.2	30.6	8.3	11.9	8.5	13.2

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.4	1.3	3.3	0.3	2.1	0.0	0.0	0.5
Total Del/Veh (s)	61.5	64.1	1.9	18.4	4.3	61.1	5.6	19.1

45: Rock Creek Pkwy & 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.2	0.3	0.1	0.0	0.4	0.2
Total Del/Veh (s)	6.7	5.9	9.0	9.3	6.9	1.0	5.9	7.7

Total Network Performance

Movement	All
Denied Del/Veh (s)	1.7
Total Del/Veh (s)	105.6

Queuing and Blocking Report

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	25	103	91	308	326	211	107	126	477	465	222	192
Average Queue (ft)	3	37	31	162	185	88	36	67	239	242	35	73
95th Queue (ft)	16	82	71	257	276	172	81	110	397	394	135	154
Link Distance (ft)		750	750		1842	1842			1996	1996	1996	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)		0	0	0	1				0			0
Queuing Penalty (veh)		0	0	1	2				1			1

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	232	262	246	225	63
Average Queue (ft)	96	142	141	113	4
95th Queue (ft)	175	220	220	209	51
Link Distance (ft)		2075	2075	2075	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	1	2		11	
Queuing Penalty (veh)	3	6		11	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B9	B19	B19	NB	NB
Directions Served	T	R	L	L	T	T	T		L	L
Maximum Queue (ft)	838	590	408	403	447	121	592	573	193	210
Average Queue (ft)	378	108	203	202	173	6	213	51	99	107
95th Queue (ft)	825	345	367	374	371	101	604	297	169	178
Link Distance (ft)	1524	1524			490	4320	602	602		318
Upstream Blk Time (%)				0	0		0	0		
Queuing Penalty (veh)				0	8		2	0		
Storage Bay Dist (ft)			400	400					200	
Storage Blk Time (%)			1	1	0				0	0
Queuing Penalty (veh)			8	12	3				0	1

Queuing and Blocking Report

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B19	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T	T		L	L	T	T
Maximum Queue (ft)	438	469	481	305	119	158	506	354	209	245	400	375
Average Queue (ft)	295	282	203	138	43	16	125	27	97	120	247	226
95th Queue (ft)	454	480	419	243	94	171	478	216	176	199	359	344
Link Distance (ft)			602	602		4320	490	490			648	648
Upstream Blk Time (%)			1	0			1	0				
Queuing Penalty (veh)			7	0			5	1				
Storage Bay Dist (ft)	415	415			415				420	420		
Storage Blk Time (%)	8	7									0	0
Queuing Penalty (veh)	17	15									1	0

Intersection: 15: 96th St & Dillon Rd

Movement	WB	NB	NB	NB	NB	B38	B38	B38	SB	SB	SB	SB
Directions Served	R	L	T	T	R	T	T		L	T	T	R
Maximum Queue (ft)	152	452	792	766	82	580	679	393	352	525	593	494
Average Queue (ft)	64	325	389	341	6	40	72	17	93	308	362	199
95th Queue (ft)	122	532	838	811	93	267	389	176	224	470	546	431
Link Distance (ft)			2594	2594		720	720	720		676	676	
Upstream Blk Time (%)						0	0			0	0	
Queuing Penalty (veh)						0	0			0	0	
Storage Bay Dist (ft)	420	330			330				335			335
Storage Blk Time (%)		28	7	2					0	8	17	1
Queuing Penalty (veh)		115	23	11					0	11	92	6

Intersection: 15: 96th St & Dillon Rd

Movement	B23
Directions Served	T
Maximum Queue (ft)	42
Average Queue (ft)	2
95th Queue (ft)	31
Link Distance (ft)	2350
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

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2040 Bkgd - AM

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	144	138	288	355	76	174	597	455	471	504	1026	761
Average Queue (ft)	56	33	117	64	56	46	163	165	196	215	291	121
95th Queue (ft)	119	104	235	234	87	109	454	377	450	486	806	481
Link Distance (ft)		564		1711			1326				1547	1547
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	125		210		50	170		500	500	400		
Storage Blk Time (%)	3	2	3	1	15	0	5	1	3	8	10	0
Queuing Penalty (veh)	2	1	10	7	34	0	38	2	9	33	43	0

Intersection: 20: 88th Street & Campus Dr

Movement	SB	B12
Directions Served	R	T
Maximum Queue (ft)	117	9
Average Queue (ft)	41	0
95th Queue (ft)	86	7
Link Distance (ft)		318
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 23: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (ft)	687	689
Average Queue (ft)	367	239
95th Queue (ft)	828	680
Link Distance (ft)	676	676
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	3	1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Intersection: 25: Northwest Pkwy & 96th St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	72	95	296	300	135	78	253	538	525	316	666	725
Average Queue (ft)	23	40	150	154	8	14	59	254	241	29	438	485
95th Queue (ft)	60	82	282	286	85	50	194	508	496	196	785	863
Link Distance (ft)			720	720				1056	1056			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			250	180	180			180	700	700
Storage Blk Time (%)			4	6				36	32		5	16
Queuing Penalty (veh)			2	51				18	22		13	42

Intersection: 25: Northwest Pkwy & 96th St

Movement	NB	NB	NB	NB	B39	B39	B39	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	T	T	T	L	L	T	T	R
Maximum Queue (ft)	764	644	349	5	449	334	235	139	860	967	966	800
Average Queue (ft)	499	220	52	0	65	17	11	42	267	706	710	370
95th Queue (ft)	909	847	219	4	399	217	169	109	834	1138	1140	1000
Link Distance (ft)		941	941	941	2050	2050	2050			864	864	
Upstream Blk Time (%)		7							0	25	25	
Queuing Penalty (veh)		32							0	0	0	
Storage Bay Dist (ft)	700							600	600			600
Storage Blk Time (%)	18	3								40	40	
Queuing Penalty (veh)	47	29								38	120	

Intersection: 25: Northwest Pkwy & 96th St

Movement	B33	B33
Directions Served	T	T
Maximum Queue (ft)	1157	1141
Average Queue (ft)	341	340
95th Queue (ft)	1156	1153
Link Distance (ft)	1436	1436
Upstream Blk Time (%)	6	6
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B29	B29	SB	SB	SB	SB
Directions Served	L	L	R	T	T	R	T	T	L	L	T	T
Maximum Queue (ft)	311	348	78	447	420	223	168	254	94	216	739	782
Average Queue (ft)	161	205	32	240	205	40	6	12	31	71	326	340
95th Queue (ft)	260	297	58	399	361	120	80	122	73	192	678	709
Link Distance (ft)		680		623	623		370	370			2050	2050
Upstream Blk Time (%)							0	0				
Queuing Penalty (veh)							0	1				
Storage Bay Dist (ft)	250		500			250			550	550		
Storage Blk Time (%)	0	4		0	4						3	4
Queuing Penalty (veh)	1	8		0	9						3	0

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	B39	B39	B39
Directions Served	T	T	
Maximum Queue (ft)	976	966	820
Average Queue (ft)	308	337	46
95th Queue (ft)	1025	1069	389
Link Distance (ft)	941	941	941
Upstream Blk Time (%)	0	1	0
Queuing Penalty (veh)	3	6	2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	226	258	219	261	228	303	342	338	327
Average Queue (ft)	116	147	103	88	74	148	185	193	94
95th Queue (ft)	197	219	184	189	177	267	304	303	228
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)						0	0	0	0
Queuing Penalty (veh)						0	1	1	0
Storage Bay Dist (ft)	330		190			300			300
Storage Blk Time (%)		0	1	1		0	1	1	0
Queuing Penalty (veh)		0	3	2		1	5	4	2

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Intersection: 37: Bend

Movement	EB	EB	EB
Directions Served	T		
Maximum Queue (ft)	645	612	325
Average Queue (ft)	75	36	11
95th Queue (ft)	390	266	152
Link Distance (ft)	648	648	648
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	1	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	229	243	48	338	316	9	317	374	184	199
Average Queue (ft)	114	141	2	191	160	0	157	180	43	54
95th Queue (ft)	192	217	38	300	277	7	259	285	133	144
Link Distance (ft)		1037		1760	1760			556	556	556
Upstream Blk Time (%)								0		
Queuing Penalty (veh)								0		
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)		9			0		8	15		
Queuing Penalty (veh)		46			0		20	37		

Intersection: 45: Rock Creek Pkwy & 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	143	61	177	278	168	75
Average Queue (ft)	56	3	55	70	48	23
95th Queue (ft)	114	36	133	204	115	75
Link Distance (ft)	807	807	1051	1051	764	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					50	
Storage Blk Time (%)					4	0
Queuing Penalty (veh)					5	0

Network Summary

Network wide Queuing Penalty: 1121

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	2.2	1.4	0.5	0.1	0.0	0.2	0.8
Total Del/Veh (s)	42.0	12.0	46.7	12.8	45.4	1.2	2.6	25.3

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	66.6	34.1	15.4	50.5	38.6	16.7	67.5	33.5	2.8	55.6	44.6	17.9

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	37.6

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.1	0.4	0.2	2.7	1.1	2.6	0.3	0.2	0.4	1.3	1.0	1.3
Total Del/Veh (s)	59.6	74.4	18.7	65.3	69.8	16.1	29.6	57.7	30.3	100.1	34.7	13.9

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	1.2
Total Del/Veh (s)	53.8

25: Northwest Pkwy & 96th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.3	0.2	3.2	0.2	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	71.4	115.3	5.7	70.6	91.2	5.9	108.8	5.5	1.0	86.8	52.8	4.0

25: Northwest Pkwy & 96th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	51.7

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.6	3.3	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	50.8	6.5	8.2	2.8	65.7	11.2	14.8

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	59.2	54.8	2.3	59.9	8.3	10.8	7.7	13.6

Total Zone Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	1336.5

Queuing and Blocking Report

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Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	WB	B9	B9	NB	NB
Directions Served	T	T	R	L	L	T	T	T	T	L	L
Maximum Queue (ft)	356	346	400	441	451	381	296	87	31	192	204
Average Queue (ft)	169	155	107	212	210	134	126	7	1	97	110
95th Queue (ft)	297	282	267	393	399	305	239	86	20	164	179
Link Distance (ft)	1555	1555				491	491	4320	4320		307
Upstream Blk Time (%)					1	1					
Queuing Penalty (veh)					0	5					
Storage Bay Dist (ft)			300	400	400					200	
Storage Blk Time (%)		1	1	3	3	0				0	0
Queuing Penalty (veh)		8	3	10	12	1				0	1

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	B9	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T	T		L	L	T	T
Maximum Queue (ft)	345	354	284	230	130	396	306	103	147	170	260	259
Average Queue (ft)	202	209	139	102	43	21	18	4	79	100	145	148
95th Queue (ft)	314	316	230	188	94	182	169	75	140	158	215	222
Link Distance (ft)			594	594		491	491	491			644	644
Upstream Blk Time (%)						0	0	0				
Queuing Penalty (veh)						0	0	0				
Storage Bay Dist (ft)	415	415			415				420	420		
Storage Blk Time (%)	0	0										
Queuing Penalty (veh)	0	0										

Intersection: 15: 96th St & Dillon Rd

Movement	WB	NB	NB	NB	NB	B38	B38	SB	SB	SB	SB	SB
Directions Served	R	L	L	T	T	T	T	L	L	T	T	R
Maximum Queue (ft)	123	251	278	383	379	427	565	123	110	351	413	349
Average Queue (ft)	54	134	142	202	215	33	45	64	47	210	256	146
95th Queue (ft)	105	226	240	360	364	275	311	106	93	319	371	278
Link Distance (ft)				477	477	708	708			2236	2236	
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (ft)	420	330	330					335	335			335
Storage Blk Time (%)		0	1	1	1					1	2	0
Queuing Penalty (veh)		1	2	4	7					1	12	1

Queuing and Blocking Report

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Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	T	T	R	L	L	T
Maximum Queue (ft)	128	112	287	486	195	150	361	435	478	520	1554	1441
Average Queue (ft)	55	28	133	57	73	54	143	157	192	273	478	283
95th Queue (ft)	108	74	262	291	153	131	279	309	410	572	1300	989
Link Distance (ft)		564		1711			1326				1547	1547
Upstream Blk Time (%)											3	1
Queuing Penalty (veh)											13	3
Storage Bay Dist (ft)	125		210		100	170		500	500	400		
Storage Blk Time (%)	1	0	7	0	5	0	7	0	1	16	20	2
Queuing Penalty (veh)	1	0	27	0	12	0	56	0	2	64	79	5

Intersection: 20: 88th Street & Campus Dr

Movement	SB	B12	B12
Directions Served	R	T	T
Maximum Queue (ft)	139	159	130
Average Queue (ft)	48	10	9
95th Queue (ft)	103	98	91
Link Distance (ft)		307	307
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		1	0
Storage Bay Dist (ft)	200		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Queuing and Blocking Report

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Intersection: 25: Northwest Pkwy & 96th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	R	L	L	L
Maximum Queue (ft)	76	84	232	243	53	316	494	503	228	613	684	704
Average Queue (ft)	19	33	117	121	10	50	201	186	13	315	355	356
95th Queue (ft)	57	71	210	218	36	163	419	401	129	599	673	686
Link Distance (ft)			708	708			1056	1056				
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			180	700	700	700
Storage Blk Time (%)			0	1			18	16		0	4	5
Queuing Penalty (veh)			0	5			10	12		0	10	13

Intersection: 25: Northwest Pkwy & 96th St

Movement	NB	NB	B39	SB	SB	SB	SB	SB	SB
Directions Served	T	T	T	L	L	T	T	T	R
Maximum Queue (ft)	576	213	13	134	150	568	552	521	123
Average Queue (ft)	72	48	1	33	60	308	306	287	37
95th Queue (ft)	399	167	13	89	118	519	506	485	97
Link Distance (ft)	941	941	2050			864	864	864	
Upstream Blk Time (%)	1								
Queuing Penalty (veh)	3								
Storage Bay Dist (ft)				600	600			600	
Storage Blk Time (%)	1					1		1	
Queuing Penalty (veh)	12					1		2	

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B29	B29	B29	SB	SB	SB
Directions Served	L	L	R	T	T	R	T	T		L	L	T
Maximum Queue (ft)	304	323	76	279	261	169	303	408	234	90	122	396
Average Queue (ft)	169	214	30	111	93	26	21	33	11	32	62	71
95th Queue (ft)	267	298	56	219	191	96	161	212	119	75	104	205
Link Distance (ft)		680		623	623		370	370	370			2050
Upstream Blk Time (%)							0	1	0			
Queuing Penalty (veh)							1	4	1			
Storage Bay Dist (ft)	250		500			250				550	550	
Storage Blk Time (%)	0	4			0							
Queuing Penalty (veh)	0	8			1							

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	B39	B39	B39	B39
Directions Served	T	T	T	T	T	
Maximum Queue (ft)	455	448	937	974	956	194
Average Queue (ft)	95	124	47	136	126	7
95th Queue (ft)	261	278	384	680	652	142
Link Distance (ft)	2050	2050	941	941	941	941
Upstream Blk Time (%)			0	0	0	0
Queuing Penalty (veh)			0	1	1	0
Storage Bay Dist (ft)						
Storage Blk Time (%)		0				
Queuing Penalty (veh)		0				

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B29
Directions Served	L	LT	R	L	T	T	T	T	T	R	T
Maximum Queue (ft)	214	240	68	269	172	153	325	346	353	343	10
Average Queue (ft)	113	147	2	137	63	59	140	184	181	82	0
95th Queue (ft)	195	220	49	233	142	132	286	315	314	206	7
Link Distance (ft)		1442	1442		556	556	370	370	370		713
Upstream Blk Time (%)								0	0	0	
Queuing Penalty (veh)								0	1	0	
Storage Bay Dist (ft)	330			190						300	
Storage Blk Time (%)				7	0				1	0	
Queuing Penalty (veh)				34	0				4	2	

Zone Summary

Zone wide Queuing Penalty: 460

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	624		567		754	
Demand Flow Rate, veh/h	637		579		769	
Vehicles Circulating, veh/h	504		195		234	
Vehicles Exiting, veh/h	499		946		540	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	8.2		5.5		7.4	
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	0.469	0.531	0.404	0.596	0.655	0.345
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	299	338	234	345	504	265
Cap Entry Lane, veh/h	849	925	1128	1203	1088	1164
Entry HV Adj Factor	0.981	0.979	0.980	0.980	0.980	0.981
Flow Entry, veh/h	293	331	229	338	494	260
Cap Entry, veh/h	832	905	1104	1176	1067	1142
V/C Ratio	0.353	0.366	0.208	0.287	0.463	0.228
Control Delay, s/veh	8.4	8.1	5.2	5.7	8.6	5.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	2	1	1	2	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.7	3.3	0.4	0.4	1.6	1.2	0.2	0.3	1.5	0.2	1.3
Total Del/Veh (s)	74.1	75.2	4.8	58.7	44.4	3.1	65.0	40.2	5.6	67.4	30.6	5.7

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.6
Total Del/Veh (s)	37.5

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	93.8	6.3	56.4	6.7	50.6	1.0	2.5	42.3

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	84.8	53.0	22.7	73.0	49.8	21.8	49.9	87.4	6.7	47.8	37.6	10.7

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	53.1

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.7	0.9	0.9	2.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.7
Total Del/Veh (s)	52.4	52.8	19.5	40.3	10.3	25.4	32.5	5.9	21.3	30.0	8.8	29.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.6	0.2	3.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	60.3	83.7	5.6	60.5	63.5	1.5	64.3	9.7	1.0	70.2	40.8	1.7

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	35.6

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.0	3.6	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	58.4	7.9	14.5	6.5	77.4	6.0	14.1

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.2	0.3	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	66.0	66.4	1.8	50.2	16.5	14.1	9.3	19.0

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	2.0	1.7	3.2	3.1	4.5	0.0	0.0	2.0
Total Del/Veh (s)	73.5	72.4	7.1	82.9	54.0	100.5	9.5	55.9

Total Zone Performance

Denied Del/Veh (s)	1.5
Total Del/Veh (s)	1968.2

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	185	192	311	211	344	455	187	138	158	479	786	210
Average Queue (ft)	74	134	138	33	253	279	88	65	98	313	330	58
95th Queue (ft)	181	204	245	158	357	411	162	126	149	444	589	160
Link Distance (ft)		750	750			2203	2203			2032	2032	2032
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	1	14	23		4	8				0		
Queuing Penalty (veh)	1	12	59		14	27				0		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	234	272	336	331	316	190
Average Queue (ft)	140	159	207	211	188	55
95th Queue (ft)	213	235	289	296	275	196
Link Distance (ft)			1994	1994	1994	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190			100	
Storage Blk Time (%)	1	3	11		27	0
Queuing Penalty (veh)	5	13	36		36	0

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	B2	B2	WB	WB	WB	B19	B19	NB	NB
Directions Served	T	R	T	T	L	L	T	T		L	L
Maximum Queue (ft)	1315	979	39	42	241	256	335	467	79	145	155
Average Queue (ft)	768	233	6	4	133	148	106	31	0	78	95
95th Queue (ft)	1406	863	54	46	211	228	238	213	0	133	145
Link Distance (ft)	1525	1525	1592	1592			490	602	602		318
Upstream Blk Time (%)	4	0									
Queuing Penalty (veh)	0	0									
Storage Bay Dist (ft)					400	400				200	
Storage Blk Time (%)							0				0
Queuing Penalty (veh)							0				0

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T		L	L	T	T	R
Maximum Queue (ft)	352	339	406	333	215	518	521	340	386	337	329	161
Average Queue (ft)	219	196	255	209	96	290	36	195	214	203	177	73
95th Queue (ft)	328	312	363	312	171	692	249	298	329	296	276	130
Link Distance (ft)			602	602		490	490			648	648	
Upstream Blk Time (%)						3	0					
Queuing Penalty (veh)						17	2					
Storage Bay Dist (ft)	415	415			415			420	420			420
Storage Blk Time (%)	0	0	0					0	0		0	
Queuing Penalty (veh)	0	0	1					0	0		0	

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B22	B22	B38	B38	SB	SB	SB	SB
Directions Served	L	T	T	R	T	T	T	T	L	T	T	R
Maximum Queue (ft)	477	564	558	477	351	368	538	634	221	329	359	191
Average Queue (ft)	166	449	425	146	112	114	17	40	100	208	248	71
95th Queue (ft)	460	608	602	508	530	545	189	299	182	302	344	140
Link Distance (ft)		477	477		2061	2061	720	720		676	676	
Upstream Blk Time (%)	0	18	13	1			0	0				
Queuing Penalty (veh)	0	114	83	0			0	0				
Storage Bay Dist (ft)	330			330					335			335
Storage Blk Time (%)		41	30							0	1	
Queuing Penalty (veh)		45	72							0	4	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	T	R	L	L	T	R
Maximum Queue (ft)	174	356	149	113	45	158	186	77	92	104	436	266
Average Queue (ft)	127	99	52	48	12	85	91	26	35	57	201	44
95th Queue (ft)	194	299	113	86	36	150	161	57	78	94	373	165
Link Distance (ft)		564		1711		1326				1558	1558	
Upstream Blk Time (%)		1										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	125		210		170		500	500	400			200
Storage Blk Time (%)	20	0	0			0					12	
Queuing Penalty (veh)	15	0	0			1					8	

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	L	T
Maximum Queue (ft)	151	154	310	294	38	81	205	194	346	373	367	245
Average Queue (ft)	83	91	190	198	9	35	124	103	229	256	247	86
95th Queue (ft)	135	146	288	287	32	71	185	173	315	341	333	189
Link Distance (ft)			720	720			1056	1056				941
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			700	700	700	
Storage Blk Time (%)			2	5			2	1				
Queuing Penalty (veh)			4	41			1	1				

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	SB	SB	SB	SB	SB
Directions Served	T	L	L	T	T	R
Maximum Queue (ft)	240	58	89	352	368	55
Average Queue (ft)	101	12	39	228	225	10
95th Queue (ft)	201	39	80	328	328	35
Link Distance (ft)	941			864	864	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		600	600		600	
Storage Blk Time (%)						
Queuing Penalty (veh)						

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B29	B29	B29	SB	SB	SB
Directions Served	L	L	R	T	T	R	T	T		L	L	T
Maximum Queue (ft)	209	228	70	470	492	264	405	436	148	81	95	171
Average Queue (ft)	94	134	22	226	223	58	45	65	10	20	51	70
95th Queue (ft)	179	204	49	406	403	197	248	303	110	59	88	150
Link Distance (ft)		680		623	623		370	370	370			2050
Upstream Blk Time (%)				0	0		0	1	0			
Queuing Penalty (veh)				0	1		2	9	0			
Storage Bay Dist (ft)	250		500			250				550	550	
Storage Blk Time (%)		0		0	4							
Queuing Penalty (veh)		0		0	15							

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	B39	B39	B39
Directions Served	T	T	T	
Maximum Queue (ft)	162	939	950	555
Average Queue (ft)	70	86	106	20
95th Queue (ft)	143	528	595	241
Link Distance (ft)	2050	941	941	941
Upstream Blk Time (%)		0	0	0
Queuing Penalty (veh)		1	1	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB	B29
Directions Served	L	LT	L	T	T	T	T	T	R	T
Maximum Queue (ft)	198	230	345	522	540	242	296	306	266	5
Average Queue (ft)	91	135	247	301	307	114	144	154	84	0
95th Queue (ft)	175	203	375	476	482	220	251	255	190	3
Link Distance (ft)		1442		556	556		370	370		713
Upstream Blk Time (%)				0	0		0	0	0	
Queuing Penalty (veh)				3	4		0	1	0	
Storage Bay Dist (ft)	330		190			300			300	
Storage Blk Time (%)			30	9		0	0	0	0	
Queuing Penalty (veh)			306	44		0	2	1	0	

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	445	587	300	1515	1518	390	266	330	273	266
Average Queue (ft)	260	309	113	928	898	183	195	220	128	146
95th Queue (ft)	419	534	351	1637	1623	501	308	383	227	237
Link Distance (ft)		1037		1760	1760			556	556	556
Upstream Blk Time (%)				5	3			1		
Queuing Penalty (veh)				0	0			7		
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)	1	49			32		22	29		
Queuing Penalty (veh)	9	359			52		40	53		

Zone Summary

Zone wide Queuing Penalty: 1524

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	1.9	0.0	0.0	0.0	0.0	0.0	0.3
Total Del/Veh (s)	17.8	3.7	36.8	6.6	34.6	1.1	2.3	15.2

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	49.4	41.4	20.7	49.8	31.9	17.5	57.8	49.3	4.3	59.1	35.0	11.8

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	37.5

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	3.7	0.7	0.7	2.4	2.4	0.1	0.1	0.2	0.0	0.0	0.0	0.9
Total Del/Veh (s)	52.4	49.9	16.1	36.9	9.9	23.9	30.3	5.2	23.2	33.5	8.8	29.2

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.4	0.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	67.3	87.4	6.1	65.0	67.2	1.8	61.8	8.8	1.0	76.9	33.0	8.2

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	35.4

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.5	3.6	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	63.5	7.7	16.2	7.8	74.3	6.1	15.2

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	70.9	73.0	1.8	58.7	15.7	12.5	10.7	19.4

Total Zone Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	1820.2

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Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L
Maximum Queue (ft)	308	287	106	224	234	177	179	128	156
Average Queue (ft)	155	138	28	108	124	62	67	61	79
95th Queue (ft)	245	238	79	183	195	145	144	110	128
Link Distance (ft)	1555	1555				491	491		307
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			300	400	400			200	
Storage Blk Time (%)		0		0	0				0
Queuing Penalty (veh)		1		0	0				0

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B19	B19	B9	B9	WB	WB	WB
Directions Served	L	L	T	T	R	T	T	T	T	L	L	T
Maximum Queue (ft)	229	243	343	307	211	7	52	246	328	239	275	228
Average Queue (ft)	139	148	212	175	102	0	2	12	17	139	162	133
95th Queue (ft)	208	217	314	283	188	6	41	136	162	209	235	199
Link Distance (ft)			594	594		4320	4320	491	491			644
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	415	415			415					420	420	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 15: 96th St & Dillon Rd

Movement	WB	WB	NB	NB	NB	NB	NB	B22	B22	B38	B38	B38
Directions Served	T	R	L	L	T	T	R	T	T	T	T	
Maximum Queue (ft)	230	153	112	320	502	516	430	28	47	278	308	81
Average Queue (ft)	138	69	39	66	292	306	56	2	3	12	21	3
95th Queue (ft)	205	121	83	205	467	483	295	24	34	143	200	64
Link Distance (ft)	644				477	477		2061	2061	708	708	708
Upstream Blk Time (%)					1	1						0
Queuing Penalty (veh)					5	9						0
Storage Bay Dist (ft)		420	330	330			330					
Storage Blk Time (%)					8	10						
Queuing Penalty (veh)					9	24						

Intersection: 15: 96th St & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	131	142	300	315	162
Average Queue (ft)	67	58	184	209	69
95th Queue (ft)	120	116	262	292	132
Link Distance (ft)			2546	2546	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	335	335			335
Storage Blk Time (%)			0	0	
Queuing Penalty (veh)			0	0	

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Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	223	329	134	114	41	159	158	69	94	157	433	256
Average Queue (ft)	130	81	52	45	14	77	86	24	32	53	212	49
95th Queue (ft)	216	243	106	88	38	134	146	55	75	108	384	201
Link Distance (ft)		564				1326				1547	1547	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125		210	100	170		500	500	400			200
Storage Blk Time (%)	19	0		1		0					15	
Queuing Penalty (veh)	14	1		0		0					9	

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	L	L	L
Maximum Queue (ft)	168	224	356	414	175	48	102	208	187	360	387	355
Average Queue (ft)	93	118	196	199	12	8	41	135	116	215	248	235
95th Queue (ft)	150	195	301	320	119	32	86	196	180	316	344	330
Link Distance (ft)			708	708				1056	1056			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			250	180	180			700	700	700
Storage Blk Time (%)			3	5				2	1			
Queuing Penalty (veh)			7	46				1	1			

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	T	L	L	T	T	T	R
Maximum Queue (ft)	242	256	85	114	251	238	218	80
Average Queue (ft)	87	94	16	43	158	152	124	29
95th Queue (ft)	195	198	50	87	224	218	196	62
Link Distance (ft)	941	941			864	864	864	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			600	600			600	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report

01/15/2020

2040 Bkgd - Rec Imp - PM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	WB	WB	WB	NB	NB	NB	B41	B41	B29	B29	B29	SB
Directions Served	L	L	R	T	T	R	T	T	T	T		L
Maximum Queue (ft)	211	256	61	523	523	268	54	34	409	411	194	65
Average Queue (ft)	107	155	24	241	241	68	2	2	45	69	9	16
95th Queue (ft)	203	232	47	445	445	218	44	26	249	312	103	52
Link Distance (ft)		680		623	623		713	713	370	370	370	
Upstream Blk Time (%)				0	0				0	1	0	
Queuing Penalty (veh)				4	4				3	9	0	
Storage Bay Dist (ft)	250		500			250						550
Storage Blk Time (%)	0	1		1	6							
Queuing Penalty (veh)	0	1		0	22							

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	SB	B39	B39
Directions Served	L	T	T	T	T	T
Maximum Queue (ft)	95	126	177	214	303	157
Average Queue (ft)	46	33	42	75	15	6
95th Queue (ft)	80	96	118	165	205	125
Link Distance (ft)		2050	2050	2050	941	941
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	0
Storage Bay Dist (ft)	550					
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB	B29
Directions Served	L	LT	L	T	T	T	T	T	R	T
Maximum Queue (ft)	189	222	290	570	586	220	238	263	279	16
Average Queue (ft)	99	136	257	293	251	93	122	137	88	1
95th Queue (ft)	183	205	336	619	598	179	208	232	199	13
Link Distance (ft)		1442		556	556	370	370	370		713
Upstream Blk Time (%)				1	1			0	0	
Queuing Penalty (veh)				8	7			1	0	
Storage Bay Dist (ft)	330		190						300	
Storage Blk Time (%)			37	0				0	0	
Queuing Penalty (veh)			383	2				1	1	

Zone Summary

Zone wide Queuing Penalty: 574

F - Intersection Capacity Worksheets (SimTraffic)**Year 2025 + Project**

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

Intersection						
Intersection Delay, s/veh	9.6					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	626		996		486	
Demand Flow Rate, veh/h	639		1015		495	
Vehicles Circulating, veh/h	328		405		329	
Vehicles Exiting, veh/h	496		562		1091	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.991		1.000	
Approach Delay, s/veh	7.2		12.6		6.3	
Approach LOS	A		B		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	0.634	0.366	0.324	0.676	0.663	0.337
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	405	234	329	686	328	167
Cap Entry Lane, veh/h	998	1075	930	1006	997	1074
Entry HV Adj Factor	0.980	0.980	0.980	0.981	0.982	0.982
Flow Entry, veh/h	397	229	323	673	322	164
Cap Entry, veh/h	974	1049	904	979	979	1054
V/C Ratio	0.407	0.219	0.357	0.688	0.329	0.156
Control Delay, s/veh	8.2	5.5	8.0	14.8	7.1	4.8
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	1	2	6	1	1

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	518	745		22	
Demand Flow Rate, veh/h	533	767		23	
Vehicles Circulating, veh/h	107	1		524	
Vehicles Exiting, veh/h	661	546		116	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	7.4	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	0.140	0.860	0.043	0.957
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	533	107	660	1	22
Cap Entry Lane, veh/h	1237	1419	1419	881	881
Entry HV Adj Factor	0.971	0.972	0.971	1.000	0.955
Flow Entry, veh/h	518	104	641	1	21
Cap Entry, veh/h	1202	1379	1378	881	841
V/C Ratio	0.431	0.075	0.465	0.001	0.025
Control Delay, s/veh	7.4	3.2	7.2	4.1	4.5
LOS	A	A	A	A	A
95th %tile Queue, veh	2	0	3	0	0

Intersection						
Intersection Delay, s/veh	3.2					
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	18		189		4	22
Demand Flow Rate, veh/h	18		195		4	23
Vehicles Circulating, veh/h	41		4		35	96
Vehicles Exiting, veh/h	78		35		24	103
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	2.8		3.3		2.7	3.0
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	0.444	0.556	0.492	0.508	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	8	10	96	99	4	23
Cap Entry Lane, veh/h	1300	1371	1345	1415	1378	1309
Entry HV Adj Factor	1.035	0.934	0.966	0.970	0.993	0.953
Flow Entry, veh/h	8	9	93	96	4	22
Cap Entry, veh/h	1346	1281	1299	1372	1368	1247
V/C Ratio	0.006	0.007	0.071	0.070	0.003	0.018
Control Delay, s/veh	2.7	2.9	3.3	3.2	2.7	3.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	0	0

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.3	3.9	0.5	0.6	2.9	2.1	0.2	0.4	2.2	0.2	2.2
Total Del/Veh (s)	49.8	49.0	2.0	40.0	33.7	3.2	47.4	29.4	4.0	49.5	23.3	3.0

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.7
Total Del/Veh (s)	25.3

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	33.1	3.4	27.2	16.1	37.4	2.1	1.6	19.5

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	50.4	55.0	7.2	64.8	44.6	9.0	51.1	32.1	2.4	102.6	180.0	37.5

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	64.2

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.1	0.2	0.3	0.0	0.0	0.0	0.3	0.1	0.3	0.6	0.1	0.5
Total Del/Veh (s)	48.7	78.4	40.2	45.3	41.0	30.2	36.2	46.3	19.0	46.5	18.2	6.1

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	32.7

23: 96th St & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.0	0.0	1.4	0.4	0.0	0.0	0.3
Total Del/Veh (s)	54.6	0.6	14.4	79.0	52.0	23.2	7.5	39.2

25: Northwest Pkwy & 96th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	3.6	0.2	3.5	1.2	0.3	1.2	0.0	0.0	0.0
Total Del/Veh (s)	63.4	66.2	8.3	63.3	79.0	2.7	199.1	6.2	1.0	77.1	127.4	10.8

25: Northwest Pkwy & 96th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	90.1

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	84.7	0.0	0.3	80.0	6.8	58.2	10.8	3.9	53.8	16.8	7.4	21.2

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	56.9	50.5	2.6	35.9	4.2	5.1	7.1	9.4

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.6	1.4	3.3	0.3	2.3	0.0	0.0	0.6
Total Del/Veh (s)	55.9	57.3	1.7	24.8	4.3	36.8	5.5	17.9

104: Office Park 3 & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.8	1.8	3.9	0.8	11.1	4.1	1.6

105: Sorrel Ave & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Del/Veh (s)	5.7	4.0	3.7	5.4		0.2	3.5	5.3

107: Internal E/W & Rockcress Dr Performance by movement

Movement	WBR	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	0.8	4.0	1.3

108: Rockcress Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.6	0.4	3.0	1.1	2.3	2.0

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.6	3.1	2.3	5.4	6.2	5.2		2.1	2.8	2.7	1.8	5.0

Total Zone Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	713.2

Queuing and Blocking Report

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2025 + Project - AM

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	27	96	82	258	292	172	125	161	447	414	146	178
Average Queue (ft)	3	36	26	144	193	79	21	84	243	218	29	54
95th Queue (ft)	16	78	65	240	270	147	78	142	383	354	97	137
Link Distance (ft)		750	750		1028	1028			893	893	893	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)		0	0	0	0				0			0
Queuing Penalty (veh)		0	0	0	1				0			0

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	206	254	236	200	64
Average Queue (ft)	95	165	143	91	2
95th Queue (ft)	171	236	225	182	36
Link Distance (ft)		1296	1296	1296	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	0	3		5	0
Queuing Penalty (veh)	1	7		5	0

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	R	L	T	T	L	L
Maximum Queue (ft)	436	80	238	235	252	165	194
Average Queue (ft)	209	25	79	104	115	81	103
95th Queue (ft)	387	67	172	198	215	141	164
Link Distance (ft)	1552	1552		490	490		337
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			400			200	
Storage Blk Time (%)						0	0
Queuing Penalty (veh)						0	1

Queuing and Blocking Report

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2025 + Project - AM

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	B37	NB	NB	NB
Directions Served	L	T	T	R	L	T	T	R	T	L	T	T
Maximum Queue (ft)	355	278	239	74	550	542	402	87	125	254	377	333
Average Queue (ft)	170	116	86	23	299	170	118	37	6	127	242	193
95th Queue (ft)	314	214	175	55	519	408	280	73	67	223	352	297
Link Distance (ft)		601	601			648	648		1613		556	556
Upstream Blk Time (%)		0	0			1	0					
Queuing Penalty (veh)		0	0			0	0					
Storage Bay Dist (ft)	415			415	420			420		330		
Storage Blk Time (%)	1				9					0	2	0
Queuing Penalty (veh)	1				14					0	4	2

Intersection: 15: 96th St & Dillon Rd

Movement	B42	B42	SB	SB	SB	SB	B38
Directions Served	T		L	T	T	R	T
Maximum Queue (ft)	511	191	495	777	751	495	2400
Average Queue (ft)	64	10	416	744	695	423	1864
95th Queue (ft)	333	124	694	816	780	690	3225
Link Distance (ft)	452	452		682	682		2350
Upstream Blk Time (%)	0	0		41	17		44
Queuing Penalty (veh)	2	0		0	0		0
Storage Bay Dist (ft)			335			335	
Storage Blk Time (%)				91	63		
Queuing Penalty (veh)				96	183		

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	80	191	279	276	162	527	270	360	382	230	73
Average Queue (ft)	24	61	146	118	50	159	164	132	145	72	37
95th Queue (ft)	59	149	257	226	116	376	283	273	302	160	65
Link Distance (ft)		565	1916	1916		2385				869	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	125				170		170	400	400		200
Storage Blk Time (%)	0	5			0	5	8	0	1	0	
Queuing Penalty (veh)	0	2			0	35	21	0	2	0	

Queuing and Blocking Report

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2025 + Project - AM

Intersection: 23: 96th St & Campus Dr

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B42
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	310	281	74	111	350	757	751	661	144	514	400	110
Average Queue (ft)	182	111	19	51	278	620	592	114	60	301	137	7
95th Queue (ft)	279	239	50	101	481	858	901	545	121	508	369	66
Link Distance (ft)		1151	1151			725	725	725	452	452		1467
Upstream Blk Time (%)						2	2	1		2		
Queuing Penalty (veh)						10	9	2		13		
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)	1	0				50				10		
Queuing Penalty (veh)	2	0				77				38		

Intersection: 23: 96th St & Campus Dr

Movement	B49	B49
Directions Served	T	
Maximum Queue (ft)	590	527
Average Queue (ft)	106	41
95th Queue (ft)	469	283
Link Distance (ft)	556	556
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	5	1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

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2025 + Project - AM

Intersection: 25: Northwest Pkwy & 96th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	T	T
Maximum Queue (ft)	78	93	126	137	35	84	316	269	800	900	1036	349
Average Queue (ft)	20	43	57	58	6	25	153	104	676	714	563	61
95th Queue (ft)	56	79	101	110	26	64	259	225	984	1117	1360	196
Link Distance (ft)			725	725			1056	1056			941	941
Upstream Blk Time (%)											24	0
Queuing Penalty (veh)											103	0
Storage Bay Dist (ft)	280	280			180	180			700	700		
Storage Blk Time (%)						0	10	3	50	36	2	
Queuing Penalty (veh)						0	4	1	99	70	18	

Intersection: 25: Northwest Pkwy & 96th St

Movement	B39	B39	B39	SB	SB	SB	SB	SB	B33	B33
Directions Served	T	T	T	L	L	T	T	R	T	T
Maximum Queue (ft)	1296	1174	945	91	637	897	904	653	572	569
Average Queue (ft)	407	236	128	21	146	633	633	254	159	159
95th Queue (ft)	1309	1041	698	65	578	1041	1045	868	736	735
Link Distance (ft)	2052	2052	2052			877	877		1436	1436
Upstream Blk Time (%)					0	16	16		2	3
Queuing Penalty (veh)					0	0	0		0	0
Storage Bay Dist (ft)				600	600			600		
Storage Blk Time (%)						30	30			
Queuing Penalty (veh)						20	91			

Queuing and Blocking Report

01/03/2021

2025 + Project - AM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	B29	B29	B29
Directions Served	L	L	L	R	L	L	T	T	R	T	T	
Maximum Queue (ft)	21	241	273	63	132	122	246	216	53	132	238	34
Average Queue (ft)	2	130	169	26	48	58	154	121	23	5	10	1
95th Queue (ft)	12	228	254	50	101	104	231	196	51	69	103	35
Link Distance (ft)			680				652	652		370	370	370
Upstream Blk Time (%)										0	0	
Queuing Penalty (veh)										0	0	
Storage Bay Dist (ft)	125	250		500	455	455			250			
Storage Blk Time (%)		0	1					0				
Queuing Penalty (veh)		0	2					0				

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	SB	B39	B39	B39
Directions Served	L	L	T	T	T	T	
Maximum Queue (ft)	61	90	458	492	956	970	865
Average Queue (ft)	14	43	166	179	224	257	44
95th Queue (ft)	46	78	364	382	872	942	371
Link Distance (ft)			2052	2052	941	941	941
Upstream Blk Time (%)					0	1	0
Queuing Penalty (veh)					1	4	1
Storage Bay Dist (ft)	550	550					
Storage Blk Time (%)			0	0			
Queuing Penalty (veh)			0	0			

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	T	T	T	T	T	R
Maximum Queue (ft)	186	214	242	67	24	167	173	206	228
Average Queue (ft)	104	137	114	4	0	49	64	74	80
95th Queue (ft)	178	199	206	32	5	120	131	149	180
Link Distance (ft)		1442		556	556		370	370	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330		190			300			300
Storage Blk Time (%)			2	0			0	0	
Queuing Penalty (veh)			7	0			0	0	

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Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	T	T	R	L	L	T	T
Maximum Queue (ft)	206	242	361	311	21	244	258	192	213
Average Queue (ft)	110	132	207	164	1	131	154	66	89
95th Queue (ft)	174	200	311	278	9	218	232	156	175
Link Distance (ft)		1037	1760	1760			556	556	556
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	330				300	180			
Storage Blk Time (%)		6		0		2	5		
Queuing Penalty (veh)		31		0		4	10		

Intersection: 104: Office Park 3 & Campus Dr

Movement	EB	B103	B103	WB	NB
Directions Served	TR	T		L	LR
Maximum Queue (ft)	2	396	73	39	31
Average Queue (ft)	0	25	3	9	10
95th Queue (ft)	3	232	72	33	32
Link Distance (ft)	1187	1916	1916		585
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				150	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 105: Sorrel Ave & Campus Dr

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	116	50	117	6	39
Average Queue (ft)	32	10	22	0	5
95th Queue (ft)	87	37	76	5	24
Link Distance (ft)	1021	1151	1151	357	357
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

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Intersection: 107: Internal E/W & Rockcress Dr

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	28
Average Queue (ft)	6
95th Queue (ft)	24
Link Distance (ft)	249
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 108: Rockcress Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	6	30
Average Queue (ft)	0	9
95th Queue (ft)	5	31
Link Distance (ft)		518
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Sorrel Ave & Rockcress Dr

Movement	EB	WB	WB	SB
Directions Served	LT	LT	R	LTR
Maximum Queue (ft)	3	25	5	30
Average Queue (ft)	0	1	0	1
95th Queue (ft)	3	14	7	14
Link Distance (ft)	1851	1059	1059	657
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 1006

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.0
Total Del/Veh (s)	68.3	57.5	21.2	69.8	48.5	12.5	46.5	27.9	7.1	28.1	35.8	9.3

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	35.1

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.2	0.3	0.0	0.0	0.0	0.4	0.1	0.4	0.6	0.1	0.5
Total Del/Veh (s)	43.1	64.8	30.6	45.0	40.1	28.1	31.5	43.3	23.2	31.7	16.0	5.8

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	29.9

23: 96th St & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	50.5	0.6	19.5	63.3	13.9	22.1	7.6	21.9

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.7	0.2	3.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	70.1	79.9	8.4	56.9	64.2	1.5	63.9	9.4	1.0	69.6	43.7	11.4

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	37.5

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.0	3.6	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Total Del/Veh (s)	36.2	0.1	0.3	96.4	6.7	45.9	8.7	2.9	68.9	25.8	8.9	25.6

Total Zone Performance

Denied Del/Veh (s)	1.8
Total Del/Veh (s)	907.4

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	R	T	L	L	T	T	R	L
Maximum Queue (ft)	205	217	222	184	88	98	303	323	251	231	116	256
Average Queue (ft)	110	120	116	87	30	4	167	201	138	113	46	121
95th Queue (ft)	183	192	183	155	68	72	270	305	216	194	87	220
Link Distance (ft)			600	600		490			650	650		
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						0						
Storage Bay Dist (ft)	415	415			415		420	420			420	330
Storage Blk Time (%)												0
Queuing Penalty (veh)												0

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	B42	B42	B42	SB	SB	SB	SB
Directions Served	T	T	T	T		L	T	T	R
Maximum Queue (ft)	377	380	295	360	152	153	371	414	144
Average Queue (ft)	190	201	14	27	5	59	220	279	42
95th Queue (ft)	326	335	144	211	91	118	331	389	104
Link Distance (ft)	2004	2004	502	502	502		2607	2607	
Upstream Blk Time (%)			0	0	0				
Queuing Penalty (veh)			0	1	0				
Storage Bay Dist (ft)						335			335
Storage Blk Time (%)	1	1					0	3	
Queuing Penalty (veh)	1	6					0	11	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	80	197	306	277	164	430	529	276	320	200	77
Average Queue (ft)	22	54	155	121	50	123	187	107	127	67	37
95th Queue (ft)	63	138	271	234	120	293	403	216	246	140	66
Link Distance (ft)		565	2135	2135		2384				869	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	125				170		500	400	400		200
Storage Blk Time (%)		3			0	4	2		0	0	
Queuing Penalty (veh)		1			0	32	4		0	3	

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Intersection: 23: 96th St & Campus Dr

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B42
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	182	219	75	159	252	439	545	484	327	569	501	22
Average Queue (ft)	108	127	23	65	91	121	150	71	73	319	137	1
95th Queue (ft)	175	195	56	126	180	288	357	270	198	545	395	15
Link Distance (ft)		1136	1136			717	717	717	502	502		2004
Upstream Blk Time (%)							0	0		2	0	
Queuing Penalty (veh)							0	0		13	0	
Storage Bay Dist (ft)	300			250	250						450	
Storage Blk Time (%)		0		0	0	1				3	0	
Queuing Penalty (veh)		0		0	0	1				13	0	

Intersection: 23: 96th St & Campus Dr

Movement	B42
Directions Served	T
Maximum Queue (ft)	220
Average Queue (ft)	15
95th Queue (ft)	107
Link Distance (ft)	2004
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	L	L	L
Maximum Queue (ft)	64	78	145	135	28	45	80	214	206	500	542	532
Average Queue (ft)	19	37	60	57	1	7	27	111	90	252	280	234
95th Queue (ft)	51	71	117	116	16	30	64	187	173	432	463	430
Link Distance (ft)			717	717				1056	1056			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			250	180	180			700	700	700
Storage Blk Time (%)								3	1	0	0	0
Queuing Penalty (veh)								1	0	0	0	0

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	L	L	T	T	R
Maximum Queue (ft)	126	142	72	93	546	541	195
Average Queue (ft)	51	67	15	45	300	300	87
95th Queue (ft)	107	121	49	85	488	486	165
Link Distance (ft)	941	941			864	864	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			600	600			600
Storage Blk Time (%)					0	0	
Queuing Penalty (veh)					0	1	

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	B29	B29	B29
Directions Served	L	L	L	R	L	L	T	T	R	T	T	
Maximum Queue (ft)	30	270	286	68	109	115	294	239	62	80	136	70
Average Queue (ft)	2	146	182	27	47	55	167	117	23	4	7	2
95th Queue (ft)	14	248	274	54	95	101	264	200	52	70	83	51
Link Distance (ft)			680				652	652		370	370	370
Upstream Blk Time (%)										0	0	0
Queuing Penalty (veh)										0	0	0
Storage Bay Dist (ft)	125	250		500	455	455			250			
Storage Blk Time (%)		0	3					0				
Queuing Penalty (veh)		0	4					0				

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	SB	B39	B39	B39
Directions Served	L	L	T	T	T	T	
Maximum Queue (ft)	69	97	500	526	971	969	686
Average Queue (ft)	13	43	293	313	267	300	51
95th Queue (ft)	43	80	428	446	955	1014	406
Link Distance (ft)			2052	2052	941	941	941
Upstream Blk Time (%)					0	1	0
Queuing Penalty (veh)					2	4	1
Storage Bay Dist (ft)	550	550					
Storage Blk Time (%)			0	0			
Queuing Penalty (veh)			0	0			

Zone Summary

Zone wide Queuing Penalty: 102

Intersection						
Intersection Delay, s/veh	6.8					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	593		537		717	
Demand Flow Rate, veh/h	605		547		731	
Vehicles Circulating, veh/h	482		182		222	
Vehicles Exiting, veh/h	471		905		507	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	7.8		5.3		7.0	
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	0.406	0.594	0.659	0.341
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	284	321	222	325	482	249
Cap Entry Lane, veh/h	866	943	1142	1217	1101	1176
Entry HV Adj Factor	0.981	0.979	0.980	0.982	0.981	0.980
Flow Entry, veh/h	279	314	218	319	473	244
Cap Entry, veh/h	849	921	1117	1192	1080	1152
V/C Ratio	0.328	0.341	0.195	0.268	0.438	0.212
Control Delay, s/veh	7.9	7.6	5.0	5.5	8.1	5.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	2	1	1	2	1

Intersection					
Intersection Delay, s/veh	4.2				
Intersection LOS	A				
Approach	EB	WB		NB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	1	1		1	
Adj Approach Flow, veh/h	284	200		113	
Demand Flow Rate, veh/h	292	206		116	
Vehicles Circulating, veh/h	25	8		290	
Vehicles Exiting, veh/h	189	398		27	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	4.6	3.6		4.2	
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	0.121	0.879	0.069	0.931
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	292	25	181	8	108
Cap Entry Lane, veh/h	1345	1410	1410	1091	1091
Entry HV Adj Factor	0.971	0.960	0.971	1.000	0.972
Flow Entry, veh/h	284	24	176	8	105
Cap Entry, veh/h	1306	1353	1369	1091	1060
V/C Ratio	0.217	0.018	0.128	0.007	0.099
Control Delay, s/veh	4.6	2.8	3.7	3.4	4.3
LOS	A	A	A	A	A
95th %tile Queue, veh	1	0	0	0	0

Intersection						
Intersection Delay, s/veh	3.1					
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	78		41		23	97
Demand Flow Rate, veh/h	80		42		24	100
Vehicles Circulating, veh/h	101		6		176	21
Vehicles Exiting, veh/h	20		194		5	27
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	3.2		2.8		3.2	3.2
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	0.475	0.525	0.452	0.548	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	38	42	19	23	24	100
Cap Entry Lane, veh/h	1230	1303	1342	1413	1223	1395
Entry HV Adj Factor	0.961	0.980	0.977	0.957	0.955	0.970
Flow Entry, veh/h	37	41	19	22	23	97
Cap Entry, veh/h	1182	1278	1312	1351	1167	1353
V/C Ratio	0.031	0.032	0.014	0.016	0.020	0.072
Control Delay, s/veh	3.3	3.1	2.9	2.8	3.2	3.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	0	0

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.7	3.4	0.5	0.5	2.8	2.1	0.3	0.4	2.1	0.2	1.9
Total Del/Veh (s)	54.4	54.4	3.5	49.2	38.3	2.8	69.8	38.8	4.4	56.1	28.7	4.0

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	32.9

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	26.5	2.0	35.1	9.0	52.0	1.6	1.9	20.0

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.8	1.3	1.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	60.2	208.6	16.8	98.6	42.5	16.7	54.8	103.1	10.3	90.9	94.1	12.4

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	84.9

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.7	0.6	0.6	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	46.0	55.3	35.4	47.6	51.9	17.7	33.9	40.2	8.8	28.4	32.6	5.9

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	33.2

23: 96th St Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	56.6	0.7	18.9	80.0	35.2	14.5	4.2	26.8

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.7	0.2	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	68.5	72.9	7.4	58.6	59.6	1.3	50.6	8.7	0.9	64.3	43.2	1.2

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	31.8

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.2	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	68.4	0.5	0.6	71.4	7.9	59.9	6.0	3.1	67.1	5.9	4.6	9.4

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	61.7	69.0	1.6	37.9	8.1	13.7	10.1	14.8

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.8	1.7	3.3	0.0	0.0	0.0	0.0	0.5
Total Del/Veh (s)	79.2	97.1	6.0	41.5	16.8	49.2	8.8	34.2

104: Office Park 3 & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.1	0.7	2.8	0.3	7.0	4.2	1.3

105: Sorrel Ave & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.4	4.0	2.9	3.8	3.7	3.4	4.0

107: Internal E/W & Rockcress Dr Performance by movement

Movement	WBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.2	4.1	0.7	3.2

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)		0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)		3.4	3.9	4.8	3.9	3.0	3.3	2.3	2.9	1.5	2.6	3.2

Total Zone Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	1462.7

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	141	175	204	63	341	392	155	172	194	465	442	155
Average Queue (ft)	36	99	97	5	221	263	79	69	122	297	269	47
95th Queue (ft)	113	162	173	55	325	368	138	160	186	419	396	127
Link Distance (ft)		750	750			1028	1028			893	893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	0	4	9		1	6				0		
Queuing Penalty (veh)	0	3	22		2	19				0		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	191	247	312	293	264	188
Average Queue (ft)	98	139	211	195	154	22
95th Queue (ft)	182	216	290	272	244	121
Link Distance (ft)			1296	1296	1296	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190				100
Storage Blk Time (%)	0	1	11		16	
Queuing Penalty (veh)	0	4	32		20	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B19	NB	NB
Directions Served	T	R	L	T	T	T	L	L
Maximum Queue (ft)	614	147	240	207	220	59	151	173
Average Queue (ft)	304	11	108	70	75	2	78	101
95th Queue (ft)	558	90	209	155	171	60	137	157
Link Distance (ft)	1552	1552		490	490	601		324
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (ft)			400				200	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							0	0

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	B19	B9	WB	WB	WB	WB	B37	NB
Directions Served	L	T	T	R	T	T	L	T	T	R	T	L
Maximum Queue (ft)	574	663	648	484	1152	401	569	650	538	150	704	490
Average Queue (ft)	312	449	424	171	183	32	439	343	184	61	221	198
95th Queue (ft)	622	719	694	527	949	232	666	779	490	118	1014	540
Link Distance (ft)		601	601		4320	490		648	648		1613	
Upstream Blk Time (%)		11	6			0		14	0		4	
Queuing Penalty (veh)		54	32			1		0	0		0	
Storage Bay Dist (ft)	415			415			420			420		330
Storage Blk Time (%)	2	42	35				35	0				0
Queuing Penalty (veh)	6	125	68				68	0				0

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	B11	B46	B46	SB	SB	SB	SB	B44
Directions Served	T	T	R	T	T		L	T	T	R	T
Maximum Queue (ft)	676	673	490	871	556	410	454	617	574	380	542
Average Queue (ft)	523	499	227	325	152	49	216	419	362	138	110
95th Queue (ft)	741	757	630	1218	540	296	508	698	650	444	611
Link Distance (ft)	621	621		1348	502	502		621	621		2411
Upstream Blk Time (%)	7	8		5	2	0		7	2		
Queuing Penalty (veh)	51	59		69	11	1		0	0		
Storage Bay Dist (ft)			330				335			335	
Storage Blk Time (%)	58	37					0	37	19		
Queuing Penalty (veh)	44	135					1	51	51		

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	168	280	239	192	42	242	108	84	95	314	156
Average Queue (ft)	93	102	115	61	9	120	44	33	45	163	25
95th Queue (ft)	161	205	204	134	29	212	90	72	80	280	89
Link Distance (ft)		565	1869	1869		3907				1558	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	125				170		170	400	400		200
Storage Blk Time (%)	6	7				4				7	
Queuing Penalty (veh)	8	9				7				11	

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Intersection: 23: 96th St

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B46
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	258	228	109	49	349	707	679	145	211	476	331	8
Average Queue (ft)	148	84	44	10	73	373	304	8	107	265	46	0
95th Queue (ft)	232	180	84	34	264	689	657	128	187	414	173	8
Link Distance (ft)		1161	1161			725	725	725	502	502		1348
Upstream Blk Time (%)						0	0	0		0		
Queuing Penalty (veh)						1	1	0		1		
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)	1					28				5		
Queuing Penalty (veh)	1					9				8		

Intersection: 23: 96th St

Movement	B11	B11
Directions Served	T	
Maximum Queue (ft)	660	567
Average Queue (ft)	168	59
95th Queue (ft)	622	356
Link Distance (ft)	621	621
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	7	1
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	T	T
Maximum Queue (ft)	192	196	196	202	47	80	197	173	543	449	198	214
Average Queue (ft)	96	107	112	116	9	27	110	60	332	275	98	115
95th Queue (ft)	157	163	173	178	32	63	177	149	483	411	177	195
Link Distance (ft)			725	725			1056	1056			941	941
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			700	700		
Storage Blk Time (%)	0			0			1	0				
Queuing Penalty (veh)	0			0			0	0				

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	SB	SB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	54	83	305	297
Average Queue (ft)	6	31	197	190
95th Queue (ft)	29	69	286	279
Link Distance (ft)			877	877
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	600	600		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	B41	B29	B29
Directions Served	L	L	L	R	L	L	T	T	R	T	T	T
Maximum Queue (ft)	53	144	176	46	41	53	286	261	107	5	291	293
Average Queue (ft)	14	57	95	19	7	11	131	122	27	0	12	17
95th Queue (ft)	43	121	162	41	26	35	241	220	76	5	120	145
Link Distance (ft)			680				722	722		613	370	370
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											0	1
Storage Bay Dist (ft)	125	250		500	455	455			250			
Storage Blk Time (%)								0				
Queuing Penalty (veh)								0				

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	B29	SB	SB	SB	SB	B39	B39	B39
Directions Served		L	L	T	T	T	T	
Maximum Queue (ft)	76	44	85	175	184	738	732	284
Average Queue (ft)	4	7	33	66	73	39	61	10
95th Queue (ft)	67	29	69	150	158	347	436	171
Link Distance (ft)	370			2052	2052	941	941	941
Upstream Blk Time (%)	0					0	0	0
Queuing Penalty (veh)	0					0	0	0
Storage Bay Dist (ft)		550	550					
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	L	T	T	T	T	T	R
Maximum Queue (ft)	190	205	18	344	423	287	296	285	282	243
Average Queue (ft)	89	125	1	210	66	43	140	125	127	94
95th Queue (ft)	169	188	18	341	255	159	274	234	238	211
Link Distance (ft)		1442	1442		556	556		370	370	
Upstream Blk Time (%)					0	0				0
Queuing Penalty (veh)					0	0				0
Storage Bay Dist (ft)	330			190			300			300
Storage Blk Time (%)				17	0		1	0	0	0
Queuing Penalty (veh)				145	0		2	1	1	0

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Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	407	573	299	672	651	390	274	280	278	281
Average Queue (ft)	235	279	94	447	420	103	166	178	96	113
95th Queue (ft)	368	487	322	637	615	377	250	261	223	229
Link Distance (ft)		1036		1843	1843			556	556	556
Upstream Blk Time (%)		0								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)	1	46			21		7	11		
Queuing Penalty (veh)	6	315			32		15	25		

Intersection: 104: Office Park 3 & Campus Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	31	69
Average Queue (ft)	2	27
95th Queue (ft)	14	53
Link Distance (ft)		584
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 105: Sorrel Ave & Campus Dr

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	48	15	31	29	65
Average Queue (ft)	3	1	2	2	17
95th Queue (ft)	23	8	15	16	48
Link Distance (ft)	1021	1161	1161	357	357
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

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Intersection: 107: Internal E/W & Rockcress Dr

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	37
Average Queue (ft)	18
95th Queue (ft)	41
Link Distance (ft)	249
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 110: Sorrel Ave & Rockcress Dr

Movement	EB	NB	SB
Directions Served	LT	LTR	LTR
Maximum Queue (ft)	14	28	43
Average Queue (ft)	1	2	7
95th Queue (ft)	7	14	31
Link Distance (ft)	1851	250	657
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 1539

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	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 Del/Veh (s)	51.0	63.3	18.8	56.7	40.3	16.8	28.0	38.0	7.5	35.1	28.5	8.6

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	36.8

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.7	0.6	0.5	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Total Del/Veh (s)	43.1	61.0	37.0	49.2	53.7	17.6	30.6	36.6	7.3	27.2	30.9	5.7

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	32.4

23: 96th St Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	58.1	0.6	19.8	101.3	8.6	9.4	3.2	14.4

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.7	0.2	3.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	60.3	65.1	6.4	58.1	61.1	1.4	53.0	7.1	0.9	67.3	30.2	8.9

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	29.3

Total Zone Performance

Movement	All
Denied Del/Veh (s)	1.5
Total Del/Veh (s)	1539.8

Queuing and Blocking Report

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2025 Ph 1 - Rec Imp - PM

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	B9	WB	WB	WB	WB	WB
Directions Served	L	L	T	T	R	T		L	L	T	T	R
Maximum Queue (ft)	192	200	354	328	164	443	137	308	325	236	220	141
Average Queue (ft)	107	118	226	188	68	28	5	191	214	144	116	57
95th Queue (ft)	172	182	329	292	131	214	82	280	302	216	193	110
Link Distance (ft)			600	600		490	490			649	649	
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						1						
Storage Bay Dist (ft)	415	415			415			420	420			420
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B46	SB	SB	SB	SB
Directions Served	L	T	T	R	T	L	T	T	R
Maximum Queue (ft)	113	486	514	341	98	161	257	302	102
Average Queue (ft)	44	252	264	17	4	73	153	187	47
95th Queue (ft)	88	432	444	166	72	134	233	271	87
Link Distance (ft)		2019	2019		494		2414	2414	
Upstream Blk Time (%)					0				
Queuing Penalty (veh)					0				
Storage Bay Dist (ft)	330			330		335			335
Storage Blk Time (%)		5	6				0	0	
Queuing Penalty (veh)		4	22				0	0	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	174	280	256	172	37	243	78	80	92	306	105
Average Queue (ft)	94	104	122	58	10	111	38	26	46	159	20
95th Queue (ft)	162	210	212	126	32	200	70	64	81	275	61
Link Distance (ft)		565	1994	1994		3906				1558	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	125				170		500	400	400		200
Storage Blk Time (%)	4	9				3				5	
Queuing Penalty (veh)	6	12				5				8	

Queuing and Blocking Report

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Intersection: 23: 96th St

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B46
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	179	202	112	56	74	256	567	361	234	452	192	8
Average Queue (ft)	89	109	40	13	28	21	42	17	86	196	31	0
95th Queue (ft)	156	173	87	43	65	145	263	181	188	372	133	9
Link Distance (ft)		1142	1142			718	718	718	494	494		2019
Upstream Blk Time (%)						0	0	0		0		
Queuing Penalty (veh)						0	0	0		1		
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)						0				2		
Queuing Penalty (veh)						0				3		

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	L	L	L
Maximum Queue (ft)	182	188	196	189	6	41	76	163	147	323	352	313
Average Queue (ft)	95	102	106	112	0	8	24	86	63	204	241	198
95th Queue (ft)	156	159	170	176	6	30	61	140	121	295	328	284
Link Distance (ft)			718	718				1056	1056			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			250	180	180			700	700	700
Storage Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	L	L	T	T	R
Maximum Queue (ft)	185	201	50	77	280	278	88
Average Queue (ft)	77	98	7	26	154	151	32
95th Queue (ft)	155	173	30	63	246	244	68
Link Distance (ft)	941	941			864	864	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			600	600		600	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Zone Summary

Zone wide Queuing Penalty: 63

F - Intersection Capacity Worksheets (SimTraffic)**Year 2030 + Project**

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.4	0.4	0.5	0.1	0.0	0.0	0.0	0.1
Total Del/Veh (s)	56.3	56.2	5.6	55.5	6.7	9.5	7.1	12.3

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	1.9	1.1	3.3	0.3	2.2	0.0	0.0	0.6
Total Del/Veh (s)	54.9	55.1	2.0	28.9	4.9	26.2	5.8	18.4

Total Zone Performance

Denied Del/Veh (s)				1.0				
Total Del/Veh (s)				764.5				

Queuing and Blocking Report

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2030 + Project - AM

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B41
Directions Served	L	LT	R	L	T	T	T	T	T	R	T
Maximum Queue (ft)	197	226	32	242	101	60	226	228	237	247	51
Average Queue (ft)	112	145	1	128	8	5	121	141	144	78	2
95th Queue (ft)	190	207	23	216	54	32	204	214	217	186	52
Link Distance (ft)		1442	1442		556	556		370	370		652
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	330			190			300			300	
Storage Blk Time (%)				4					0	0	
Queuing Penalty (veh)				21					0	0	

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	244	242	29	406	370	14	241	250	188	207
Average Queue (ft)	143	148	1	243	198	1	121	146	93	113
95th Queue (ft)	220	221	30	356	319	14	197	220	168	185
Link Distance (ft)		1037		1760	1760			556	556	556
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)		11			1		1	3		
Queuing Penalty (veh)		61			0		2	9		

Zone Summary

Zone wide Queuing Penalty: 93

Intersection						
Intersection Delay, s/veh	10.2					
Intersection LOS	B					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	650		1023		500	
Demand Flow Rate, veh/h	663		1044		510	
Vehicles Circulating, veh/h	336		422		336	
Vehicles Exiting, veh/h	510		577		1130	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.991		1.000	
Approach Delay, s/veh	7.5		13.7		6.5	
Approach LOS	A		B		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	0.637	0.363	0.322	0.678	0.659	0.341
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	422	241	336	708	336	174
Cap Entry Lane, veh/h	991	1067	916	992	991	1067
Entry HV Adj Factor	0.981	0.980	0.980	0.980	0.979	0.983
Flow Entry, veh/h	414	236	329	694	329	171
Cap Entry, veh/h	968	1042	890	964	970	1049
V/C Ratio	0.428	0.227	0.370	0.720	0.339	0.163
Control Delay, s/veh	8.6	5.6	8.3	16.3	7.3	4.9
LOS	A	A	A	C	A	A
95th %tile Queue, veh	2	1	2	6	2	1

Intersection					
Intersection Delay, s/veh	8.7				
Intersection LOS	A				
Approach	EB	WB		NB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	1	1		1	
Adj Approach Flow, veh/h	550	1086		66	
Demand Flow Rate, veh/h	566	1119		68	
Vehicles Circulating, veh/h	339	2		555	
Vehicles Exiting, veh/h	782	621		350	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	11.8	7.3		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	0.303	0.697	0.029	0.971
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	566	339	780	2	66
Cap Entry Lane, veh/h	977	1418	1418	857	857
Entry HV Adj Factor	0.971	0.971	0.971	1.000	0.970
Flow Entry, veh/h	550	329	757	2	64
Cap Entry, veh/h	949	1376	1376	857	831
V/C Ratio	0.580	0.239	0.550	0.002	0.077
Control Delay, s/veh	11.8	4.6	8.5	4.2	5.1
LOS	B	A	A	A	A
95th %tile Queue, veh	4	1	4	0	0

Intersection						
Intersection Delay, s/veh	4.4					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		2		1	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	55		592		15	
Demand Flow Rate, veh/h	56		610		15	
Vehicles Circulating, veh/h	130		14		111	
Vehicles Exiting, veh/h	247		112		75	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.2		4.6		2.9	
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	0.464	0.536	0.497	0.503	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	26	30	303	307	15	73
Cap Entry Lane, veh/h	1198	1272	1333	1403	1292	1097
Entry HV Adj Factor	0.991	0.969	0.970	0.971	0.996	0.968
Flow Entry, veh/h	26	29	294	298	15	71
Cap Entry, veh/h	1187	1232	1293	1362	1287	1062
V/C Ratio	0.022	0.024	0.227	0.219	0.012	0.067
Control Delay, s/veh	3.2	3.1	4.7	4.5	2.9	4.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	1	1	0	0

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.2	0.3	3.9	0.5	0.7	2.8	2.1	0.2	0.4	2.2	0.2	2.1
Total Del/Veh (s)	48.0	51.1	2.0	40.5	34.1	3.2	49.9	31.4	4.3	56.0	23.4	3.2

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	26.5

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	40.8	3.9	31.7	15.8	36.9	1.7	1.6	21.3

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.3	1.4	0.4	1.3
Total Del/Veh (s)	68.0	54.3	25.1	72.8	49.8	13.0	55.4	26.9	6.6	30.8	41.8	10.4

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	37.0

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.2	1.1	0.3	0.7
Total Del/Veh (s)	46.1	78.4	46.4	45.1	41.5	32.5	34.6	44.8	16.4	61.0	23.6	7.6

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	35.2

22: 88th Street & Tape Dr Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.5	0.3	0.0	0.1
Total Del/Veh (s)	16.4	7.4	2.0	1.5	8.9	2.7	2.5

23: 96th St & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	61.9	1.1	20.9	55.3	9.8	21.7	12.8	22.5

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.6	0.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	86.7	102.4	7.4	73.2	78.2	1.9	109.3	13.8	1.0	87.7	46.6	15.0

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	51.1

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.3	3.5	2.1	1.1	1.9	0.0	0.0	0.0	0.7
Total Del/Veh (s)	76.1	0.6	91.6	7.2	64.9	15.0	6.2	70.8	52.6	17.4	42.2

104: Office Park 3 & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.6	1.7	4.9	1.5	14.0	0.6	4.2	1.9

105: Sorrel Ave & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.2	6.1	14.2	16.2	3.2	3.4	12.8

107: Internal E/W & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.3	0.6	0.4	3.3	3.0	1.8		4.4	2.3	4.5	4.7	2.6

107: Internal E/W & Rockcress Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	2.5

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.0	3.2	2.1	11.3	11.8	8.4	2.0	2.8	2.2	3.8	3.6	2.0

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	8.7

Total Zone Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	599.0

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	30	101	103	281	326	163	132	162	463	439	155	191
Average Queue (ft)	2	40	35	152	198	79	21	82	253	226	37	72
95th Queue (ft)	15	84	81	259	286	142	76	139	399	374	115	171
Link Distance (ft)		750	750		1028	1028			893	893	893	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)		0	0	0	1				0			0
Queuing Penalty (veh)		0	0	0	2				0			1

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	226	259	244	214	72
Average Queue (ft)	117	164	144	94	4
95th Queue (ft)	202	238	222	188	42
Link Distance (ft)		1296	1296	1296	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	2	4		6	
Queuing Penalty (veh)	6	10		6	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B19	B19	NB	NB
Directions Served	T	R	L	T	T	T		L	L
Maximum Queue (ft)	539	100	274	242	250	34	29	166	190
Average Queue (ft)	244	30	94	111	120	1	1	82	105
95th Queue (ft)	467	74	209	207	222	35	30	146	165
Link Distance (ft)	1552	1552		490	490	600	600		337
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			400					200	
Storage Blk Time (%)			0					0	0
Queuing Penalty (veh)			0					0	1

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	T
Maximum Queue (ft)	205	220	208	174	131	334	354	250	219	109	305	378
Average Queue (ft)	108	120	115	84	46	195	217	139	114	46	138	197
95th Queue (ft)	180	188	183	156	101	300	322	214	190	89	262	333
Link Distance (ft)			600	600				650	650			2073
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	415	415			415	420	420			420	330	
Storage Blk Time (%)						0	0				1	1
Queuing Penalty (veh)						0	0				6	1

Intersection: 15: 96th St & Dillon Rd

Movement	NB	SB	SB	SB	SB
Directions Served	T	L	T	T	R
Maximum Queue (ft)	353	214	503	519	340
Average Queue (ft)	206	60	291	323	52
95th Queue (ft)	334	153	441	460	177
Link Distance (ft)	2073		2635	2635	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		335			335
Storage Blk Time (%)	1		4	8	
Queuing Penalty (veh)	5		5	26	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	108	197	317	303	170	288	401	365	418	458	102
Average Queue (ft)	26	67	162	133	57	126	166	152	170	136	37
95th Queue (ft)	69	156	277	258	123	235	317	348	381	393	76
Link Distance (ft)		565	1976	1976		1351				869	
Upstream Blk Time (%)										0	
Queuing Penalty (veh)										2	
Storage Bay Dist (ft)	125				170		500	400	400		200
Storage Blk Time (%)	0	6			0	6	0	2	4	1	
Queuing Penalty (veh)	0	2			1	43	0	8	16	8	

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Intersection: 22: 88th Street & Tape Dr

Movement	WB	NB	SB
Directions Served	LR	R	L
Maximum Queue (ft)	38	7	58
Average Queue (ft)	8	0	21
95th Queue (ft)	27	4	51
Link Distance (ft)	1076		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		300	300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: 96th St & Campus Dr

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B42
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	237	253	110	236	248	438	549	341	335	532	400	318
Average Queue (ft)	138	158	37	126	138	79	100	25	85	363	232	17
95th Queue (ft)	218	240	80	218	229	246	311	179	209	581	460	207
Link Distance (ft)		1160	1160			711	711	711	455	455		2073
Upstream Blk Time (%)							0	0	0	5		
Queuing Penalty (veh)							0	0	0	35		
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)	0	0		0	0	0				13	0	
Queuing Penalty (veh)	0	0		1	1	1				72	1	

Intersection: 23: 96th St & Campus Dr

Movement	B42
Directions Served	T
Maximum Queue (ft)	519
Average Queue (ft)	68
95th Queue (ft)	350
Link Distance (ft)	2073
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	R	L	L	L
Maximum Queue (ft)	94	116	167	169	54	127	305	288	38	647	693	676
Average Queue (ft)	25	43	81	80	8	40	149	132	1	381	409	368
95th Queue (ft)	69	91	149	151	36	95	257	243	39	699	744	747
Link Distance (ft)			711	711			1056	1056				
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			180	700	700	700
Storage Blk Time (%)							10	7		4	7	6
Queuing Penalty (veh)							5	4		9	14	12

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	B39	B39	B39	SB	SB	SB	SB	SB
Directions Served	T	T	T	T	T	L	L	T	T	R
Maximum Queue (ft)	442	278	272	152	63	120	137	627	639	267
Average Queue (ft)	152	94	35	11	4	27	55	356	355	115
95th Queue (ft)	576	203	310	150	76	82	109	607	605	219
Link Distance (ft)	941	941	2052	2052	2052			864	864	
Upstream Blk Time (%)	2									
Queuing Penalty (veh)	11									
Storage Bay Dist (ft)						600	600			600
Storage Blk Time (%)	0							2	2	
Queuing Penalty (veh)	3							1	6	

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	47	315	355	67	314	314	309	258	70	83	529	1154
Average Queue (ft)	8	183	227	30	192	194	172	133	21	23	110	588
95th Queue (ft)	32	291	333	54	287	285	269	234	55	62	415	1102
Link Distance (ft)			680				1947	1947				2052
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125	250		500	455	455			250	550	550	
Storage Blk Time (%)		2	8		0			0				14
Queuing Penalty (veh)		4	13		0			0				11

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	B39	B39	B39
Directions Served	T	R	T	T	
Maximum Queue (ft)	1154	424	848	859	285
Average Queue (ft)	599	45	101	109	10
95th Queue (ft)	1117	332	572	596	172
Link Distance (ft)	2052		941	941	941
Upstream Blk Time (%)			0	0	0
Queuing Penalty (veh)			1	1	0
Storage Bay Dist (ft)		550			
Storage Blk Time (%)	16				
Queuing Penalty (veh)	6				

Intersection: 104: Office Park 3 & Campus Dr

Movement	EB	B103	WB	NB
Directions Served	TR	T	L	LR
Maximum Queue (ft)	6	211	66	50
Average Queue (ft)	0	11	23	15
95th Queue (ft)	4	148	56	42
Link Distance (ft)	1128	1976		585
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

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Intersection: 105: Sorrel Ave & Campus Dr

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	168	294	430	7	55
Average Queue (ft)	66	82	134	0	13
95th Queue (ft)	128	238	341	5	42
Link Distance (ft)	1021	1160	1160	357	357
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 107: Internal E/W & Rockcress Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	40	16	31	46
Average Queue (ft)	7	1	5	25
95th Queue (ft)	29	10	24	43
Link Distance (ft)	795	878	387	249
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 110: Sorrel Ave & Rockcress Dr

Movement	EB	WB	WB	NB	SB
Directions Served	LT	LT	R	LTR	LTR
Maximum Queue (ft)	26	191	105	12	51
Average Queue (ft)	2	56	6	0	12
95th Queue (ft)	13	152	46	6	39
Link Distance (ft)	1851	1063	1063	250	657
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Zone Summary

Zone wide Queuing Penalty: 362

35: Northwest Pkwy & US 36 WB (North Ramps) Performance by movement

Movement	WBL	WBT	WBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	62.2	66.3	2.0	61.2	9.8	49.3	15.8	28.6

40: Northwest Pkwy & US 36 EB (South Ramps) Performance by movement

Movement	EBL	EBT	EBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	11.7	13.1	12.6	0.0	0.0	0.1	0.0	2.5
Total Del/Veh (s)	124.0	121.7	25.9	112.2	74.1	93.8	14.2	79.1

Total Zone Performance

Denied Del/Veh (s)	6.9
Total Del/Veh (s)	2171.9

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Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	WB	WB	NB	NB	NB	SB	SB	SB	SB	B29	B29	B41
Directions Served	L	LT	L	T	T	T	T	T	R	T	T	T
Maximum Queue (ft)	186	212	344	539	572	370	464	431	368	725	717	774
Average Queue (ft)	84	124	269	120	79	361	430	246	170	565	514	464
95th Queue (ft)	162	185	374	441	377	405	516	401	337	963	965	1023
Link Distance (ft)		1442		556	556		370	370		613	613	722
Upstream Blk Time (%)				0	0	38	51	1	0	43	18	14
Queuing Penalty (veh)				3	3	0	586	10	0	493	208	103
Storage Bay Dist (ft)	330		190			300			300			
Storage Blk Time (%)			39	0		65	7	2	1			
Queuing Penalty (veh)			365	0		384	38	12	8			

Intersection: 35: Northwest Pkwy & US 36 WB (North Ramps)

Movement	B41	B41
Directions Served	T	
Maximum Queue (ft)	772	862
Average Queue (ft)	475	373
95th Queue (ft)	1047	978
Link Distance (ft)	722	722
Upstream Blk Time (%)	22	7
Queuing Penalty (veh)	168	53
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 40: Northwest Pkwy & US 36 EB (South Ramps)

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	480	884	300	1447	1451	390	335	586	433	389
Average Queue (ft)	334	515	195	988	977	216	323	516	175	186
95th Queue (ft)	535	1035	430	1739	1735	534	369	667	365	346
Link Distance (ft)		1036		1843	1843			556	556	556
Upstream Blk Time (%)		8		0	0			9	0	0
Queuing Penalty (veh)		0		1	1			61	0	0
Storage Bay Dist (ft)	330		150			300	180			
Storage Blk Time (%)	15	64			42		35	47		
Queuing Penalty (veh)	112	454			68		141	193		

Zone Summary

Zone wide Queuing Penalty: 3463

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	608		550		750	
Demand Flow Rate, veh/h	620		561		765	
Vehicles Circulating, veh/h	499		191		227	
Vehicles Exiting, veh/h	493		928		525	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	8.1		5.4		7.3	
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	0.405	0.595	0.652	0.348
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	291	329	227	334	499	266
Cap Entry Lane, veh/h	853	929	1132	1207	1095	1171
Entry HV Adj Factor	0.981	0.979	0.980	0.979	0.980	0.981
Flow Entry, veh/h	286	322	223	327	489	261
Cap Entry, veh/h	836	908	1108	1180	1074	1149
V/C Ratio	0.342	0.355	0.201	0.277	0.456	0.227
Control Delay, s/veh	8.2	7.9	5.1	5.6	8.4	5.2
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	2	1	1	2	1

Intersection					
Intersection Delay, s/veh	5.6				
Intersection LOS	A				
Approach	EB	WB		NB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	1	1		1	
Adj Approach Flow, veh/h	376	278		346	
Demand Flow Rate, veh/h	387	286		356	
Vehicles Circulating, veh/h	78	12		384	
Vehicles Exiting, veh/h	220	728		81	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	5.7	3.6		7.2	
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	0.273	0.727	0.034	0.966
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	387	78	208	12	344
Cap Entry Lane, veh/h	1274	1405	1405	1001	1001
Entry HV Adj Factor	0.971	0.974	0.971	1.000	0.971
Flow Entry, veh/h	376	76	202	12	334
Cap Entry, veh/h	1237	1369	1364	1001	972
V/C Ratio	0.304	0.056	0.148	0.012	0.344
Control Delay, s/veh	5.7	3.1	3.8	3.7	7.3
LOS	A	A	A	A	A
95th %tile Queue, veh	1	0	1	0	2

Intersection						
Intersection Delay, s/veh	4.5					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		2		1	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	247		130		75	
Demand Flow Rate, veh/h	254		133		77	
Vehicles Circulating, veh/h	327		20		563	
Vehicles Exiting, veh/h	66		620		18	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	4.7		3.1		5.1	
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	0.469	0.531	0.474	0.526	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	119	135	63	70	77	325
Cap Entry Lane, veh/h	999	1075	1325	1396	880	1340
Entry HV Adj Factor	0.974	0.969	0.977	0.971	0.969	0.972
Flow Entry, veh/h	116	131	62	68	75	316
Cap Entry, veh/h	974	1042	1295	1356	853	1303
V/C Ratio	0.119	0.126	0.048	0.050	0.088	0.242
Control Delay, s/veh	4.8	4.6	3.2	3.0	5.1	4.9
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	0	0	0	1

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.3	0.8	3.3	0.6	0.6	2.7	2.1	0.3	0.4	2.1	0.2	1.9
Total Del/Veh (s)	56.8	55.7	3.9	50.0	36.6	3.0	70.2	42.0	4.6	57.6	29.9	4.5

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	34.2

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	30.6	2.0	30.2	7.7	55.5	1.6	1.9	21.3

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.4	1.4
Total Del/Veh (s)	51.5	67.3	21.3	57.5	41.3	20.7	35.8	45.0	9.1	41.8	31.7	9.5

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	39.7

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.7	0.6	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	35.0	46.3	27.5	38.7	44.9	16.3	19.8	24.0	4.6	18.4	19.3	4.9

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	23.6

22: 88th Street Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Total Del/Veh (s)	10.7	0.0	3.9	2.3	1.4	5.1	2.9	2.9

23: 96th St Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	54.0	1.1	31.0	94.7	9.8	16.1	4.9	20.6

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.7	0.2	3.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	61.6	61.1	7.1	60.4	60.2	1.6	48.2	9.5	0.9	61.8	35.0	9.4

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	29.6

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	3.7	1.7	1.0	1.6	0.0	0.0	0.0	0.6
Total Del/Veh (s)	65.3	1.7	83.2	8.8	71.0	17.2	9.9	69.1	5.1	4.4	16.0

45: Rock Creek Pkwy & 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.1	0.2	0.1	0.4	0.2
Total Del/Veh (s)	7.0	6.1	4.0	3.0	8.1	7.0	6.0

104: Office Park 3 & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.0	1.5	2.7	0.5	7.1	1.1	4.3	1.5

105: Sorrel Ave & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.9	3.2	3.2	4.4	4.1	0.4	4.8	4.6

106: Rockcress Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.1	0.1
Total Del/Veh (s)	0.5	0.2	2.0	0.5	4.7	3.0	2.0

107: Internal E/W & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.2	0.6	0.4	2.4	1.0	0.4	5.1	6.4	3.2	5.1	4.6	3.3

107: Internal E/W & Rockcress Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.2

108: Rockcress Dr Performance by movement

Movement	EBT	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	0.7	3.5	1.0	5.0	3.3	1.2

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.2	4.2	4.8	5.1	6.1	4.8	4.4	5.3	2.8	4.8	4.0	3.4

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	4.5

111: Sorrel Ave Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.2		0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	6.3	2.9	6.3	4.0		1.1	1.1	2.8	0.5	0.2	2.4

112: Sorrel Ave & Internal E/W Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	6.9	5.2	5.3	3.6	5.6	7.2	3.1	4.7	5.4	3.0	5.2

113: Sorrel Ave Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.1	0.1	0.0	0.0	0.0		0.0	0.0	0.1
Total Del/Veh (s)	6.0	3.5	5.9	3.0	2.5	0.9	0.5		0.9	0.5	2.4

114: Internal E/W Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.2	0.1
Total Del/Veh (s)	2.1	0.5	0.2	0.0	5.4	3.4	2.2

115: Internal E/W Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1
Total Del/Veh (s)	1.6	0.2	0.0	2.4	0.1	0.1	4.5	2.8	4.4	2.9	1.7

116: Internal E/W & Office Park 3 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.1	0.4	1.9	2.0	5.1	3.0	2.0

117: Internal E/W Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	6.5	4.5	5.1	6.0	3.1	1.9	0.1	1.9	5.4

118: Office Park 3 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	5.3	3.4	1.9	0.2	0.2	0.2	3.6

Total Network Performance

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)							0.8
Total Del/Veh (s)							60.5

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	166	194	229	107	340	449	179	180	213	462	444	181
Average Queue (ft)	41	108	104	10	234	279	83	76	126	313	289	51
95th Queue (ft)	129	176	193	83	329	385	151	169	195	440	417	137
Link Distance (ft)		750	750			1028	1028			893	893	893
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	0	7	10		1	7				0		
Queuing Penalty (veh)	0	6	25		3	24				0		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	215	270	348	324	286	176
Average Queue (ft)	106	146	218	204	168	29
95th Queue (ft)	192	227	308	291	261	139
Link Distance (ft)			1296	1296	1296	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190				100
Storage Blk Time (%)	0	2	13		18	
Queuing Penalty (veh)	1	6	40		24	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	R	L	T	T	L	L
Maximum Queue (ft)	716	208	208	177	203	182	201
Average Queue (ft)	338	12	103	66	76	98	117
95th Queue (ft)	641	94	180	141	161	162	181
Link Distance (ft)	1552	1552		490	490		324
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			400			200	
Storage Blk Time (%)						0	0
Queuing Penalty (veh)						0	1

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	R	T	L	L	T	T	R	L
Maximum Queue (ft)	200	195	375	342	179	346	293	330	252	237	155	332
Average Queue (ft)	111	121	241	203	80	19	186	210	151	126	64	74
95th Queue (ft)	178	182	356	318	151	175	274	301	225	203	120	200
Link Distance (ft)			600	600		490			649	649		
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						0						
Storage Bay Dist (ft)	415	415			415		420	420			420	330
Storage Blk Time (%)			0									
Queuing Penalty (veh)			0									

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	B46	B46	B46	SB	SB	SB	SB
Directions Served	T	T	R	T	T		L	T	T	R
Maximum Queue (ft)	527	550	488	44	44	50	173	296	320	106
Average Queue (ft)	313	329	42	2	2	0	86	180	210	47
95th Queue (ft)	494	509	267	45	44	0	151	268	298	88
Link Distance (ft)	2019	2019		498	498	498		2442	2442	
Upstream Blk Time (%)						0				
Queuing Penalty (veh)						0				
Storage Bay Dist (ft)			330				335			335
Storage Blk Time (%)	9	11						0	0	
Queuing Penalty (veh)	9	46						0	0	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	171	248	248	185	64	239	74	79	91	277	62
Average Queue (ft)	80	92	104	69	10	106	34	23	42	116	17
95th Queue (ft)	145	190	196	144	44	198	66	58	77	219	48
Link Distance (ft)		565	1989	1989		1350				1558	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	125				170		500	400	400		200
Storage Blk Time (%)	3	5				2				2	
Queuing Penalty (veh)	4	7				4				3	

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Intersection: 22: 88th Street

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	61	31
Average Queue (ft)	24	4
95th Queue (ft)	48	21
Link Distance (ft)	1082	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		300
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 23: 96th St

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B46
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	246	274	246	77	92	244	405	123	306	522	367	39
Average Queue (ft)	147	171	113	29	42	36	51	11	133	287	71	2
95th Queue (ft)	221	244	206	62	82	120	198	111	255	474	261	22
Link Distance (ft)		1159	1159			715	715	715	498	498		2019
Upstream Blk Time (%)						0	0	0	0	1		
Queuing Penalty (veh)						0	0	0	0	4		
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)		0								8		
Queuing Penalty (veh)		0								15		

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	L	T
Maximum Queue (ft)	210	223	201	208	64	97	175	158	357	383	324	239
Average Queue (ft)	118	129	118	122	8	36	103	81	202	229	190	110
95th Queue (ft)	184	199	180	187	38	80	162	144	305	328	279	199
Link Distance (ft)			715	715			1056	1056				941
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			700	700	700	
Storage Blk Time (%)	0	0				0	0	0				
Queuing Penalty (veh)	0	0				0	0	0				

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	SB	SB	SB	SB	SB
Directions Served	T	L	L	T	T	R
Maximum Queue (ft)	250	47	73	306	303	102
Average Queue (ft)	128	6	29	181	179	33
95th Queue (ft)	213	27	62	272	272	74
Link Distance (ft)	941			864	864	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		600	600		600	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	90	189	214	62	99	106	365	360	159	59	87	140
Average Queue (ft)	39	101	147	26	34	46	184	169	31	12	40	53
95th Queue (ft)	80	201	213	52	76	88	308	293	98	41	79	117
Link Distance (ft)			683				2496	2496				2052
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125	250		500	455	455			250	550	550	
Storage Blk Time (%)			0					1				
Queuing Penalty (veh)			0					3				

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	B39	B39	B39
Directions Served	T	T	T	
Maximum Queue (ft)	130	886	928	380
Average Queue (ft)	52	53	69	17
95th Queue (ft)	107	397	462	224
Link Distance (ft)	2052	941	941	941
Upstream Blk Time (%)		0	0	0
Queuing Penalty (veh)		0	0	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 37: Bend

Movement	EB	EB	EB
Directions Served	T		
Maximum Queue (ft)	629	618	130
Average Queue (ft)	139	58	5
95th Queue (ft)	524	338	95
Link Distance (ft)	649	649	649
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report

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Intersection: 45: Rock Creek Pkwy & 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	136	24	55	49	210	75
Average Queue (ft)	57	1	16	5	67	35
95th Queue (ft)	105	21	45	27	144	92
Link Distance (ft)	807	807	1051	1051	764	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						50
Storage Blk Time (%)					8	0
Queuing Penalty (veh)					16	1

Intersection: 104: Office Park 3 & Campus Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	35	64
Average Queue (ft)	4	35
95th Queue (ft)	22	53
Link Distance (ft)		585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 105: Sorrel Ave & Campus Dr

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	89	41	55	31	117
Average Queue (ft)	21	4	8	3	45
95th Queue (ft)	64	24	35	18	88
Link Distance (ft)	1021	1159	1159	357	357
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

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Intersection: 106: Rockcress Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	3	63
Average Queue (ft)	0	32
95th Queue (ft)	3	53
Link Distance (ft)	795	217
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 107: Internal E/W & Rockcress Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	34	8	60	71
Average Queue (ft)	2	0	27	34
95th Queue (ft)	16	8	51	54
Link Distance (ft)	795	878	387	249
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 108: Rockcress Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	25	59
Average Queue (ft)	1	25
95th Queue (ft)	11	48
Link Distance (ft)		518
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

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Intersection: 110: Sorrel Ave & Rockcress Dr

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	R	LTR	LTR
Maximum Queue (ft)	37	9	48	14	49	91
Average Queue (ft)	7	0	3	1	14	40
95th Queue (ft)	28	6	22	9	43	72
Link Distance (ft)	1851		1062	1062	250	657
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		300				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 111: Sorrel Ave

Movement	EB	WB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	59	75	37
Average Queue (ft)	21	36	5
95th Queue (ft)	49	60	25
Link Distance (ft)	625	394	357
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 112: Sorrel Ave & Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	78	62	66	57
Average Queue (ft)	39	37	30	28
95th Queue (ft)	61	56	59	52
Link Distance (ft)	519	750	900	702
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

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Intersection: 113: Sorrel Ave

Movement	EB	WB	NB
Directions Served	LTR	LTR	L
Maximum Queue (ft)	61	73	29
Average Queue (ft)	30	33	2
95th Queue (ft)	52	59	14
Link Distance (ft)	317	264	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 114: Internal E/W

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	19	80
Average Queue (ft)	1	35
95th Queue (ft)	10	59
Link Distance (ft)	249	434
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 115: Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	3	9	35	71
Average Queue (ft)	0	0	11	33
95th Queue (ft)	3	6	35	57
Link Distance (ft)	405	396	187	164
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

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Intersection: 116: Internal E/W & Office Park 3

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	9	63
Average Queue (ft)	0	30
95th Queue (ft)	5	54
Link Distance (ft)	396	556
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 117: Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	78	40	3	12
Average Queue (ft)	40	22	0	1
95th Queue (ft)	64	46	3	8
Link Distance (ft)	515	519	361	399
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 118: Office Park 3

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	80	6
Average Queue (ft)	41	0
95th Queue (ft)	65	5
Link Distance (ft)	434	556
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 246

F - Intersection Capacity Worksheets (SimTraffic)**Year 2040 + Project**

[Note: The attached Queuing and Blocking reports contain a number of columns where the heading lists a "B" and then a number. These "B" columns indicate nodes in the roadway network where there is a "Bend". These "Bend" nodes were entered into the network model to accurately indicate the alignment of the roadways in the network, or where a roadway lane begins or ends midblock. The analysis software generates queuing distances at all nodes (usually intersections) in the network, including the "Bend" nodes. The reader should ignore these "Bend" nodes when reviewing the queuing and blocking reports.]

Intersection						
Intersection Delay, s/veh	11.5					
Intersection LOS	B					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	687		1067		522	
Demand Flow Rate, veh/h	701		1089		533	
Vehicles Circulating, veh/h	351		453		348	
Vehicles Exiting, veh/h	530		599		1194	
Ped Vol Crossing Leg, #/h	5		12		0	
Ped Cap Adj	0.996		0.992		1.000	
Approach Delay, s/veh	8.1		16.0		6.7	
Approach LOS	A		C		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	0.646	0.354	0.320	0.680	0.659	0.341
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	453	248	348	741	351	182
Cap Entry Lane, veh/h	977	1054	890	966	980	1056
Entry HV Adj Factor	0.980	0.980	0.980	0.980	0.980	0.978
Flow Entry, veh/h	444	243	341	726	344	178
Cap Entry, veh/h	954	1029	865	939	961	1033
V/C Ratio	0.465	0.236	0.394	0.773	0.358	0.172
Control Delay, s/veh	9.3	5.8	8.8	19.4	7.6	5.1
LOS	A	A	A	C	A	A
95th %tile Queue, veh	3	1	2	8	2	1

Intersection					
Intersection Delay, s/veh	12.3				
Intersection LOS	B				
Approach	EB	WB	NB		
Entry Lanes	1	2	2		
Conflicting Circle Lanes	1	1	1		
Adj Approach Flow, veh/h	598	1380	101		
Demand Flow Rate, veh/h	616	1421	104		
Vehicles Circulating, veh/h	531	3	598		
Vehicles Exiting, veh/h	893	699	549		
Ped Vol Crossing Leg, #/h	0	0	0		
Ped Cap Adj	1.000	1.000	1.000		
Approach Delay, s/veh	22.0	8.6	5.7		
Approach LOS	C	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	0.374	0.626	0.029	0.971
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	616	531	890	3	101
Cap Entry Lane, veh/h	803	1416	1416	824	824
Entry HV Adj Factor	0.970	0.972	0.971	1.000	0.970
Flow Entry, veh/h	598	516	864	3	98
Cap Entry, veh/h	779	1376	1375	824	800
V/C Ratio	0.767	0.375	0.628	0.004	0.123
Control Delay, s/veh	22.0	6.1	10.1	4.4	5.7
LOS	C	A	B	A	A
95th %tile Queue, veh	7	2	5	0	0

Intersection						
Intersection Delay, s/veh	5.7					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		2		1	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	87		928		22	
Demand Flow Rate, veh/h	90		956		23	
Vehicles Circulating, veh/h	201		23		172	
Vehicles Exiting, veh/h	389		172		119	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	3.5		6.0		3.2	
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	0.467	0.533	0.498	0.502	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	42	48	476	480	23	112
Cap Entry Lane, veh/h	1122	1197	1322	1393	1227	946
Entry HV Adj Factor	0.975	0.962	0.970	0.971	0.953	0.969
Flow Entry, veh/h	41	46	462	466	22	108
Cap Entry, veh/h	1094	1152	1282	1352	1169	916
V/C Ratio	0.037	0.040	0.360	0.345	0.019	0.118
Control Delay, s/veh	3.6	3.5	6.2	5.8	3.2	5.0
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	0	2	2	0	0

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.1	3.3	0.2	3.3	0.3	0.1	0.3	0.0	0.0	0.0
Total Del/Veh (s)	91.8	125.7	82.5	75.0	103.3	3.1	223.0	16.3	1.1	84.7	79.5	21.2

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	100.0

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	41.3	38.8	10.9	10.5	10.1	3.2	5.0	11.1	11.1
Total Del/Veh (s)	80.1	0.7	263.7	13.5	200.2	84.3	68.0	161.1	177.9	119.6	147.8

Total Zone Performance

Movement	All
Denied Del/Veh (s)	16.7
Total Del/Veh (s)	2293.3

Queuing and Blocking Report

01/03/2021

2040 + Project - AM

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	72	379	744	738	400	70	285	454	437	266	759	821
Average Queue (ft)	19	42	226	672	395	15	50	225	206	14	615	662
95th Queue (ft)	54	166	641	870	435	51	163	396	380	129	897	973
Link Distance (ft)			714	714				1056	1056			
Upstream Blk Time (%)			2	12								
Queuing Penalty (veh)			13	70								
Storage Bay Dist (ft)	280	280			250	180	180			180	700	700
Storage Blk Time (%)				0	64			29	24		22	32
Queuing Penalty (veh)				2	65			15	17		56	83

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	NB	B39	B39	B39	SB	SB	SB	SB	SB	B33
Directions Served	L	T	T	T	T	T	L	L	T	T	R	T
Maximum Queue (ft)	882	944	404	1112	990	846	108	492	865	872	704	296
Average Queue (ft)	668	468	111	439	366	210	33	119	581	580	246	35
95th Queue (ft)	1059	1206	264	1614	1498	1097	83	461	964	966	678	236
Link Distance (ft)		941	941	2052	2052	2052			864	864		1436
Upstream Blk Time (%)		16	0	2	1	0		0	6	6		
Queuing Penalty (veh)		87	0	11	3	1		0	0	0		
Storage Bay Dist (ft)	700						600	600			600	
Storage Blk Time (%)	29	3							18	17		
Queuing Penalty (veh)	75	32							17	70		

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	B33
Directions Served	T
Maximum Queue (ft)	310
Average Queue (ft)	37
95th Queue (ft)	242
Link Distance (ft)	1436
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

01/03/2021

2040 + Project - AM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	L	L	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	48	421	677	560	232	539	618	2905	2657	135	71	710
Average Queue (ft)	11	375	541	209	49	471	527	1230	1073	43	17	302
95th Queue (ft)	36	508	834	731	169	630	740	3107	2928	164	50	835
Link Distance (ft)			686	686				3201	3201			
Upstream Blk Time (%)			34	10				3	1			
Queuing Penalty (veh)			0	0				0	0			
Storage Bay Dist (ft)	125	250			500	455	455			250	550	550
Storage Blk Time (%)		64	76			28	31	3	4			
Queuing Penalty (veh)		137	163			220	247	24	8			

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	B39	B39
Directions Served	T	T	R	T	T
Maximum Queue (ft)	2155	2159	710	866	907
Average Queue (ft)	1720	1733	248	299	314
95th Queue (ft)	2597	2604	806	871	911
Link Distance (ft)	2052	2052		941	941
Upstream Blk Time (%)	32	36		0	3
Queuing Penalty (veh)	366	409		2	38
Storage Bay Dist (ft)			550		
Storage Blk Time (%)	44	48			
Queuing Penalty (veh)	42	26			

Zone Summary

Zone wide Queuing Penalty: 2300

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.3	3.9	0.6	0.7	2.7	2.0	0.3	0.4	2.2	0.2	2.2
Total Del/Veh (s)	51.6	55.3	2.3	43.1	36.5	3.5	51.4	33.3	5.1	54.8	24.2	3.3

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.8
Total Del/Veh (s)	27.6

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.4	0.3	1.4	0.3	0.0	0.0	0.0	0.3
Total Del/Veh (s)	36.0	4.3	56.1	15.6	55.3	2.7	1.9	24.8

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.3	1.4	0.5	1.3
Total Del/Veh (s)	74.6	61.7	31.6	86.3	55.7	21.6	60.5	31.0	7.7	37.2	53.4	11.7

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.3
Total Del/Veh (s)	44.1

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	4.0	0.3	0.3	0.0	0.0	0.0	0.1	0.0	0.1	1.1	0.3	0.8
Total Del/Veh (s)	46.6	66.2	38.1	45.5	41.8	34.9	34.0	44.7	18.5	66.0	25.9	7.7

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	36.8

22: 88th Street & Tape Dr Performance by movement

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.6	0.4	0.1	0.1
Total Del/Veh (s)	15.4	7.9	2.1	1.6	9.4	2.8	2.8

23: 96th St & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	58.9	1.5	23.9	82.6	16.2	29.2	22.4	30.9

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.1	0.0	0.0	3.3	0.2	3.4	0.1	0.2	0.3	0.0	0.0	0.0
Total Del/Veh (s)	78.2	109.2	8.7	63.7	79.4	2.3	97.8	21.7	1.0	89.3	51.0	20.1

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	52.2

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0		0.0	0.3	1.9	4.1	3.8	3.9	0.0	0.0	0.0	1.8
Total Del/Veh (s)	79.3		0.8	77.7	8.6	82.1	41.0	27.3	62.5	52.4	10.2	52.2

44: 88th Street Performance by movement

Movement	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.0	0.1	0.7	0.1	0.1	0.1
Total Del/Veh (s)	8.8	6.2	6.0	2.9	1.8	5.0	2.0	0.5	3.0

45: Rock Creek Pkwy & 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.2	0.3	0.0	0.3	0.2
Total Del/Veh (s)	9.0	6.9	9.7	9.1	7.9	6.4	8.5

104: Office Park 3 & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.6	1.5	6.1	2.2	19.2	4.3	2.2

105: Sorrel Ave & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.1	0.0		0.0	0.1
Total Del/Veh (s)	15.2	12.8	66.3	62.4	4.5		3.7	48.2

106: Rockcross Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	0.9	0.7	2.9	1.7	5.5	3.0	2.1

107: Internal E/W & Rockcross Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.9	1.1	0.6	3.8	3.7	2.2	4.6	5.6	2.5	6.2	7.0	3.2

107: Internal E/W & Rockcross Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.1

108: Rockcross Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.6	0.5	4.2	2.5	2.8	2.4

110: Sorrel Ave & Rockcross Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	3.7	3.6	2.8	16.8	17.0	9.9	3.9	4.5	2.2	4.6	4.9	2.7

110: Sorrel Ave & Rockcross Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	11.6

111: Sorrel Ave Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	10.5	3.3	7.5	2.7	4.2	1.5	1.2	5.0	3.9	3.4	3.9

112: Sorrel Ave & Internal E/W Performance by movement

Movement	EBL	EBT	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	6.6	1.7	4.4	5.0	2.7	9.0	10.1	7.7	5.8	7.2	4.6	6.7

113: Sorrel Ave Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	8.4	2.9	11.5	2.8	3.1	2.8	1.8	6.4	1.6	1.2	2.8

114: Internal E/W Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Total Del/Veh (s)	2.5	1.3	0.4	0.1	6.9	2.7	1.6

115: Internal E/W Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0
Total Del/Veh (s)	2.7	0.8	0.4	2.1	0.6	0.3	4.8	3.1	5.3	2.6	1.4

116: Internal E/W & Office Park 3 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.5	0.3	2.8	2.4	5.5	3.4	2.6

117: Internal E/W Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	5.8	3.0	6.1	7.5	4.6	3.0	0.1	1.8	6.5

118: Office Park 3 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.3	2.8	2.9	0.5	1.4	0.9	1.9

Total Network Performance

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)											1.3
Total Del/Veh (s)											92.0

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB
Directions Served	L	L	T	L	L	T	L	L	T	T	R	L
Maximum Queue (ft)	30	109	115	323	383	173	137	164	454	422	217	236
Average Queue (ft)	4	41	36	175	219	84	33	96	278	250	55	95
95th Queue (ft)	20	86	85	280	321	151	104	156	415	387	154	206
Link Distance (ft)		750	750		1028	1028			893	893	893	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	135			285			510	510				190
Storage Blk Time (%)		0	1	0	2				0			1
Queuing Penalty (veh)		0	0	0	6				0			2

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	T	R
Maximum Queue (ft)	268	311	274	225	94
Average Queue (ft)	134	179	160	112	5
95th Queue (ft)	232	266	240	208	52
Link Distance (ft)		1296	1296	1296	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	190			100	
Storage Blk Time (%)	3	5		8	
Queuing Penalty (veh)	10	14		8	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B19	B19	NB	NB
Directions Served	T	R	L	T	T	T		L	L
Maximum Queue (ft)	595	216	379	318	290	224	111	218	250
Average Queue (ft)	302	41	128	135	140	15	5	116	136
95th Queue (ft)	520	124	315	268	265	124	67	196	214
Link Distance (ft)	1552	1552		490	490	600	600		337
Upstream Blk Time (%)			0						
Queuing Penalty (veh)			0						
Storage Bay Dist (ft)			400					200	
Storage Blk Time (%)			2	0				1	2
Queuing Penalty (veh)			7	0				2	8

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Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	WB	WB	WB	WB	WB	B37
Directions Served	L	L	T	T	R	T	L	L	T	T	R	T
Maximum Queue (ft)	270	297	191	202	158	109	434	480	392	286	160	29
Average Queue (ft)	167	180	103	111	60	4	242	259	140	135	63	1
95th Queue (ft)	257	271	170	184	123	76	397	430	278	206	125	24
Link Distance (ft)			600	600		490			650	650		1613
Upstream Blk Time (%)						0			0			
Queuing Penalty (veh)						0			0			
Storage Bay Dist (ft)	415	415			415		420	420			420	
Storage Blk Time (%)							2	3				
Queuing Penalty (veh)							3	5				

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	NB	B42	SB	SB	SB	SB
Directions Served	L	T	T	R	T	L	T	T	R
Maximum Queue (ft)	354	438	439	109	60	506	643	863	324
Average Queue (ft)	164	247	262	6	2	100	402	425	78
95th Queue (ft)	289	404	414	93	58	303	595	715	222
Link Distance (ft)		2073	2073		447		2635	2635	
Upstream Blk Time (%)					0				
Queuing Penalty (veh)					0				
Storage Bay Dist (ft)	330			330		450			600
Storage Blk Time (%)	1	2	4				7	1	
Queuing Penalty (veh)	3	6	25				9	6	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	125	191	331	341	167	295	459	426	465	552	136
Average Queue (ft)	31	58	163	135	55	142	186	168	191	159	38
95th Queue (ft)	81	137	287	276	119	245	366	384	426	441	89
Link Distance (ft)		565	2091	2091		1351				869	
Upstream Blk Time (%)										1	
Queuing Penalty (veh)										7	
Storage Bay Dist (ft)	125				170		500	400	400		200
Storage Blk Time (%)	0	3			0	8	0	2	5	2	
Queuing Penalty (veh)	0	1			1	57	1	9	20	13	

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Intersection: 22: 88th Street & Tape Dr

Movement	WB	NB	SB
Directions Served	LR	R	L
Maximum Queue (ft)	36	18	65
Average Queue (ft)	11	1	28
95th Queue (ft)	30	9	61
Link Distance (ft)	1079		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		300	300
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: 96th St & Campus Dr

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B42
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	261	282	125	283	333	627	626	507	485	541	400	784
Average Queue (ft)	148	169	51	180	201	213	224	104	267	421	324	118
95th Queue (ft)	229	254	101	288	331	482	501	352	494	615	510	610
Link Distance (ft)		1147	1147			703	703	703	447	447		2073
Upstream Blk Time (%)						0	0	0	2	10		0
Queuing Penalty (veh)						0	1	0	15	92		0
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)	0	0		4	7	4				20	7	
Queuing Penalty (veh)	0	0		20	33	17				136	39	

Intersection: 23: 96th St & Campus Dr

Movement	B42
Directions Served	T
Maximum Queue (ft)	1525
Average Queue (ft)	217
95th Queue (ft)	859
Link Distance (ft)	2073
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	R	L	L	L
Maximum Queue (ft)	87	112	249	295	70	231	425	391	127	672	723	742
Average Queue (ft)	27	46	113	115	8	44	197	175	8	385	414	374
95th Queue (ft)	68	89	211	230	37	129	348	328	95	699	752	759
Link Distance (ft)			703	703			1056	1056				
Upstream Blk Time (%)				0								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)	280	280			180	180			180	700	700	700
Storage Blk Time (%)			0	1			20	16		2	5	5
Queuing Penalty (veh)			0	8			11	12		6	14	12

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	B39	SB	SB	SB	SB	SB	SB
Directions Served	T	T	T	L	L	T	T	T	R
Maximum Queue (ft)	600	312	412	128	138	553	554	506	329
Average Queue (ft)	201	150	20	38	67	335	328	294	153
95th Queue (ft)	589	285	260	98	120	524	518	477	280
Link Distance (ft)	941	941	2051			864	864	864	
Upstream Blk Time (%)	1		0						
Queuing Penalty (veh)	5		0						
Storage Bay Dist (ft)				600	600			600	
Storage Blk Time (%)	0					0			
Queuing Penalty (veh)	4					0			

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	49	319	342	86	426	438	1912	1304	168	96	445	821
Average Queue (ft)	11	205	225	41	280	285	290	227	34	35	82	409
95th Queue (ft)	37	302	328	72	384	390	948	783	103	79	262	738
Link Distance (ft)			1738				3202	3202				2051
Upstream Blk Time (%)							0	0				
Queuing Penalty (veh)							0	0				
Storage Bay Dist (ft)	125	250		500	455	455			250	550	550	
Storage Blk Time (%)		5	10		0	0		2				6
Queuing Penalty (veh)		10	21		1	2		4				5

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	B39	B39	B39
Directions Served	T	T	R	T	T	T
Maximum Queue (ft)	859	846	473	621	639	511
Average Queue (ft)	465	473	39	29	49	22
95th Queue (ft)	785	780	307	297	392	253
Link Distance (ft)	2051	2051		941	941	941
Upstream Blk Time (%)				0	0	0
Queuing Penalty (veh)				0	1	0
Storage Bay Dist (ft)			550			
Storage Blk Time (%)		9				
Queuing Penalty (veh)		5				

Intersection: 37: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	409	305
Average Queue (ft)	33	19
95th Queue (ft)	210	171
Link Distance (ft)	650	650
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

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Intersection: 44: 88th Street

Movement	EB	WB	NB	SB	SB	B12
Directions Served	LTR	LTR	L	L	TR	T
Maximum Queue (ft)	65	103	27	48	85	202
Average Queue (ft)	30	45	2	6	9	6
95th Queue (ft)	55	83	15	32	108	81
Link Distance (ft)	627	437			617	337
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	1
Storage Bay Dist (ft)			75	75		
Storage Blk Time (%)					1	
Queuing Penalty (veh)					0	

Intersection: 45: Rock Creek Pkwy & 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	192	71	188	276	178	75
Average Queue (ft)	70	5	54	66	55	29
95th Queue (ft)	150	47	148	215	132	84
Link Distance (ft)	807	807	1051	1051	764	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						50
Storage Blk Time (%)					6	0
Queuing Penalty (veh)					9	1

Intersection: 104: Office Park 3 & Campus Dr

Movement	EB	B103	B103	WB	NB
Directions Served	TR	T		L	LR
Maximum Queue (ft)	12	270	57	87	46
Average Queue (ft)	0	14	4	34	19
95th Queue (ft)	5	164	69	68	46
Link Distance (ft)	1021	2091	2091		585
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)				150	
Storage Blk Time (%)				0	
Queuing Penalty (veh)				0	

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Intersection: 105: Sorrel Ave & Campus Dr

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	289	1005	980	14	72
Average Queue (ft)	99	414	434	1	19
95th Queue (ft)	219	972	1037	11	54
Link Distance (ft)	1021	1147	1147	357	357
Upstream Blk Time (%)		0	1		
Queuing Penalty (veh)		0	7		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 106: Rockcress Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	56	58
Average Queue (ft)	10	18
95th Queue (ft)	38	47
Link Distance (ft)	795	217
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 107: Internal E/W & Rockcress Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	63	59	32	65
Average Queue (ft)	13	5	8	32
95th Queue (ft)	44	31	31	53
Link Distance (ft)	795	878	387	249
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Intersection: 108: Rockcress Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	40	30
Average Queue (ft)	4	9
95th Queue (ft)	24	31
Link Distance (ft)		518
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 110: Sorrel Ave & Rockcress Dr

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	R	LTR	LTR
Maximum Queue (ft)	40	8	288	152	27	66
Average Queue (ft)	7	0	129	17	1	21
95th Queue (ft)	29	8	262	83	13	54
Link Distance (ft)	1851		1047	1047	250	657
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		300				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 111: Sorrel Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	55	32	68
Average Queue (ft)	8	19	2	11
95th Queue (ft)	30	44	15	43
Link Distance (ft)	625	394	702	357
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Intersection: 112: Sorrel Ave & Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	58	45	153	87
Average Queue (ft)	28	21	66	51
95th Queue (ft)	52	45	113	76
Link Distance (ft)	519	750	900	702
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 113: Sorrel Ave

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	TR	L
Maximum Queue (ft)	45	50	49	10	30
Average Queue (ft)	16	17	7	0	4
95th Queue (ft)	42	46	30	7	20
Link Distance (ft)	317	264		657	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			300		300
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 114: Internal E/W

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	71	5	45
Average Queue (ft)	19	0	20
95th Queue (ft)	57	3	44
Link Distance (ft)	249	134	434
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 115: Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	53	22	30	38
Average Queue (ft)	13	1	4	16
95th Queue (ft)	42	10	22	41
Link Distance (ft)	405	396	187	164
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 116: Internal E/W & Office Park 3

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	24	53
Average Queue (ft)	1	24
95th Queue (ft)	10	47
Link Distance (ft)	396	556
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 117: Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	52	78	7	7
Average Queue (ft)	28	44	0	0
95th Queue (ft)	51	70	4	5
Link Distance (ft)	515	519	361	399
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 118: Office Park 3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	52	48	14
Average Queue (ft)	24	16	1
95th Queue (ft)	49	43	7
Link Distance (ft)	434	556	585
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 715

Intersection						
Intersection Delay, s/veh	7.3					
Intersection LOS	A					
Approach	EB		WB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	630		572		797	
Demand Flow Rate, veh/h	643		584		813	
Vehicles Circulating, veh/h	524		201		234	
Vehicles Exiting, veh/h	523		966		551	
Ped Vol Crossing Leg, #/h	2		2		0	
Ped Cap Adj	0.999		0.998		1.000	
Approach Delay, s/veh	8.5		5.6		7.7	
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	0.470	0.530	0.401	0.599	0.645	0.355
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	302	341	234	350	524	289
Cap Entry Lane, veh/h	834	910	1122	1197	1088	1164
Entry HV Adj Factor	0.981	0.980	0.980	0.980	0.981	0.979
Flow Entry, veh/h	296	334	229	343	514	283
Cap Entry, veh/h	817	890	1098	1171	1068	1140
V/C Ratio	0.363	0.375	0.209	0.293	0.481	0.248
Control Delay, s/veh	8.7	8.3	5.2	5.8	8.9	5.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	2	2	1	1	3	1

Intersection					
Intersection Delay, s/veh	8.1				
Intersection LOS	A				
Approach	EB	WB		NB	
Entry Lanes	1	2		2	
Conflicting Circle Lanes	1	1		1	
Adj Approach Flow, veh/h	454	336		542	
Demand Flow Rate, veh/h	468	346		559	
Vehicles Circulating, veh/h	119	19		464	
Vehicles Exiting, veh/h	246	1004		123	
Ped Vol Crossing Leg, #/h	0	0		0	
Ped Cap Adj	1.000	1.000		1.000	
Approach Delay, s/veh	6.8	3.8		12.0	
Approach LOS	A	A		B	
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	0.344	0.656	0.034	0.966
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	468	119	227	19	540
Cap Entry Lane, veh/h	1222	1396	1396	931	931
Entry HV Adj Factor	0.971	0.975	0.971	0.947	0.970
Flow Entry, veh/h	454	116	220	18	524
Cap Entry, veh/h	1187	1361	1355	882	903
V/C Ratio	0.383	0.085	0.163	0.020	0.580
Control Delay, s/veh	6.8	3.3	4.0	4.3	12.2
LOS	A	A	A	A	B
95th %tile Queue, veh	2	0	1	0	4

Intersection						
Intersection Delay, s/veh	6.2					
Intersection LOS	A					
Approach	EB		WB		NB	
Entry Lanes	2		2		1	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	389		198		117	
Demand Flow Rate, veh/h	400		204		121	
Vehicles Circulating, veh/h	513		32		885	
Vehicles Exiting, veh/h	103		974		28	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	6.6		3.4		7.7	
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	0.470	0.530	0.475	0.525	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	188	212	97	107	121	510
Cap Entry Lane, veh/h	842	918	1311	1382	669	1298
Entry HV Adj Factor	0.971	0.971	0.967	0.972	0.971	0.970
Flow Entry, veh/h	183	206	94	104	117	495
Cap Entry, veh/h	818	892	1268	1343	650	1259
V/C Ratio	0.223	0.231	0.074	0.077	0.181	0.393
Control Delay, s/veh	6.8	6.4	3.4	3.3	7.7	6.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	1	1	0	0	1	2

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.4	0.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	53.5	69.7	11.3	57.9	58.6	1.6	53.2	13.2	1.0	60.5	45.6	10.0

25: Northwest Pkwy & 96th St/Via Varra Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	33.8

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.3	3.6	1.9	1.7	1.9	0.0	0.0	0.0	0.9
Total Del/Veh (s)	66.1	2.9	79.1	9.9	82.2	32.1	24.8	63.2	9.3	5.2	24.3

Total Zone Performance

Movement	All
Denied Del/Veh (s)	1.7
Total Del/Veh (s)	1391.5

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Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	L	L	L
Maximum Queue (ft)	229	241	332	409	67	50	96	206	189	334	371	323
Average Queue (ft)	125	135	180	178	7	10	38	120	99	220	248	212
95th Queue (ft)	199	207	296	330	90	36	80	189	174	304	334	296
Link Distance (ft)			714	714				1056	1056			
Upstream Blk Time (%)				0								
Queuing Penalty (veh)				0								
Storage Bay Dist (ft)	280	280			250	180	180			700	700	700
Storage Blk Time (%)	0	0	1	2				2	1			
Queuing Penalty (veh)	0	0	4	18				1	1			

Intersection: 25: Northwest Pkwy & 96th St/Via Varra

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	L	L	T	T	R
Maximum Queue (ft)	318	322	60	76	401	392	110
Average Queue (ft)	155	173	8	33	242	236	40
95th Queue (ft)	272	283	33	64	371	367	80
Link Distance (ft)	941	941			864	864	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			600	600			600
Storage Blk Time (%)					0	0	
Queuing Penalty (veh)					0	0	

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Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	L	R	L	L	T	T	R	L	L	T
Maximum Queue (ft)	118	224	258	72	135	144	419	405	317	64	96	257
Average Queue (ft)	54	122	167	31	62	71	253	238	50	17	49	134
95th Queue (ft)	106	216	236	57	112	124	392	372	158	49	86	227
Link Distance (ft)			687				3719	3719				2052
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125	250		500	455	455			250	550	550	
Storage Blk Time (%)	1	0	0				0	4				
Queuing Penalty (veh)	0	0	0				0	14				

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	B39	B39	B39
Directions Served	T	T	T	
Maximum Queue (ft)	261	933	940	196
Average Queue (ft)	137	94	125	7
95th Queue (ft)	235	546	635	143
Link Distance (ft)	2052	941	941	941
Upstream Blk Time (%)		0	0	0
Queuing Penalty (veh)		0	1	0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 41

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.4	0.7	3.3	0.7	0.7	2.7	2.1	0.3	0.5	2.0	0.2	1.9
Total Del/Veh (s)	68.9	65.1	4.2	57.1	42.4	2.9	63.5	49.6	4.9	72.3	37.6	6.5

5: McCaslin Blvd & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.9
Total Del/Veh (s)	40.1

10: 88th Street & Dillon Rd Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Del/Veh (s)	41.0	2.7	37.4	8.2	67.9	2.7	2.2	27.7

15: 96th St & Dillon Rd Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.3	1.4
Total Del/Veh (s)	55.3	68.2	22.5	69.7	42.9	24.0	35.6	48.4	11.5	47.6	31.9	11.5

15: 96th St & Dillon Rd Performance by movement

Movement	All
Denied Del/Veh (s)	0.2
Total Del/Veh (s)	42.5

20: 88th Street & Campus Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	3.6	0.6	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	34.3	47.6	29.0	36.2	43.4	15.7	20.5	25.6	4.7	19.3	17.9	4.6

20: 88th Street & Campus Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.4
Total Del/Veh (s)	23.2

22: 88th Street Performance by movement

Movement	WBL	WBT	WBR	NBT	NBR	SBL	SBT	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0
Total Del/Veh (s)	12.4	0.4	5.8	2.5	2.4	5.1	2.9	3.3

23: 96th St Performance by movement

Movement	EBL	EBT	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	47.7	1.7	36.6	91.4	12.2	27.5	7.6	26.6

25: Northwest Pkwy & 96th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	3.4	0.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	54.5	64.0	10.2	52.1	57.1	2.4	53.3	14.3	1.0	65.4	36.5	9.7

25: Northwest Pkwy & 96th St Performance by movement

Movement	All
Denied Del/Veh (s)	0.1
Total Del/Veh (s)	32.3

30: Northwest Pkwy & Tape Drive/Via Varra Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.3	3.6	2.1	2.0	2.2	0.0	0.0	0.0	1.0
Total Del/Veh (s)	62.7	2.9	75.4	10.2	82.5	35.8	27.5	66.9	6.8	3.8	25.1

45: Rock Creek Pkwy & 88th Street Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.3	0.1	0.1	0.2	0.1	0.5	0.2
Total Del/Veh (s)	7.9	6.5	4.1	3.1	9.0	7.5	6.5

104: Office Park 3 & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.1	1.2	3.0	0.7	8.3	5.0	2.1

105: Sorrel Ave & Campus Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	5.7	4.8	3.9	4.9	5.8	11.0	7.5

106: Rockcress Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.1	0.2	0.1
Total Del/Veh (s)	0.4	0.3	2.1	0.7	5.2	3.3	2.1

107: Internal E/W & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Total Del/Veh (s)	2.5	0.8	0.4	3.0	1.7	0.9	5.3	7.1	3.8	6.4	6.6	3.9

107: Internal E/W & Rockcress Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	3.9

108: Rockcress Dr Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.0		0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	0.9		4.6	1.7	5.6	3.8	1.6

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.0	0.0
Total Del/Veh (s)	4.6	4.9	4.9	6.6	7.1	5.4	7.1	8.7	3.9	9.1	9.2	6.7

110: Sorrel Ave & Rockcress Dr Performance by movement

Movement	All
Denied Del/Veh (s)	0.0
Total Del/Veh (s)	6.8

111: Sorrel Ave Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	7.5	3.5	9.1	6.0	3.6	1.4	1.2	3.4	1.0	1.0	3.3

112: Sorrel Ave & Internal E/W Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	7.7	6.1	5.8	4.2	6.0	8.2	4.4	5.6	6.5	3.2	6.0

113: Sorrel Ave Performance by movement

Movement	EBL	EBR	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Del/Veh (s)	8.4	5.0	8.0	4.3	3.3	1.3	0.8	3.6	1.2	1.7	3.3

114: Internal E/W Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.2	0.2	0.1
Total Del/Veh (s)	2.2	0.6	0.3	0.0	6.4	4.2	2.7

115: Internal E/W Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1
Total Del/Veh (s)	1.9	0.2	0.0	2.3	0.3	0.1	4.5	3.3	5.2	3.1	2.0

116: Internal E/W & Office Park 3 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	2.2	0.5	2.0	1.7	5.7	2.7	2.3

117: Internal E/W Performance by movement

Movement	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Total Del/Veh (s)	7.0	4.0	5.0	6.3	3.1	2.0	0.2	2.2	5.8

118: Office Park 3 Performance by movement

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.3	0.3	0.0	0.0	0.0	0.0	0.2
Total Del/Veh (s)	6.0	4.2	2.0	0.3	0.8	0.3	4.3

Total Network Performance

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Del/Veh (s)							0.9
Total Del/Veh (s)							71.1

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Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB
Directions Served	L	L	T	R	L	L	T	L	L	T	T	R
Maximum Queue (ft)	183	214	237	192	345	591	189	174	300	588	548	200
Average Queue (ft)	62	122	119	16	276	332	87	71	132	378	356	66
95th Queue (ft)	162	195	210	107	372	483	160	166	240	542	517	168
Link Distance (ft)		750	750			1028	1028			893	893	893
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						0						
Storage Bay Dist (ft)	135			120	285			510	510			
Storage Blk Time (%)	1	12	17		3	17				2		
Queuing Penalty (veh)	1	9	44		13	62				4		

Intersection: 5: McCaslin Blvd & Dillon Rd

Movement	SB	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	T	R
Maximum Queue (ft)	238	309	444	420	368	190
Average Queue (ft)	150	198	266	253	215	63
95th Queue (ft)	228	305	382	359	320	208
Link Distance (ft)			1296	1296	1296	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	190	190			100	
Storage Blk Time (%)	2	7	22		29	
Queuing Penalty (veh)	8	25	75		38	

Intersection: 10: 88th Street & Dillon Rd

Movement	EB	EB	WB	WB	WB	B19	B19	NB	NB	NB
Directions Served	T	R	L	T	T	T		L	L	R
Maximum Queue (ft)	934	326	251	210	219	198	35	252	279	64
Average Queue (ft)	451	43	120	71	81	9	1	133	151	2
95th Queue (ft)	837	258	211	161	174	82	16	213	236	47
Link Distance (ft)	1524	1524		490	490	600	600		324	
Upstream Blk Time (%)								0	0	0
Queuing Penalty (veh)								0	0	0
Storage Bay Dist (ft)			400					200		200
Storage Blk Time (%)			0					2	5	
Queuing Penalty (veh)			0					10	19	

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2040 + Project - PM

Intersection: 15: 96th St & Dillon Rd

Movement	EB	EB	EB	EB	EB	B9	WB	WB	WB	WB	WB	NB
Directions Served	L	L	T	T	R	T	L	L	T	T	R	L
Maximum Queue (ft)	232	235	345	343	201	398	368	380	217	220	164	421
Average Queue (ft)	124	135	205	219	93	40	226	243	131	136	74	86
95th Queue (ft)	192	206	324	332	172	261	333	351	195	205	137	235
Link Distance (ft)			600	600		490			649	649		
Upstream Blk Time (%)						0						
Queuing Penalty (veh)						1						
Storage Bay Dist (ft)	415	415			415		420	420			420	330
Storage Blk Time (%)			0				0	0				
Queuing Penalty (veh)			0				0	0				

Intersection: 15: 96th St & Dillon Rd

Movement	NB	NB	NB	B46	B46	SB	SB	SB	SB
Directions Served	T	T	R	T	T	L	T	T	R
Maximum Queue (ft)	678	733	490	49	228	200	332	354	156
Average Queue (ft)	363	383	92	4	12	92	216	227	62
95th Queue (ft)	579	607	408	72	133	171	310	328	124
Link Distance (ft)	2019	2019		494	494		2442	2442	
Upstream Blk Time (%)				0	0				
Queuing Penalty (veh)				0	0				
Storage Bay Dist (ft)			330			335			335
Storage Blk Time (%)	14	17					0	0	
Queuing Penalty (veh)	18	76					0	1	

Intersection: 20: 88th Street & Campus Dr

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	L	T	R
Maximum Queue (ft)	163	249	228	192	90	295	84	78	92	256	78
Average Queue (ft)	75	92	104	68	12	128	36	32	42	116	18
95th Queue (ft)	141	180	194	142	54	233	70	68	75	214	48
Link Distance (ft)		565	1952	1952		1350				1558	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	125				170		500	400	400		200
Storage Blk Time (%)	3	5				4				2	
Queuing Penalty (veh)	4	7				9				3	

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 22: 88th Street

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	80	32
Average Queue (ft)	33	4
95th Queue (ft)	62	22
Link Distance (ft)	1077	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		300
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 23: 96th St

Movement	EB	EB	EB	NB	NB	NB	NB	NB	SB	SB	SB	B46
Directions Served	L	L	R	L	L	T	T	T	T	T	R	T
Maximum Queue (ft)	283	305	332	101	126	428	559	283	528	560	400	54
Average Queue (ft)	183	201	192	41	55	83	112	26	320	358	122	3
95th Queue (ft)	260	279	307	84	103	254	327	149	505	545	369	34
Link Distance (ft)		1149	1149			706	706	706	494	494		2019
Upstream Blk Time (%)						0	0	0	1	3		
Queuing Penalty (veh)						0	0	0	11	24		
Storage Bay Dist (ft)	300			250	250						300	
Storage Blk Time (%)	0	0								15		
Queuing Penalty (veh)	0	1								33		

Intersection: 23: 96th St

Movement	B46
Directions Served	T
Maximum Queue (ft)	101
Average Queue (ft)	7
95th Queue (ft)	57
Link Distance (ft)	2019
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 25: Northwest Pkwy & 96th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	T	L	L	T	T	L	L	L	T
Maximum Queue (ft)	222	230	258	263	34	97	204	173	346	392	343	308
Average Queue (ft)	132	142	162	158	7	38	121	92	221	255	212	163
95th Queue (ft)	204	211	239	237	28	81	182	162	315	350	305	284
Link Distance (ft)			706	706			1056	1056				941
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	280	280			180	180			700	700	700	
Storage Blk Time (%)		0	0	0			1	0				
Queuing Penalty (veh)		0	0	4			1	0				

Intersection: 25: Northwest Pkwy & 96th St

Movement	NB	SB	SB	SB	SB	SB	SB
Directions Served	T	L	L	T	T	T	R
Maximum Queue (ft)	316	55	82	284	268	233	98
Average Queue (ft)	180	10	36	178	170	135	39
95th Queue (ft)	298	35	73	252	244	215	75
Link Distance (ft)	941			864	864	864	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		600	600			600	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	L	R	L	L	R	L	L	T	T	R	L	L
Maximum Queue (ft)	124	5	220	257	68	144	197	525	529	375	61	88
Average Queue (ft)	57	0	118	165	33	68	75	282	274	64	17	47
95th Queue (ft)	113	6	215	234	59	124	153	450	447	214	48	81
Link Distance (ft)	1046		687				3719		3719			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	125		250		500	455	455			250	550	550
Storage Blk Time (%)	1		0	0				1	6			
Queuing Penalty (veh)	0		0	1				1	21			

Intersection: 30: Northwest Pkwy & Tape Drive/Via Varra

Movement	SB	SB	SB	B39	B39	B39	B39
Directions Served	T	T	T	T	T	T	
Maximum Queue (ft)	143	178	190	94	276	186	94
Average Queue (ft)	38	85	107	3	13	10	3
95th Queue (ft)	106	156	169	95	191	166	96
Link Distance (ft)	2052	2052	2052	941	941	941	941
Upstream Blk Time (%)				0	0	0	0
Queuing Penalty (veh)				0	0	0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 37: Bend

Movement	EB	EB
Directions Served	T	
Maximum Queue (ft)	476	417
Average Queue (ft)	88	43
95th Queue (ft)	356	240
Link Distance (ft)	649	649
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 45: Rock Creek Pkwy & 88th Street

Movement	EB	EB	WB	WB	SB	SB
Directions Served	LT	T	T	TR	L	R
Maximum Queue (ft)	133	50	67	48	217	75
Average Queue (ft)	63	2	19	7	76	36
95th Queue (ft)	109	26	51	31	165	94
Link Distance (ft)	807	807	1051	1051	764	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						50
Storage Blk Time (%)					11	0
Queuing Penalty (veh)					22	1

Intersection: 104: Office Park 3 & Campus Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	37	96
Average Queue (ft)	6	43
95th Queue (ft)	28	71
Link Distance (ft)		585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 105: Sorrel Ave & Campus Dr

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	121	58	71	44	223
Average Queue (ft)	37	12	15	8	92
95th Queue (ft)	92	43	54	32	182
Link Distance (ft)	1021	1149	1149	357	357
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 106: Rockcress Dr

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	15	80
Average Queue (ft)	1	39
95th Queue (ft)	7	64
Link Distance (ft)	795	216
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 107: Internal E/W & Rockcress Dr

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	47	18	64	93
Average Queue (ft)	5	1	31	47
95th Queue (ft)	28	9	53	78
Link Distance (ft)	795	878	387	249
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 108: Rockcress Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	36	58
Average Queue (ft)	4	31
95th Queue (ft)	21	51
Link Distance (ft)		518
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 110: Sorrel Ave & Rockcress Dr

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	R	LTR	LTR
Maximum Queue (ft)	55	38	77	33	76	179
Average Queue (ft)	14	2	12	2	31	79
95th Queue (ft)	41	18	49	17	66	142
Link Distance (ft)	1851		1046	1046	250	657
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		300				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 111: Sorrel Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	62	103	16	46
Average Queue (ft)	27	49	1	10
95th Queue (ft)	53	83	11	36
Link Distance (ft)	625	394	702	357
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 112: Sorrel Ave & Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	92	89	86	68
Average Queue (ft)	47	45	39	35
95th Queue (ft)	74	70	68	57
Link Distance (ft)	519	750	900	702
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 113: Sorrel Ave

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	L	L
Maximum Queue (ft)	84	93	36	9
Average Queue (ft)	38	42	6	0
95th Queue (ft)	64	74	27	5
Link Distance (ft)	317	264		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			300	300
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 114: Internal E/W

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	84
Average Queue (ft)	3	45
95th Queue (ft)	17	72
Link Distance (ft)	249	434
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 115: Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	14	6	53	78
Average Queue (ft)	1	0	19	39
95th Queue (ft)	8	4	47	63
Link Distance (ft)	405	396	187	164
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

01/03/2021

2040 + Project - PM

Intersection: 116: Internal E/W & Office Park 3

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	28	2	70
Average Queue (ft)	2	0	33
95th Queue (ft)	13	2	55
Link Distance (ft)	396	515	556
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 117: Internal E/W

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	87	42	8	34
Average Queue (ft)	45	28	0	4
95th Queue (ft)	71	45	5	21
Link Distance (ft)	515	519	361	399
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 118: Office Park 3

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	95	18
Average Queue (ft)	51	1
95th Queue (ft)	81	8
Link Distance (ft)	434	556
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

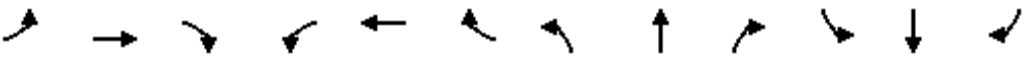
Network wide Queuing Penalty: 549

G - US 36 6th Edition HCM Reports

HCM 6th Signalized Intersection Summary 01/16/2020

35: Northwest Pkwy & US 36 WB (North Ramps)

Existing - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↱	↱	↰	↕			↕	↰
Traffic Volume (veh/h)	0	0	0	257	13	505	165	759	0	0	1448	451
Future Volume (veh/h)	0	0	0	257	13	505	165	759	0	0	1448	451
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				313	0	0	179	816	0	0	1524	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				390	0		340	2692	0	0	3381	
Arrive On Green				0.11	0.00	0.00	0.10	1.00	0.00	0.00	0.67	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				313	0	0	179	816	0	0	1524	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				8.6	0.0	0.0	3.2	0.0	0.0	0.0	14.3	0.0
Cycle Q Clear(g_c), s				8.6	0.0	0.0	3.2	0.0	0.0	0.0	14.3	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				390	0		340	2692	0	0	3381	
V/C Ratio(X)				0.80	0.00		0.53	0.30	0.00	0.00	0.45	
Avail Cap(c_a), veh/h				636	0		441	2692	0	0	3381	
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	0.89	0.89	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				43.4	0.0	0.0	6.1	0.0	0.0	0.0	7.9	0.0
Incr Delay (d2), s/veh				1.5	0.0	0.0	0.4	0.3	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln				3.8	0.0	0.0	0.7	0.1	0.0	0.0	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				44.9	0.0	0.0	6.5	0.3	0.0	0.0	8.3	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					313	A		995			1524	A
Approach Delay, s/veh					44.9			1.4			8.3	
Approach LOS					D			A			A	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	83.0			10.2			72.7			17.0		
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			5.2			16.3			10.6		
Green Ext Time (p_c), s	6.1			0.1			13.8			0.4		

Intersection Summary

HCM 6th Ctrl Delay	9.9
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.

HCM 6th Signalized Intersection Summary
01/16/2020

40: Northwest Pkwy & US 36 EB (South Ramps)

Existing - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	12	337	0	0	0	0	697	50	375	1364	0
Future Volume (veh/h)	211	12	337	0	0	0	0	697	50	375	1364	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	1856	1856	1856				0	1826	1826	1870	1870	0
Adj Flow Rate, veh/h	259	0	0				0	783	0	463	1499	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	2	2	0
Cap, veh/h	336	0					0	2011		537	2790	0
Arrive On Green	0.09	0.00	0.00				0.00	0.58	0.00	0.16	0.79	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3456	3647	0
Grp Volume(v), veh/h	259	0	0				0	783	0	463	1499	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1728	1777	0
Q Serve(g_s), s	7.2	0.0	0.0				0.0	12.3	0.0	13.1	15.7	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0				0.0	12.3	0.0	13.1	15.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	336	0					0	2011		537	2790	0
V/C Ratio(X)	0.77	0.00					0.00	0.39		0.86	0.54	0.00
Avail Cap(c_a), veh/h	672	0					0	2011		691	2790	0
HCM Platoon Ratio	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				0.00	1.00	0.00	0.85	0.85	0.00
Uniform Delay (d), s/veh	44.2	0.0	0.0				0.0	11.4	0.0	41.2	4.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0				0.0	0.6	0.0	6.4	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
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0				0.0	4.3	0.0	5.8	3.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.6	0.0	0.0				0.0	12.0	0.0	47.6	4.6	0.0
LnGrp LOS	D	A					A	B		D	A	A
Approach Vol, veh/h	259			A			783			A		
Approach Delay, s/veh	45.6						12.0			14.8		
Approach LOS	D						B			B		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	20.5	64.0		15.5			84.5					
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	15.1	14.3		9.2			17.7					
Green Ext Time (p_c), s	0.5	5.4		0.3			15.6					

Intersection Summary

HCM 6th Ctrl Delay 16.7

HCM 6th LOS B

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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

Existing - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	185	12	393	431	1599	0	0	1083	363
Future Volume (veh/h)	0	0	0	185	12	393	431	1599	0	0	1083	363
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	1870	1870
Adj Flow Rate, veh/h				219	0	0	474	1666	0	0	1152	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	2	2
Cap, veh/h				295	0		558	2831	0	0	3111	
Arrive On Green				0.08	0.00	0.00	0.27	1.00	0.00	0.00	0.61	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5274	1585
Grp Volume(v), veh/h				219	0	0	474	1666	0	0	1152	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1702	1585
Q Serve(g_s), s				6.1	0.0	0.0	11.2	0.0	0.0	0.0	11.4	0.0
Cycle Q Clear(g_c), s				6.1	0.0	0.0	11.2	0.0	0.0	0.0	11.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				295	0		558	2831	0	0	3111	
V/C Ratio(X)				0.74	0.00		0.85	0.59	0.00	0.00	0.37	
Avail Cap(c_a), veh/h				672	0		759	2831	0	0	3111	
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	0.29	0.29	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.8	0.0	0.0	7.4	0.0	0.0	0.0	9.9	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	1.6	0.3	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				2.7	0.0	0.0	1.7	0.1	0.0	0.0	3.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.2	0.0	0.0	9.0	0.3	0.0	0.0	10.2	0.0
LnGrp LOS				D	A		A	A	A	A	B	
Approach Vol, veh/h					219	A		2140			1152	A
Approach Delay, s/veh					46.2			2.2			10.2	
Approach LOS					D			A			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	85.7			18.7			66.9			14.3		
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			13.2			13.4			8.1		
Green Ext Time (p_c), s	20.2			0.6			8.3			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.												

HCM 6th Signalized Intersection Summary 01/16/2020

40: Northwest Pkwy & US 36 EB (South Ramps)

Existing - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	434	9	433	0	0	0	0	1600	147	289	983	0
Future Volume (veh/h)	434	9	433	0	0	0	0	1600	147	289	983	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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	449	0	0				0	1720	0	325	1080	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	526	0					0	2011		403	2603	0
Arrive On Green	0.15	0.00	0.00				0.00	0.57	0.00	0.08	0.49	0.00
Sat Flow, veh/h	3563	0	1585				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	449	0	0				0	1720	0	325	1080	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	1728	1777	0
Q Serve(g_s), s	12.3	0.0	0.0				0.0	40.7	0.0	9.3	19.4	0.0
Cycle Q Clear(g_c), s	12.3	0.0	0.0				0.0	40.7	0.0	9.3	19.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	526	0					0	2011		403	2603	0
V/C Ratio(X)	0.85	0.00					0.00	0.86		0.81	0.41	0.00
Avail Cap(c_a), veh/h	677	0					0	2011		691	2603	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	0.88	0.88	0.00
Uniform Delay (d), s/veh	41.6	0.0	0.0				0.0	18.3	0.0	45.0	11.8	0.0
Incr Delay (d2), s/veh	6.9	0.0	0.0				0.0	4.9	0.0	1.3	0.4	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
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.0				0.0	15.6	0.0	4.0	8.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	0.0	0.0				0.0	23.2	0.0	46.3	12.2	0.0
LnGrp LOS	D	A					A	C		D	B	A
Approach Vol, veh/h	449			A			1720			A		
Approach Delay, s/veh	48.5						23.2			20.1		
Approach LOS	D						C			C		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	16.7	62.6		20.8			79.2					
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+l1), s	11.3	42.7		14.3			21.4					
Green Ext Time (p_c), s	0.4	1.1		0.5			9.0					

Intersection Summary

HCM 6th Ctrl Delay 25.1

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.

HCM 6th Signalized Intersection Summary 01/16/2020

35: Northwest Pkwy & US 36 WB (North Ramps)
2025 Bkgd - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	265	15	545	175	815	0	0	1595	500
Future Volume (veh/h)	0	0	0	265	15	545	175	815	0	0	1595	500
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				324	0	0	190	876	0	0	1679	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				391	0		305	2761	0	0	3538	
Arrive On Green				0.11	0.00	0.00	0.10	1.00	0.00	0.00	0.70	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				324	0	0	190	876	0	0	1679	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				10.8	0.0	0.0	3.7	0.0	0.0	0.0	17.9	0.0
Cycle Q Clear(g_c), s				10.8	0.0	0.0	3.7	0.0	0.0	0.0	17.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				391	0		305	2761	0	0	3538	
V/C Ratio(X)				0.83	0.00		0.62	0.32	0.00	0.00	0.47	
Avail Cap(c_a), veh/h				736	0		511	2761	0	0	3538	
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	0.87	0.87	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				52.2	0.0	0.0	7.7	0.0	0.0	0.0	8.2	0.0
Incr Delay (d2), s/veh				1.7	0.0	0.0	0.7	0.3	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				4.9	0.0	0.0	1.0	0.1	0.0	0.0	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				54.0	0.0	0.0	8.4	0.3	0.0	0.0	8.6	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					324	A		1066			1679	A
Approach Delay, s/veh					54.0			1.7			8.6	
Approach LOS					D			A			A	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	100.7			10.9			89.8			19.3		
Change Period (Y+Rc), s	6.0			5.0			6.0			6.0		
Max Green Setting (Gmax), s	83.0			20.0			58.0			25.0		
Max Q Clear Time (g_c+I1), s	2.0			5.7			19.9			12.8		
Green Ext Time (p_c), s	6.8			0.2			16.1			0.5		
Intersection Summary												
HCM 6th Ctrl Delay	11.0											
HCM 6th LOS	B											
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

2025 Bkgd - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	15	350	0	0	0	0	755	55	415	1450	0
Future Volume (veh/h)	235	15	350	0	0	0	0	755	55	415	1450	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	1856	1856	1856				0	1826	1826	1870	1870	0
Adj Flow Rate, veh/h	291	0	0				0	848	0	512	1593	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	2	2	0
Cap, veh/h	357	0					0	2057		568	2839	0
Arrive On Green	0.10	0.00	0.00				0.00	0.59	0.00	0.33	1.00	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3456	3647	0
Grp Volume(v), veh/h	291	0	0				0	848	0	512	1593	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1728	1777	0
Q Serve(g_s), s	9.7	0.0	0.0				0.0	15.8	0.0	17.0	0.0	0.0
Cycle Q Clear(g_c), s	9.7	0.0	0.0				0.0	15.8	0.0	17.0	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	357	0					0	2057		568	2839	0
V/C Ratio(X)	0.81	0.00					0.00	0.41		0.90	0.56	0.00
Avail Cap(c_a), veh/h	707	0					0	2057		864	2839	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	0.82	0.82	0.00
Uniform Delay (d), s/veh	52.8	0.0	0.0				0.0	13.2	0.0	39.3	0.0	0.0
Incr Delay (d2), s/veh	1.7	0.0	0.0				0.0	0.6	0.0	5.3	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
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0				0.0	5.8	0.0	6.1	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.6	0.0	0.0				0.0	13.8	0.0	44.6	0.7	0.0
LnGrp LOS	D	A					A	B		D	A	A
Approach Vol, veh/h	291			A			848			A		
Approach Delay, s/veh	54.6						13.8			11.4		
Approach LOS	D						B			B		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	24.7	77.1		18.1			101.9					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	30.0	49.0		24.0			84.0					
Max Q Clear Time (g_c+l1), s	19.0	17.8		11.7			2.0					
Green Ext Time (p_c), s	0.8	6.1		0.4			18.9					

Intersection Summary

HCM 6th Ctrl Delay 15.9

HCM 6th LOS B

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.

HCM 6th Signalized Intersection Summary 01/16/2020

35: Northwest Pkwy & US 36 WB (North Ramps)
2025 Bkgd - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	195	15	425	445	1690	0	0	1170	390
Future Volume (veh/h)	0	0	0	195	15	425	445	1690	0	0	1170	390
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	1870	1870
Adj Flow Rate, veh/h				233	0	0	489	1760	0	0	1245	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	2	2
Cap, veh/h				309	0		540	2817	0	0	3047	
Arrive On Green				0.09	0.00	0.00	0.29	1.00	0.00	0.00	0.60	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5274	1585
Grp Volume(v), veh/h				233	0	0	489	1760	0	0	1245	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1702	1585
Q Serve(g_s), s				6.4	0.0	0.0	12.0	0.0	0.0	0.0	13.0	0.0
Cycle Q Clear(g_c), s				6.4	0.0	0.0	12.0	0.0	0.0	0.0	13.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				309	0		540	2817	0	0	3047	
V/C Ratio(X)				0.75	0.00		0.91	0.62	0.00	0.00	0.41	
Avail Cap(c_a), veh/h				672	0		726	2817	0	0	3047	
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	0.14	0.14	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.6	0.0	0.0	9.3	0.0	0.0	0.0	10.8	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	1.7	0.1	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln				2.9	0.0	0.0	3.1	0.1	0.0	0.0	4.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.0	0.0	0.0	11.1	0.1	0.0	0.0	11.2	0.0
LnGrp LOS				D	A		B	A	A	A	B	
Approach Vol, veh/h					233	A		2249			1245	A
Approach Delay, s/veh					46.0			2.5			11.2	
Approach LOS					D			A			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	85.3			19.6			65.7			14.7		
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			14.0			15.0			8.4		
Green Ext Time (p_c), s	22.6			0.6			9.0			0.3		
Intersection Summary												
HCM 6th Ctrl Delay	8.1											
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

2025 Bkgd - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	465	10	450	0	0	0	0	1670	155	325	1035	0
Future Volume (veh/h)	465	10	450	0	0	0	0	1670	155	325	1035	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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	483	0	0				0	1796	0	365	1137	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	558	0					0	1937		443	2571	0
Arrive On Green	0.16	0.00	0.00				0.00	0.55	0.00	0.09	0.48	0.00
Sat Flow, veh/h	3563	0	1585				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	483	0	0				0	1796	0	365	1137	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	1728	1777	0
Q Serve(g_s), s	13.2	0.0	0.0				0.0	46.5	0.0	10.4	21.0	0.0
Cycle Q Clear(g_c), s	13.2	0.0	0.0				0.0	46.5	0.0	10.4	21.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	558	0					0	1937		443	2571	0
V/C Ratio(X)	0.87	0.00					0.00	0.93		0.82	0.44	0.00
Avail Cap(c_a), veh/h	677	0					0	1937		691	2571	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	0.83	0.83	0.00
Uniform Delay (d), s/veh	41.1	0.0	0.0				0.0	20.9	0.0	44.6	12.5	0.0
Incr Delay (d2), s/veh	8.6	0.0	0.0				0.0	9.2	0.0	2.0	0.5	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
%ile BackOfQ(50%),veh/ln	6.4	0.0	0.0				0.0	18.9	0.0	4.6	8.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.8	0.0	0.0				0.0	30.1	0.0	46.6	13.0	0.0
LnGrp LOS	D	A					A	C		D	B	A
Approach Vol, veh/h	483			A			1796			A		
Approach Delay, s/veh	49.8						30.1			21.2		
Approach LOS	D						C			C		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	17.8	60.5		21.7			78.3					
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	12.4	48.5		15.2			23.0					
Green Ext Time (p_c), s	0.4	0.0		0.4			9.7					

Intersection Summary

HCM 6th Ctrl Delay 29.1

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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

2030 Bkgd - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	270	20	565	180	870	0	0	1720	520
Future Volume (veh/h)	0	0	0	270	20	565	180	870	0	0	1720	520
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				335	0	0	196	935	0	0	1811	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				393	0		276	2809	0	0	3656	
Arrive On Green				0.11	0.00	0.00	0.09	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				335	0	0	196	935	0	0	1811	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				13.0	0.0	0.0	4.2	0.0	0.0	0.0	21.7	0.0
Cycle Q Clear(g_c), s				13.0	0.0	0.0	4.2	0.0	0.0	0.0	21.7	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				393	0		276	2809	0	0	3656	
V/C Ratio(X)				0.85	0.00		0.71	0.33	0.00	0.00	0.50	
Avail Cap(c_a), veh/h				682	0		496	2809	0	0	3656	
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	0.85	0.85	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				61.1	0.0	0.0	10.7	0.0	0.0	0.0	8.4	0.0
Incr Delay (d2), s/veh				2.1	0.0	0.0	1.1	0.3	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				6.0	0.0	0.0	2.2	0.1	0.0	0.0	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				63.2	0.0	0.0	11.8	0.3	0.0	0.0	8.9	0.0
LnGrp LOS				E	A		B	A	A	A	A	
Approach Vol, veh/h					335	A		1131			1811	A
Approach Delay, s/veh					63.2			2.3			8.9	
Approach LOS					E			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		118.4			11.4	107.0		21.6				
Change Period (Y+Rc), s		6.0			5.0	6.0		6.0				
Max Green Setting (Gmax), s		101.0			24.0	72.0		27.0				
Max Q Clear Time (g_c+I1), s		2.0			6.2	23.7		15.0				
Green Ext Time (p_c), s		7.5			0.2	19.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				12.2								
HCM 6th LOS				B								
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

2030 Bkgd - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	20	355	0	0	0	0	805	60	430	1565	0
Future Volume (veh/h)	250	20	355	0	0	0	0	805	60	430	1565	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	1856	1856	1856				0	1826	1826	1870	1870	0
Adj Flow Rate, veh/h	315	0	0				0	904	0	531	1720	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	2	2	0
Cap, veh/h	372	0					0	2100		580	2875	0
Arrive On Green	0.11	0.00	0.00				0.00	0.61	0.00	0.34	1.00	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3456	3647	0
Grp Volume(v), veh/h	315	0	0				0	904	0	531	1720	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1728	1777	0
Q Serve(g_s), s	12.3	0.0	0.0				0.0	19.5	0.0	20.6	0.0	0.0
Cycle Q Clear(g_c), s	12.3	0.0	0.0				0.0	19.5	0.0	20.6	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	372	0					0	2100		580	2875	0
V/C Ratio(X)	0.85	0.00					0.00	0.43		0.92	0.60	0.00
Avail Cap(c_a), veh/h	682	0					0	2100		913	2875	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	0.79	0.79	0.00
Uniform Delay (d), s/veh	61.5	0.0	0.0				0.0	14.8	0.0	45.5	0.0	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.0				0.0	0.6	0.0	5.3	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
%ile BackOfQ(50%),veh/ln	5.6	0.0	0.0				0.0	7.4	0.0	7.6	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.6	0.0	0.0				0.0	15.4	0.0	50.9	0.7	0.0
LnGrp LOS	E	A					A	B		D	A	A
Approach Vol, veh/h	315			A			904			A		
Approach Delay, s/veh	63.6						15.4			12.6		
Approach LOS	E						B			B		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	28.5	90.7		20.8			119.2					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	37.0	59.0		27.0			101.0					
Max Q Clear Time (g_c+I1), s	22.6	21.5		14.3			2.0					
Green Ext Time (p_c), s	0.9	6.8		0.5			22.8					

Intersection Summary

HCM 6th Ctrl Delay 17.9

HCM 6th LOS B

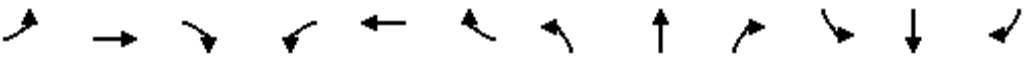
Notes

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.

HCM 6th Signalized Intersection Summary 01/16/2020

35: Northwest Pkwy & US 36 WB (North Ramps)
2030 Bkgd - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↱	↱	↰	↕			↕	↰
Traffic Volume (veh/h)	0	0	0	200	20	445	455	1815	0	0	1240	400
Future Volume (veh/h)	0	0	0	200	20	445	455	1815	0	0	1240	400
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	1870	1870
Adj Flow Rate, veh/h				244	0	0	500	1891	0	0	1319	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	2	2
Cap, veh/h				320	0		529	2805	0	0	2993	
Arrive On Green				0.09	0.00	0.00	0.20	1.00	0.00	0.00	0.59	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5274	1585
Grp Volume(v), veh/h				244	0	0	500	1891	0	0	1319	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1702	1585
Q Serve(g_s), s				6.7	0.0	0.0	12.7	0.0	0.0	0.0	14.4	0.0
Cycle Q Clear(g_c), s				6.7	0.0	0.0	12.7	0.0	0.0	0.0	14.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				320	0		529	2805	0	0	2993	
V/C Ratio(X)				0.76	0.00		0.95	0.67	0.00	0.00	0.44	
Avail Cap(c_a), veh/h				672	0		701	2805	0	0	2993	
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.09	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				44.4	0.0	0.0	15.1	0.0	0.0	0.0	11.5	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	2.3	0.1	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				3.0	0.0	0.0	6.6	0.0	0.0	0.0	4.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				45.8	0.0	0.0	17.4	0.1	0.0	0.0	12.0	0.0
LnGrp LOS				D	A		B	A	A	A	B	
Approach Vol, veh/h					244	A		2391			1319	A
Approach Delay, s/veh					45.8			3.7			12.0	
Approach LOS					D			A			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	84.9			20.3			64.6			15.1		
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			14.7			16.4			8.7		
Green Ext Time (p_c), s	26.3			0.6			9.4			0.3		

Intersection Summary

HCM 6th Ctrl Delay	9.1
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.

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

2030 Bkgd - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	485	15	460	0	0	0	0	1785	160	335	1100	0
Future Volume (veh/h)	485	15	460	0	0	0	0	1785	160	335	1100	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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	509	0	0				0	1919	0	376	1209	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	534	0					0	1968		436	2594	0
Arrive On Green	0.15	0.00	0.00				0.00	0.55	0.00	0.25	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	509	0	0				0	1919	0	376	1209	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	1728	1777	0
Q Serve(g_s), s	14.2	0.0	0.0				0.0	52.4	0.0	10.4	0.0	0.0
Cycle Q Clear(g_c), s	14.2	0.0	0.0				0.0	52.4	0.0	10.4	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	534	0					0	1968		436	2594	0
V/C Ratio(X)	0.95	0.00					0.00	0.98		0.86	0.47	0.00
Avail Cap(c_a), veh/h	534	0					0	1968		518	2594	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	0.78	0.78	0.00
Uniform Delay (d), s/veh	42.1	0.0	0.0				0.0	21.6	0.0	36.6	0.0	0.0
Incr Delay (d2), s/veh	27.1	0.0	0.0				0.0	15.2	0.0	8.8	0.5	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
%ile BackOfQ(50%),veh/ln	8.2	0.0	0.0				0.0	22.6	0.0	4.2	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	0.0	0.0				0.0	36.8	0.0	45.3	0.5	0.0
LnGrp LOS	E	A					A	D		D	A	A
Approach Vol, veh/h	509			A			1919			A		
Approach Delay, s/veh	69.3						36.8			11.1		
Approach LOS	E						D			B		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	17.6	61.4		21.0			79.0					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	15.0	53.0		15.0			73.0					
Max Q Clear Time (g_c+I1), s	12.4	54.4		16.2			2.0					
Green Ext Time (p_c), s	0.2	0.0		0.0			11.1					
Intersection Summary												
HCM 6th Ctrl Delay				30.8								
HCM 6th LOS				C								
Notes												
User approved pedestrian interval to be less than phase max green.												
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.												

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

2040 Bkgd - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	280	20	620	185	1000	0	0	2020	560
Future Volume (veh/h)	0	0	0	280	20	620	185	1000	0	0	2020	560
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				347	0	0	201	1075	0	0	2126	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				405	0		230	2797	0	0	3631	
Arrive On Green				0.11	0.00	0.00	0.09	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				347	0	0	201	1075	0	0	2126	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				13.5	0.0	0.0	4.4	0.0	0.0	0.0	28.7	0.0
Cycle Q Clear(g_c), s				13.5	0.0	0.0	4.4	0.0	0.0	0.0	28.7	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				405	0		230	2797	0	0	3631	
V/C Ratio(X)				0.86	0.00		0.87	0.38	0.00	0.00	0.59	
Avail Cap(c_a), veh/h				682	0		448	2797	0	0	3631	
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	0.78	0.78	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				60.9	0.0	0.0	22.2	0.0	0.0	0.0	9.7	0.0
Incr Delay (d2), s/veh				2.5	0.0	0.0	3.2	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				6.2	0.0	0.0	5.0	0.1	0.0	0.0	9.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				63.3	0.0	0.0	25.4	0.3	0.0	0.0	10.4	0.0
LnGrp LOS				E	A		C	A	A	A	B	
Approach Vol, veh/h					347	A		1276			2126	A
Approach Delay, s/veh					63.3			4.3			10.4	
Approach LOS					E			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		118.0			11.6	106.4		22.0				
Change Period (Y+Rc), s		6.0			5.0	6.0		6.0				
Max Green Setting (Gmax), s		101.0			24.0	72.0		27.0				
Max Q Clear Time (g_c+I1), s		2.0			6.4	30.7		15.5				
Green Ext Time (p_c), s		9.2			0.2	23.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				13.2								
HCM 6th LOS				B								
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

2040 Bkgd - AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	20	365	0	0	0	0	910	60	495	1810	0
Future Volume (veh/h)	275	20	365	0	0	0	0	910	60	495	1810	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	1856	1856	1856				0	1826	1826	1870	1870	0
Adj Flow Rate, veh/h	344	0	0				0	1022	0	611	1989	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	2	2	0
Cap, veh/h	402	0					0	1993		658	2845	0
Arrive On Green	0.11	0.00	0.00				0.00	0.57	0.00	0.38	1.00	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3456	3647	0
Grp Volume(v), veh/h	344	0	0				0	1022	0	611	1989	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1728	1777	0
Q Serve(g_s), s	13.4	0.0	0.0				0.0	24.9	0.0	23.7	0.0	0.0
Cycle Q Clear(g_c), s	13.4	0.0	0.0				0.0	24.9	0.0	23.7	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	402	0					0	1993		658	2845	0
V/C Ratio(X)	0.86	0.00					0.00	0.51		0.93	0.70	0.00
Avail Cap(c_a), veh/h	682	0					0	1993		913	2845	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(l)	1.00	0.00	0.00				0.00	1.00	0.00	0.68	0.68	0.00
Uniform Delay (d), s/veh	60.9	0.0	0.0				0.0	18.0	0.0	42.4	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.0	0.0				0.0	0.9	0.0	7.6	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
%ile BackOfQ(50%),veh/ln	6.1	0.0	0.0				0.0	9.7	0.0	8.7	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.2	0.0	0.0				0.0	18.9	0.0	50.0	1.0	0.0
LnGrp LOS	E	A					A	B		D	A	A
Approach Vol, veh/h	344			A			1022			A		
Approach Delay, s/veh	63.2						18.9			12.5		
Approach LOS	E						B			B		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	31.7	86.4		21.9			118.1					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	37.0	59.0		27.0			101.0					
Max Q Clear Time (g_c+I1), s	25.7	26.9		15.4			2.0					
Green Ext Time (p_c), s	1.0	7.8		0.5			32.7					

Intersection Summary

HCM 6th Ctrl Delay 18.6

HCM 6th LOS B

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.

HCM 6th Signalized Intersection Summary 01/16/2020

35: Northwest Pkwy & US 36 WB (North Ramps)
2040 Bkgd - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	205	20	485	465	2065	0	0	1415	430
Future Volume (veh/h)	0	0	0	205	20	485	465	2065	0	0	1415	430
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	1870	1870
Adj Flow Rate, veh/h				249	0	0	511	2151	0	0	1505	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	2	2
Cap, veh/h				299	0		525	2969	0	0	3198	
Arrive On Green				0.08	0.00	0.00	0.35	1.00	0.00	0.00	0.63	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5274	1585
Grp Volume(v), veh/h				249	0	0	511	2151	0	0	1505	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1702	1585
Q Serve(g_s), s				10.4	0.0	0.0	23.6	0.0	0.0	0.0	23.4	0.0
Cycle Q Clear(g_c), s				10.4	0.0	0.0	23.6	0.0	0.0	0.0	23.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				299	0		525	2969	0	0	3198	
V/C Ratio(X)				0.83	0.00		0.97	0.72	0.00	0.00	0.47	
Avail Cap(c_a), veh/h				471	0		853	2969	0	0	3198	
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	0.09	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				67.6	0.0	0.0	20.1	0.0	0.0	0.0	14.9	0.0
Incr Delay (d2), s/veh				3.8	0.0	0.0	2.5	0.1	0.0	0.0	0.5	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
%ile BackOfQ(50%),veh/ln				4.9	0.0	0.0	13.8	0.1	0.0	0.0	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				71.4	0.0	0.0	22.6	0.1	0.0	0.0	15.3	0.0
LnGrp LOS				E	A		C	A	A	A	B	
Approach Vol, veh/h					249	A		2662			1505	A
Approach Delay, s/veh					71.4			4.4			15.3	
Approach LOS					E			A			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	131.3			31.4			99.9			18.7		
Change Period (Y+Rc), s	6.0			5.0			6.0			6.0		
Max Green Setting (Gmax), s	118.0			54.0			59.0			20.0		
Max Q Clear Time (g_c+I1), s	2.0			25.6			25.4			12.4		
Green Ext Time (p_c), s	41.7			0.7			13.0			0.3		
Intersection Summary												
HCM 6th Ctrl Delay	11.9											
HCM 6th LOS	B											
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

2040 Bkgd - PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	515	15	470	0	0	0	0	2015	165	370	1245	0
Future Volume (veh/h)	515	15	470	0	0	0	0	2015	165	370	1245	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	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	539	0	0				0	2167	0	416	1368	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	591	0					0	2182		369	2680	0
Arrive On Green	0.17	0.00	0.00				0.00	0.61	0.00	0.21	1.00	0.00
Sat Flow, veh/h	3563	0	1585				0	3647	1585	3456	3647	0
Grp Volume(v), veh/h	539	0	0				0	2167	0	416	1368	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1777	1585	1728	1777	0
Q Serve(g_s), s	22.3	0.0	0.0				0.0	90.5	0.0	16.0	0.0	0.0
Cycle Q Clear(g_c), s	22.3	0.0	0.0				0.0	90.5	0.0	16.0	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	591	0					0	2182		369	2680	0
V/C Ratio(X)	0.91	0.00					0.00	0.99		1.13	0.51	0.00
Avail Cap(c_a), veh/h	689	0					0	2182		369	2680	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	0.77	0.77	0.00
Uniform Delay (d), s/veh	61.5	0.0	0.0				0.0	28.6	0.0	59.0	0.0	0.0
Incr Delay (d2), s/veh	14.0	0.0	0.0				0.0	17.7	0.0	81.3	0.5	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
%ile BackOfQ(50%),veh/ln	11.3	0.0	0.0				0.0	40.1	0.0	10.2	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.5	0.0	0.0				0.0	46.3	0.0	140.3	0.5	0.0
LnGrp LOS	E	A					A	D		F	A	A
Approach Vol, veh/h	539			A			2167			A		
Approach Delay, s/veh	75.5						46.3			33.1		
Approach LOS	E						D			C		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	21.0	98.1		30.9			119.1					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	16.0	88.0		29.0			109.0					
Max Q Clear Time (g_c+I1), s	18.0	92.5		24.3			2.0					
Green Ext Time (p_c), s	0.0	0.0		0.6			14.0					

Intersection Summary

HCM 6th Ctrl Delay 44.6

HCM 6th LOS D

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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	265	15	694	175	865	0	0	1626	506
Future Volume (veh/h)	0	0	0	265	15	694	175	865	0	0	1626	506
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				324	0	0	190	930	0	0	1712	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				385	0		296	2793	0	0	3616	
Arrive On Green				0.11	0.00	0.00	0.09	1.00	0.00	0.00	0.71	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				324	0	0	190	930	0	0	1712	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				11.7	0.0	0.0	3.8	0.0	0.0	0.0	19.0	0.0
Cycle Q Clear(g_c), s				11.7	0.0	0.0	3.8	0.0	0.0	0.0	19.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				385	0		296	2793	0	0	3616	
V/C Ratio(X)				0.84	0.00		0.64	0.33	0.00	0.00	0.47	
Avail Cap(c_a), veh/h				652	0		498	2793	0	0	3616	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	0.00	0.78	0.78	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				56.8	0.0	0.0	8.1	0.0	0.0	0.0	8.0	0.0
Incr Delay (d2), s/veh				1.9	0.0	0.0	0.7	0.3	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln				5.3	0.0	0.0	1.2	0.1	0.0	0.0	6.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				58.8	0.0	0.0	8.7	0.3	0.0	0.0	8.5	0.0
LnGrp LOS				E	A		A	A	A	A	A	
Approach Vol, veh/h					324	A		1120			1712	A
Approach Delay, s/veh					58.8			1.7			8.5	
Approach LOS					E			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		109.8			11.0	98.8		20.2				
Change Period (Y+Rc), s		6.0			5.0	6.0		6.0				
Max Green Setting (Gmax), s		94.0			21.0	68.0		24.0				
Max Q Clear Time (g_c+I1), s		2.0			5.8	21.0		13.7				
Green Ext Time (p_c), s		7.4			0.2	17.8		0.5				
Intersection Summary												
HCM 6th Ctrl Delay					11.2							
HCM 6th LOS					B							
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	15	350	0	0	0	0	772	55	441	1450	0
Future Volume (veh/h)	268	15	350	0	0	0	0	772	55	441	1450	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	1856	1856	1856				0	1826	1826	1856	1870	0
Adj Flow Rate, veh/h	330	0	0				0	867	0	544	1593	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	3	2	0
Cap, veh/h	392	0					0	1334		1255	2831	0
Arrive On Green	0.11	0.00	0.00				0.00	0.38	0.00	0.73	1.00	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3428	3647	0
Grp Volume(v), veh/h	330	0	0				0	867	0	544	1593	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1714	1777	0
Q Serve(g_s), s	11.9	0.0	0.0				0.0	26.7	0.0	8.1	0.0	0.0
Cycle Q Clear(g_c), s	11.9	0.0	0.0				0.0	26.7	0.0	8.1	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	392	0					0	1334		1255	2831	0
V/C Ratio(X)	0.84	0.00					0.00	0.65		0.43	0.56	0.00
Avail Cap(c_a), veh/h	707	0					0	1334		1255	2831	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	0.82	0.82	0.00
Uniform Delay (d), s/veh	56.7	0.0	0.0				0.0	32.8	0.0	12.1	0.0	0.0
Incr Delay (d2), s/veh	1.9	0.0	0.0				0.0	2.5	0.0	0.1	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
%ile BackOfQ(50%),veh/ln	5.4	0.0	0.0				0.0	11.2	0.0	2.4	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.6	0.0	0.0				0.0	35.3	0.0	12.2	0.7	0.0
LnGrp LOS	E	A					A	D		B	A	A
Approach Vol, veh/h	330			A			867			A		
Approach Delay, s/veh	58.6						35.3			3.6		
Approach LOS	E						D			A		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	53.6	56.0		20.4			109.6					
Change Period (Y+Rc), s	6.0	* 6		6.0			6.0					
Max Green Setting (Gmax), s	37.0	* 50		26.0			92.0					
Max Q Clear Time (g_c+I1), s	10.1	28.7		13.9			2.0					
Green Ext Time (p_c), s	1.0	5.6		0.5			19.0					

Intersection Summary

HCM 6th Ctrl Delay 17.3

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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	195	15	457	445	1706	0	0	1326	423
Future Volume (veh/h)	0	0	0	195	15	457	445	1706	0	0	1326	423
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				233	0	0	489	1777	0	0	1411	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				286	0		510	2972	0	0	3318	
Arrive On Green				0.08	0.00	0.00	0.20	1.00	0.00	0.00	0.66	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				233	0	0	489	1777	0	0	1411	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				9.4	0.0	0.0	18.6	0.0	0.0	0.0	19.3	0.0
Cycle Q Clear(g_c), s				9.4	0.0	0.0	18.6	0.0	0.0	0.0	19.3	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				286	0		510	2972	0	0	3318	
V/C Ratio(X)				0.81	0.00		0.96	0.60	0.00	0.00	0.43	
Avail Cap(c_a), veh/h				585	0		863	2972	0	0	3318	
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.25	0.25	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				65.6	0.0	0.0	23.6	0.0	0.0	0.0	12.0	0.0
Incr Delay (d2), s/veh				2.1	0.0	0.0	3.5	0.2	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln				4.3	0.0	0.0	16.2	0.1	0.0	0.0	6.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				67.7	0.0	0.0	27.1	0.2	0.0	0.0	12.4	0.0
LnGrp LOS				E	A		C	A	A	A	B	
Approach Vol, veh/h					233	A		2266			1411	A
Approach Delay, s/veh					67.7			6.0			12.4	
Approach LOS					E			A			B	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		127.3			26.3	101.0		17.7				
Change Period (Y+Rc), s		6.0			5.0	6.0		6.0				
Max Green Setting (Gmax), s		109.0			50.0	54.0		24.0				
Max Q Clear Time (g_c+I1), s		2.0			20.6	21.3		11.4				
Green Ext Time (p_c), s		24.9			0.7	11.8		0.3				
Intersection Summary												
HCM 6th Ctrl Delay				12.0								
HCM 6th LOS				B								
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	10	450	0	0	0	0	1679	155	471	1050	0
Future Volume (veh/h)	472	10	450	0	0	0	0	1679	155	471	1050	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	1856	1870	1870				0	1870	1870	1856	1870	0
Adj Flow Rate, veh/h	490	0	0				0	1805	0	529	1154	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	3	2	2				0	2	2	3	2	0
Cap, veh/h	536	0					0	2002		576	2721	0
Arrive On Green	0.15	0.00	0.00				0.00	0.56	0.00	0.22	1.00	0.00
Sat Flow, veh/h	3534	0	1585				0	3647	1585	3428	3647	0
Grp Volume(v), veh/h	490	0	0				0	1805	0	529	1154	0
Grp Sat Flow(s),veh/h/ln	1767	0	1585				0	1777	1585	1714	1777	0
Q Serve(g_s), s	19.8	0.0	0.0				0.0	65.4	0.0	21.9	0.0	0.0
Cycle Q Clear(g_c), s	19.8	0.0	0.0				0.0	65.4	0.0	21.9	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	536	0					0	2002		576	2721	0
V/C Ratio(X)	0.91	0.00					0.00	0.90		0.92	0.42	0.00
Avail Cap(c_a), veh/h	561	0					0	2002		662	2721	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.81	0.81	0.00
Uniform Delay (d), s/veh	60.6	0.0	0.0				0.0	28.1	0.0	55.3	0.0	0.0
Incr Delay (d2), s/veh	18.7	0.0	0.0				0.0	7.1	0.0	13.3	0.4	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
%ile BackOfQ(50%),veh/ln	10.3	0.0	0.0				0.0	27.7	0.0	9.9	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.3	0.0	0.0				0.0	35.2	0.0	68.6	0.4	0.0
LnGrp LOS	E	A					A	D		E	A	A
Approach Vol, veh/h	490			A			1805			A		
Approach Delay, s/veh	79.3						35.2			21.8		
Approach LOS	E						D			C		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	29.4	87.7		28.0			117.0					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	28.0	77.0		23.0			110.0					
Max Q Clear Time (g_c+I1), s	23.9	67.4		21.8			2.0					
Green Ext Time (p_c), s	0.5	7.4		0.2			10.3					

Intersection Summary

HCM 6th Ctrl Delay	35.0
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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	270	20	1033	180	1020	0	0	1816	539
Future Volume (veh/h)	0	0	0	270	20	1033	180	1020	0	0	1816	539
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				335	0	0	196	1097	0	0	1912	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				396	0		263	2783	0	0	3592	
Arrive On Green				0.11	0.00	0.00	0.10	1.00	0.00	0.00	0.71	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				335	0	0	196	1097	0	0	1912	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				12.1	0.0	0.0	4.0	0.0	0.0	0.0	22.9	0.0
Cycle Q Clear(g_c), s				12.1	0.0	0.0	4.0	0.0	0.0	0.0	22.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				396	0		263	2783	0	0	3592	
V/C Ratio(X)				0.85	0.00		0.75	0.39	0.00	0.00	0.53	
Avail Cap(c_a), veh/h				652	0		462	2783	0	0	3592	
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	0.67	0.67	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				56.6	0.0	0.0	14.3	0.0	0.0	0.0	8.8	0.0
Incr Delay (d2), s/veh				2.5	0.0	0.0	1.1	0.3	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				5.5	0.0	0.0	3.3	0.1	0.0	0.0	7.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				59.1	0.0	0.0	15.4	0.3	0.0	0.0	9.4	0.0
LnGrp LOS				E	A		B	A	A	A	A	
Approach Vol, veh/h					335	A		1293			1912	A
Approach Delay, s/veh					59.1			2.6			9.4	
Approach LOS					E			A			A	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		109.4			11.2	98.2		20.6				
Change Period (Y+Rc), s		6.0			5.0	6.0		6.0				
Max Green Setting (Gmax), s		94.0			21.0	68.0		24.0				
Max Q Clear Time (g_c+I1), s		2.0			6.0	24.9		14.1				
Green Ext Time (p_c), s		9.5			0.2	20.7		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				11.6								
HCM 6th LOS				B								
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	353	20	355	0	0	0	0	847	60	516	1570	0
Future Volume (veh/h)	353	20	355	0	0	0	0	847	60	516	1570	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	1856	1856	1856				0	1826	1826	1856	1870	0
Adj Flow Rate, veh/h	434	0	0				0	952	0	637	1725	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	3	2	0
Cap, veh/h	496	0					0	1334		1154	2727	0
Arrive On Green	0.14	0.00	0.00				0.00	0.38	0.00	0.67	1.00	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3428	3647	0
Grp Volume(v), veh/h	434	0	0				0	952	0	637	1725	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1714	1777	0
Q Serve(g_s), s	15.6	0.0	0.0				0.0	30.3	0.0	12.6	0.0	0.0
Cycle Q Clear(g_c), s	15.6	0.0	0.0				0.0	30.3	0.0	12.6	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	496	0					0	1334		1154	2727	0
V/C Ratio(X)	0.87	0.00					0.00	0.71		0.55	0.63	0.00
Avail Cap(c_a), veh/h	707	0					0	1334		1154	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	0.75	0.75	0.00
Uniform Delay (d), s/veh	54.7	0.0	0.0				0.0	33.9	0.0	16.2	0.0	0.0
Incr Delay (d2), s/veh	6.5	0.0	0.0				0.0	3.3	0.0	0.3	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	7.4	0.0	0.0				0.0	12.9	0.0	3.6	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	0.0				0.0	37.2	0.0	16.4	0.8	0.0
LnGrp LOS	E	A					A	D		B	A	A
Approach Vol, veh/h	434			A			952			A		
Approach Delay, s/veh	61.3						37.2			5.0		
Approach LOS	E						D			A		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	49.7	56.0		24.3			105.7					
Change Period (Y+Rc), s	6.0	* 6		6.0			6.0					
Max Green Setting (Gmax), s	37.0	* 50		26.0			92.0					
Max Q Clear Time (g_c+I1), s	14.6	32.3		17.6			2.0					
Green Ext Time (p_c), s	1.2	5.9		0.6			22.8					

Intersection Summary

HCM 6th Ctrl Delay 19.7

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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	200	20	548	455	1849	0	0	1773	506
Future Volume (veh/h)	0	0	0	200	20	548	455	1849	0	0	1773	506
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				244	0	0	500	1926	0	0	1886	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				297	0		524	2960	0	0	2920	
Arrive On Green				0.08	0.00	0.00	0.22	0.83	0.00	0.00	0.58	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				244	0	0	500	1926	0	0	1886	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				9.8	0.0	0.0	29.5	28.6	0.0	0.0	36.4	0.0
Cycle Q Clear(g_c), s				9.8	0.0	0.0	29.5	28.6	0.0	0.0	36.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				297	0		524	2960	0	0	2920	
V/C Ratio(X)				0.82	0.00		0.95	0.65	0.00	0.00	0.65	
Avail Cap(c_a), veh/h				585	0		742	2960	0	0	2920	
HCM Platoon Ratio				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	0.09	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				65.3	0.0	0.0	40.9	4.4	0.0	0.0	20.7	0.0
Incr Delay (d2), s/veh				2.2	0.0	0.0	2.3	0.1	0.0	0.0	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
%ile BackOfQ(50%),veh/ln				4.5	0.0	0.0	17.6	6.7	0.0	0.0	13.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				67.5	0.0	0.0	43.3	4.5	0.0	0.0	21.8	0.0
LnGrp LOS				E	A		D	A	A	A	C	
Approach Vol, veh/h					244	A		2426			1886	A
Approach Delay, s/veh					67.5			12.5			21.8	
Approach LOS					E			B			C	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	126.8			37.2			89.6			18.2		
Change Period (Y+Rc), s	6.0			5.0			6.0			6.0		
Max Green Setting (Gmax), s	109.0			50.0			54.0			24.0		
Max Q Clear Time (g_c+I1), s	30.6			31.5			38.4			11.8		
Green Ext Time (p_c), s	28.6			0.7			10.9			0.4		
Intersection Summary												
HCM 6th Ctrl Delay	19.3											
HCM 6th LOS	B											
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	508	15	460	0	0	0	0	1796	160	815	1158	0
Future Volume (veh/h)	508	15	460	0	0	0	0	1796	160	815	1158	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	1856	1870	1870				0	1870	1870	1856	1870	0
Adj Flow Rate, veh/h	532	0	0				0	1931	0	916	1273	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	3	2	2				0	2	2	3	2	0
Cap, veh/h	561	0					0	1887		662	2696	0
Arrive On Green	0.16	0.00	0.00				0.00	0.53	0.00	0.26	1.00	0.00
Sat Flow, veh/h	3534	0	1585				0	3647	1585	3428	3647	0
Grp Volume(v), veh/h	532	0	0				0	1931	0	916	1273	0
Grp Sat Flow(s),veh/h/ln	1767	0	1585				0	1777	1585	1714	1777	0
Q Serve(g_s), s	21.6	0.0	0.0				0.0	77.0	0.0	28.0	0.0	0.0
Cycle Q Clear(g_c), s	21.6	0.0	0.0				0.0	77.0	0.0	28.0	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	561	0					0	1887		662	2696	0
V/C Ratio(X)	0.95	0.00					0.00	1.02		1.38	0.47	0.00
Avail Cap(c_a), veh/h	561	0					0	1887		662	2696	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.59	0.59	0.00
Uniform Delay (d), s/veh	60.4	0.0	0.0				0.0	34.0	0.0	53.9	0.0	0.0
Incr Delay (d2), s/veh	25.6	0.0	0.0				0.0	26.8	0.0	178.2	0.4	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
%ile BackOfQ(50%),veh/ln	11.7	0.0	0.0				0.0	37.9	0.0	27.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.0	0.0	0.0				0.0	60.8	0.0	232.1	0.4	0.0
LnGrp LOS	F	A					A	F		F	A	A
Approach Vol, veh/h	532			A			1931			A		
Approach Delay, s/veh	86.0						60.8			97.3		
Approach LOS	F						E			F		
Timer - Assigned Phs	1	2		4			6					
Phs Duration (G+Y+Rc), s	33.0	83.0		29.0			116.0					
Change Period (Y+Rc), s	5.0	6.0		6.0			6.0					
Max Green Setting (Gmax), s	28.0	77.0		23.0			110.0					
Max Q Clear Time (g_c+I1), s	30.0	79.0		23.6			2.0					
Green Ext Time (p_c), s	0.0	0.0		0.0			12.2					

Intersection Summary

HCM 6th Ctrl Delay 80.9

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.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	280	20	1353	185	1244	0	0	2167	589
Future Volume (veh/h)	0	0	0	280	20	1353	185	1244	0	0	2167	589
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	1841	1841	0	0	1856	1856
Adj Flow Rate, veh/h				347	0	0	201	1338	0	0	2281	0
Peak Hour Factor				0.86	0.68	0.95	0.92	0.93	0.92	0.92	0.95	0.96
Percent Heavy Veh, %				3	3	3	4	4	0	0	3	3
Cap, veh/h				403	0		221	2819	0	0	3642	
Arrive On Green				0.11	0.00	0.00	0.11	1.00	0.00	0.00	0.72	0.00
Sat Flow, veh/h				3534	0	1572	1753	3589	0	0	5233	1572
Grp Volume(v), veh/h				347	0	0	201	1338	0	0	2281	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1753	1749	0	0	1689	1572
Q Serve(g_s), s				14.5	0.0	0.0	5.9	0.0	0.0	0.0	34.5	0.0
Cycle Q Clear(g_c), s				14.5	0.0	0.0	5.9	0.0	0.0	0.0	34.5	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				403	0		221	2819	0	0	3642	
V/C Ratio(X)				0.86	0.00		0.91	0.47	0.00	0.00	0.63	
Avail Cap(c_a), veh/h				801	0		395	2819	0	0	3642	
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	0.45	0.45	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				65.3	0.0	0.0	29.6	0.0	0.0	0.0	10.8	0.0
Incr Delay (d2), s/veh				2.2	0.0	0.0	3.3	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				6.7	0.0	0.0	5.3	0.1	0.0	0.0	11.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				67.5	0.0	0.0	32.9	0.3	0.0	0.0	11.6	0.0
LnGrp LOS				E	A		C	A	A	A	B	
Approach Vol, veh/h					347	A		1539			2281	A
Approach Delay, s/veh					67.5			4.5			11.6	
Approach LOS					E			A			B	
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	126.9			13.1			113.8			23.1		
Change Period (Y+Rc), s	6.0			5.0			6.0			6.0		
Max Green Setting (Gmax), s	104.0			23.0			76.0			34.0		
Max Q Clear Time (g_c+I1), s	2.0			7.9			36.5			16.5		
Green Ext Time (p_c), s	13.5			0.2			25.5			0.6		
Intersection Summary												
HCM 6th Ctrl Delay	13.6											
HCM 6th LOS	B											
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	20	365	0	0	0	0	991	60	627	1820	0
Future Volume (veh/h)	438	20	365	0	0	0	0	991	60	627	1820	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	1856	1856	1856				0	1826	1826	1856	1870	0
Adj Flow Rate, veh/h	533	0	0				0	1113	0	774	2000	0
Peak Hour Factor	0.86	0.60	0.77				0.92	0.89	0.78	0.81	0.91	0.92
Percent Heavy Veh, %	3	3	3				0	5	5	3	2	0
Cap, veh/h	586	0					0	1318		1146	2680	0
Arrive On Green	0.17	0.00	0.00				0.00	0.38	0.00	0.67	1.00	0.00
Sat Flow, veh/h	3534	0	1572				0	3561	1547	3428	3647	0
Grp Volume(v), veh/h	533	0	0				0	1113	0	774	2000	0
Grp Sat Flow(s),veh/h/ln	1767	0	1572				0	1735	1547	1714	1777	0
Q Serve(g_s), s	22.2	0.0	0.0				0.0	43.9	0.0	20.5	0.0	0.0
Cycle Q Clear(g_c), s	22.2	0.0	0.0				0.0	43.9	0.0	20.5	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	586	0					0	1318		1146	2680	0
V/C Ratio(X)	0.91	0.00					0.00	0.84		0.68	0.75	0.00
Avail Cap(c_a), veh/h	707	0					0	1318		1146	2680	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	0.64	0.64	0.00
Uniform Delay (d), s/veh	61.5	0.0	0.0				0.0	42.4	0.0	20.0	0.0	0.0
Incr Delay (d2), s/veh	12.8	0.0	0.0				0.0	6.8	0.0	0.8	1.3	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	11.0	0.0	0.0				0.0	19.5	0.0	5.4	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.3	0.0	0.0				0.0	49.2	0.0	20.8	1.3	0.0
LnGrp LOS	E	A					A	D		C	A	A
Approach Vol, veh/h	533			A			1113			A		
Approach Delay, s/veh	74.3						49.2			6.7		
Approach LOS	E						D			A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	56.1	63.0		30.9		119.1						
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0						
Max Green Setting (Gmax), s	46.0	* 57		30.0		108.0						
Max Q Clear Time (g_c+I1), s	22.5	45.9		24.2		2.0						
Green Ext Time (p_c), s	1.5	5.4		0.7		33.6						

Intersection Summary

HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

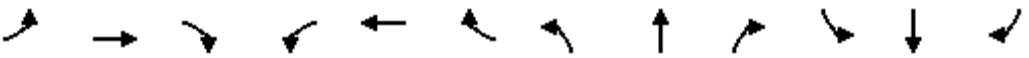
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

35: Northwest Pkwy & US 36 WB (North Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↱	↲	↳	↴			↵	↶
Traffic Volume (veh/h)	0	0	0	205	20	643	465	2118	0	0	2240	596
Future Volume (veh/h)	0	0	0	205	20	643	465	2118	0	0	2240	596
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				249	0	0	511	2206	0	0	2383	0
Peak Hour Factor				0.89	0.75	0.82	0.91	0.96	0.92	0.92	0.94	0.91
Percent Heavy Veh, %				3	3	3	2	2	0	0	3	3
Cap, veh/h				299	0		524	2959	0	0	2750	
Arrive On Green				0.08	0.00	0.00	0.26	0.83	0.00	0.00	0.54	0.00
Sat Flow, veh/h				3534	0	1572	1781	3647	0	0	5233	1572
Grp Volume(v), veh/h				249	0	0	511	2206	0	0	2383	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1781	1777	0	0	1689	1572
Q Serve(g_s), s				10.1	0.0	0.0	35.5	39.7	0.0	0.0	58.9	0.0
Cycle Q Clear(g_c), s				10.1	0.0	0.0	35.5	39.7	0.0	0.0	58.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				299	0		524	2959	0	0	2750	
V/C Ratio(X)				0.83	0.00		0.97	0.75	0.00	0.00	0.87	
Avail Cap(c_a), veh/h				414	0		524	2959	0	0	2750	
HCM Platoon Ratio				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	0.09	0.09	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				65.3	0.0	0.0	46.9	5.4	0.0	0.0	28.6	0.0
Incr Delay (d2), s/veh				7.2	0.0	0.0	7.0	0.2	0.0	0.0	4.0	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
%ile BackOfQ(50%),veh/ln				4.9	0.0	0.0	18.8	9.3	0.0	0.0	23.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				72.6	0.0	0.0	53.9	5.5	0.0	0.0	32.6	0.0
LnGrp LOS				E	A		D	A	A	A	C	
Approach Vol, veh/h					249	A		2717			2383	A
Approach Delay, s/veh					72.6			14.6			32.6	
Approach LOS					E			B			C	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		126.7			42.0	84.7		18.3				
Change Period (Y+Rc), s		6.0			5.0	6.0		6.0				
Max Green Setting (Gmax), s		116.0			37.0	74.0		17.0				
Max Q Clear Time (g_c+I1), s		41.7			37.5	60.9		12.1				
Green Ext Time (p_c), s		38.0			0.0	11.2		0.2				
Intersection Summary												
HCM 6th Ctrl Delay				25.3								
HCM 6th LOS				C								
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.												

HCM 6th Signalized Intersection Summary

40: Northwest Pkwy & US 36 EB (South Ramps)

01/24/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	550	15	470	0	0	0	0	2033	165	1117	1328	0
Future Volume (veh/h)	550	15	470	0	0	0	0	2033	165	1117	1328	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	1856	1870	1870				0	1870	1870	1856	1870	0
Adj Flow Rate, veh/h	575	0	0				0	2186	0	1255	1459	0
Peak Hour Factor	0.99	0.56	0.86				0.92	0.93	0.74	0.89	0.91	0.92
Percent Heavy Veh, %	3	2	2				0	2	2	3	2	0
Cap, veh/h	487	0					0	1642		969	2769	0
Arrive On Green	0.14	0.00	0.00				0.00	0.46	0.00	0.38	1.00	0.00
Sat Flow, veh/h	3534	0	1585				0	3647	1585	3428	3647	0
Grp Volume(v), veh/h	575	0	0				0	2186	0	1255	1459	0
Grp Sat Flow(s),veh/h/ln	1767	0	1585				0	1777	1585	1714	1777	0
Q Serve(g_s), s	20.0	0.0	0.0				0.0	67.0	0.0	41.0	0.0	0.0
Cycle Q Clear(g_c), s	20.0	0.0	0.0				0.0	67.0	0.0	41.0	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	487	0					0	1642		969	2769	0
V/C Ratio(X)	1.18	0.00					0.00	1.33		1.29	0.53	0.00
Avail Cap(c_a), veh/h	487	0					0	1642		969	2769	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.28	0.28	0.00
Uniform Delay (d), s/veh	62.5	0.0	0.0				0.0	39.0	0.0	45.2	0.0	0.0
Incr Delay (d2), s/veh	100.3	0.0	0.0				0.0	153.4	0.0	134.8	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
%ile BackOfQ(50%),veh/ln	15.8	0.0	0.0				0.0	62.6	0.0	34.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	162.8	0.0	0.0				0.0	192.4	0.0	180.1	0.2	0.0
LnGrp LOS	F	A					A	F		F	A	A
Approach Vol, veh/h	575			A			2186			A		
Approach Delay, s/veh	162.8						192.4			83.4		
Approach LOS	F						F			F		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	46.0	73.0		26.0		119.0						
Change Period (Y+Rc), s	5.0	6.0		6.0		6.0						
Max Green Setting (Gmax), s	41.0	67.0		20.0		113.0						
Max Q Clear Time (g_c+I1), s	43.0	69.0		22.0		2.0						
Green Ext Time (p_c), s	0.0	0.0		0.0		15.9						
Intersection Summary												
HCM 6th Ctrl Delay	135.2											
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.												



H – Percent Contribution



Appendix I: 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 %	Bkgd + Redtail	Redtail % of Bkgd + Redtail	Ex	Bkgd	Redtail	Total	Redtail %	Bkgd + Redtail	Redtail % of Bkgd + Redtail	Ex	Bkgd	Redtail	Total	Redtail %	Bkgd + Redtail	Redtail % of Bkgd + Redtail	Ex	Bkgd	Redtail	Total	Redtail %	Bkgd + Redtail	Redtail % of Bkgd + Redtail
Dillon Road/McCaslin Boulevard	3549	216	32	3797	1%	248	13%	4400	260	33	4693	1%	293	11%	3549	521	154	4224	4%	675	23%	4400	550	162	5112	3%	712	23%
Dillon Road/88th Street	1777	238	33	2048	2%	271	12%	1922	283	34	2239	2%	317	11%	1777	533	160	2470	6%	693	23%	1922	493	167	2582	6%	660	25%
Dillon Road/96th Street	3698	432	87	4217	2%	519	17%	3989	496	90	4575	2%	586	15%	3698	1102	424	5224	8%	1526	28%	3989	1021	444	5454	8%	1465	30%
88th Street/Campus Drive	1809	171	33	2013	2%	204	16%	1203	177	33	1413	2%	210	16%	1809	296	121	2226	5%	417	29%	1203	282	127	1612	8%	409	31%
88 th Street/Rockcress Drive	1069	126	8	1203	1%	134	6%	741	134	8	883	1%	142	6%	1069	206	121	1396	9%	327	37%	741	189	126	1056	12%	315	40%
96 th Street/Campus Drive	2731	209	155	3095	5%	364	43%	2537	233	160	2930	5%	393	41%	2731	604	757	4092	18%	1361	56%	2537	603	790	3930	20%	1393	57%
Northwest Parkway/96th Street/Via Varra	3637	303	82	4022	2%	385	21%	3904	311	85	4300	2%	396	21%	3637	1168	403	5208	8%	1571	26%	3904	1186	421	5511	8%	1607	26%
Northwest Parkway/Rockcress Drive/Via Varra	3341	249	249	3839	6%	498	50%	3510	235	256	4001	6%	491	52%	3341	1054	1217	5612	22%	2271	54%	3510	1000	1273	5783	22%	2273	56%
Northwest Parkway/US 36 North Ramps (WB)	3666	244	236	4146	6%	480	49%	4074	256	242	4572	5%	498	49%	3666	1019	1153	5838	20%	2172	53%	4074	1011	1207	6292	19%	2218	54%
Northwest Parkway/US 36 South Ramps (EB)	3084	191	81	3356	2%	272	30%	3895	215	177	4287	4%	392	45%	3084	851	391	4326	9%	1242	31%	3895	900	883	5678	16%	1783	50%
88th Street/Rock Creek Parkway	1495	130	8	1633	0%	138	6%	1333	137	8	1478	1%	145	6%	1495	230	38	1763	2%	268	14%	1333	222	42	1597	3%	264	16%
S. 88th St. (Btw Dillon Rd and Campus Dr)	894	111	25	1030	2%	136	18%	777	133	25	935	3%	158	16%	894	176	121	1191	10%	297	41%	777	183	126	1086	12%	309	41%
S. 88th St. (Btw Campus Dr and Rockcress Dr)	1069	136	8	1213	1%	144	6%	741	144	8	893	1%	152	5%	1069	221	82	1372	6%	303	27%	741	214	86	1041	8%	300	29%
S. 88th St. (South of Rockcress Dr)	1069	126	8	1203	1%	134	6%	741	134	8	883	1%	142	6%	1069	206	39	1314	3%	245	16%	741	189	40	970	4%	229	17%
Dillon Rd (Btw S. 88th St. and S. 96th St.)	1122	198	9	1329	1%	207	4%	1492	243	10	1745	1%	253	4%	1122	458	45	1625	3%	503	9%	1492	433	47	1972	2%	480	10%
S. 96th St. (North of Dillon Rd)	2055	325	59	2439	2%	384	15%	2087	378	61	2526	2%	439	14%	2055	875	289	3219	9%	1164	25%	2087	768	302	3157	10%	1070	28%
S. 96th St. (Btw Dillon Road and Northwest Pkwy)	2623	212	85	2920	3%	297	29%	2502	228	88	2818	3%	316	28%	2623	607	418	3648	11%	1025	41%	2502	593	436	3531	12%	1029	42%
Northwest Pkwy (Northeast of S. 96th St.)	1777	108	39	1924	2%	147	27%	1899	101	41	2041	2%	142	29%	1777	598	192	2567	7%	790	24%	1899	616	201	2716	7%	817	25%
Northwest Pkwy (Btw S. 96th St. and Rockcress Dr)	2964	176	56	3196	2%	232	24%	3199	171	58	3428	2%	229	25%	2964	766	275	4005	7%	1041	26%	3199	731	287	4217	7%	1018	28%
Northwest Pkwy (Btw Rockcress Dr and US 36)	3231	224	236	3691	6%	460	51%	3446	224	242	3912	6%	466	52%	3231	964	1153	5348	22%	2117	54%	3446	944	1206	5596	22%	2150	56%
Northwest Pkwy (South of US 36)	2478	132	20	2630	1%	152	13%	3163	147	21	3331	1%	168	13%	2478	667	96	3241	3%	763	13%	3163	732	101	3996	3%	833	12%