



**DAVIDSON MESA
CRUSHER FINES TRAIL RESURFACING PROJECT**

**City of Louisville, Parks, Recreation & Open Space Department
717 MAIN STREET, LOUISVILLE, CO 80027
PH: (303) 335-4735
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Project Number: 201524-660279

Project Specifications

**The Davidson Mesa trail head is just north and west of the intersection of
McCaslin Boulevard and Washington Avenue.**

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CRUSHER FINES TRAIL RESURFACING

1. **General Description:**

The project will consist of repairing and resurfacing 3.3 miles of trail which varies in width from 10 feet to 10.5 feet to a consistent 10.5 feet width throughout. An additional 0.3 miles of trail which has gradually widened beyond the original 4 foot width will be repaired, rebuilt and resurfaced to a consistent 8 foot width. **The Davidson Mesa Trail head is located north and west of the intersection of McCaslin Boulevard and Washington Avenue.**

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2. **Project Schedule:**

Work will begin October 27, 2021 and continue through January 31, 2022, unless otherwise extended by the City Parks Project Manager.

3. **Site Conditions:**

All bidders shall familiarize themselves with ordinances and statutes pertaining to public improvements within the City of Louisville. The Contractor shall examine and familiarize themselves with Davidson Mesa Trail segments and contract documents.

4. **Existing Conditions:**

The Contractor shall, at his expense, return the project sites to pre-construction conditions which shall be documented at the pre-construction meetings. This includes, but is not limited to, vegetation, driveways & roadways.

5. **Site Access:**

Site access shall be determined and agreed upon by the City Parks Project Manager and the Contractor.

6. **Pre-Construction Meeting:**

Before starting each segment of the work, a meeting will be held to review the project schedule and to establish a working understanding between the parties as to the project. Present at each conference shall be the City Parks Project Manager, the Contractor and his superintendent.

7. **Inspection:**

The City Parks Project Manager or his representative will conduct site inspections weekly and at other times as needed.

8. **Protection and Public Safety:**

The contractor must take special precautions to protect all work from vandalism and to

protect the public from unsafe situations within work area. Contractor is responsible for adequately posting trail closures and re-routing trail users. Trail should be closed during daytime work hours and reopened each day when work is complete. This may include but is not limited to the use of signage, cones, lath, flagging, tape, barricades and obtaining R.O.W. permits.

9. Inspection and Approval:

The Owner, and his authorized representative, shall at all times have access to the work wherever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection. Such representatives reserve the right to reject, to require the correction of, at any time or place prior to final acceptance, materials or workmanship which in their opinion fail to meet specifications. Any rejected or faulty work shall be repaired or replaced at no cost to the Owner, and rejected materials shall be promptly removed from the site. Any work done prior to approval from the City Parks Project Manager shall be subject to removal and replacement at the cost of the Contractor.

The Contractor shall take whatever steps are deemed necessary and appropriate to protect and maintain adjacent properties. Any and all damages to any adjacent properties shall be corrected and repaired to conditions as first found. All work specified herein shall be performed under the direct supervision of a superintendent thoroughly familiar with the work of this Contract and who shall be at the project sites for the duration of the work of this Contract. Contractor must obtain Owner's written approval prior to changing the superintendent.

10. Crusher Fines:

A. Work Included:

Remove the top four inches of crusher fines material, inspect the bottom two inches of crusher fines material, if proper compaction cannot be attained remove bottom two inches of crusher fines. Provide, place and compact crusher fines material in two inch lifts per project details and specifications to meet depth requirements.

B. Quality Assurance:

1. Gravel Materials: Subject to inspection and acceptance. Provide source location and sample prior to delivery to site.
2. Inspection will be made periodically during installation, and at project completion.

C. Submittals:

1. Submit representative samples of crusher fines material to City Parks Project Manager for approval prior to delivery to the site.

D. Delivery, Storage and Handling:

1. Stockpile delivered material in location determined by the City

Parks Project Manager.

2. Material will be inspected upon delivery to site.
3. Immediately remove unacceptable material from site.

E. Project Conditions:

1. Verify existing conditions, elevations and contours. In the event of discrepancies between existing conditions and the requirements of the Contract Documents, contact the City Parks Project Manager for clarification.

F. Materials:

1. Lafarge, Spec Aggregate Pit, Golden #224110 (or approved equal). Spec Aggregate Pit Phone (303) 278-2821.
2. Approved equal shall meet the following specification:
 - a. 3/8" minus crusher fines, tan color or color to match existing, meet the following specification for size distribution:

85% passes 3/8" screen
65% passes 1/4" screen
50% passes 3/16" screen
35% passes 1/8" screen
25% passes 1/16" screen

G. Inspection:

1. Visit site to determine existing conditions.
2. Crusher fines to be spread to meet trail cross section details attached.
3. Verify grades of path to not exceed 2% cross slope.
4. Ensure positive drainage off of trail.

H. Preparation:

1. Protect from damage any existing utilities in or near the project area.
2. Do not perform work when existing site conditions will not provide satisfactory results.
3. Cut, remove or spray vegetation within the existing trail bed. Haul

debris off-site.

4. Saturate existing trail bed immediately prior to laying new crusher fines to ensure uniform compaction.

I. Installation:

1. Spread thoroughly mixed portions of crusher fines uniformly and in an even stream along trail bed.

2. Determine necessary depth of crusher fines with City Parks Project Manager. Final trail cross section should match cross section identified.

3. Rake crusher fines to uniform specified depth with 2% maximum, 1% minimum cross slope if sheet draining, or with center crown.

4. Immediately roll gravel material with self-propelled, vibratory roller of sufficient weight to compact crusher fines into smooth firm surface. Rolling shall continue until material is firmly locked and keyed together. Saturate uniformly with water. The appearance and surface shall be uniform with all ridges removed. Surface shall not vary more than ½" when measured with a ten foot straight edge applied parallel to the centerline. Correct any variation by loosening, reshaping and re-rolling.

a. In any areas where there are underground pipes, use extreme caution when compacting to protect pipe. Discuss alternative compaction methods with City Parks Project Manager prior to execution for approval if pipe hazard is anticipated.

J. Cleaning:

1. Contractor shall be responsible for daily removal of mud and debris from road and trail surfaces on a daily basis.

A. Remove debris and excess materials from site.

2. Contractor is responsible for providing a clean trail edge and shall remove any crusher fines that are beyond the specified trail width.

K. Protection:

1. The Contractor shall be responsible for making a reasonable effort to protect the work from vandalism. If barricading or signing is necessary, the Contractor shall provide.

2. Contractor shall exercise due caution and take any measures deemed necessary to ensure the safety of the public while

construction is in progress. Trail may be closed during the work day, but must be re-opened on evenings and weekends. The Contractor will be responsible for all signage necessary for trail closures.

11. Work in City R.O.W.'s:

1. Work in the City R.O.W.'s including access to work sites and staging areas requires a permit from the City of Louisville Public Works Department. The Contractor is responsible for all requirements of the permit.
2. Staging or other operations that require lane closures will require a traffic control plan as directed by the City of Louisville Public Works Department. The Contractor is responsible for all necessary signage and barricades.

12. Utilities:

It is the responsibility of the Contractor to locate or call for utility locations prior to digging.

13. Bulk Water Permit:

The Contractor may obtain a bulk water permit from the City of Louisville Public Works Department, Operations Division for access to City water. There will be no charge for use of City water, however, the Contractor will be responsible for required deposits.

END OF SECTION

PROJECT MEETINGS

1.1 PRECONSTRUCTION CONFERENCES

- A. Preconstruction Conference: A meeting will be scheduled by the Owner within 7 days following Notice of Award. The Contractor will submit executed bonds and insurance certificates and will sign the contract prior to this meeting. Administrative requirements such as products lists, schedule of values, payment applications, progress charts, change order procedures and project closeout will be reviewed in detail. Contractor shall bring complete list of project submittals to the meeting for Owner assignment of submittal review.

1.2 PROGRESS MEETINGS

- A. Progress meetings shall be held weekly at a time and place to be designated by the Project Coordinator. These meetings shall be attended by the Project Coordinator and the Contractor's Superintendent. Also invited as appropriate to items under discussion, will be selected subcontractors and suppliers and the Design Consultant. The following items will be discussed:
 - 1. Review of work progress since previous meetings.
 - 2. Field Observations, problems, conflicts.
 - 3. Problems which impede construction schedule.
 - 4. Corrective measures and procedures to regain projected schedule.
 - 5. Revisions to construction schedule.
 - 6. Plan progress, schedule during succeeding work period.
 - 7. Coordination of schedules.
 - 8. Maintenance of quality standards.
 - 9. Review submittal schedules; expedite as required.
 - 10. Review proposed changes for effect on other trades, construction schedule and completion date.
 - 11. Coordination of separate contracts or work.
 - 12. Other business as required.
- B. The persons representing the Contractor at the meetings shall have the authority to commit the Contractor to solutions agreed upon in the meetings. To the maximum extent possible, assign the same person or persons to represent the Contractor at meetings throughout the progress of the work.
- C. Coordination Meetings: The progress meetings shall in no way be considered a substitute for Contractor/Subcontractor coordination meetings.

END OF SECTION

SUBMITTALS

1.1 RELATED REQUIREMENTS

A. List of Subcontractors:

1. Instructions to Bidders and General Conditions

B. Progress Schedule:

1. General and Special Conditions.

C. Schedule of Values:

1. General and Special Conditions.
2. Supplemental schedule of prices - for each bid item unless provided with bid.

D. Performance Bond/Labor and Material Payment Bond:

1. Instructions to Bidders.
2. General and Special Conditions.

E. Insurance Certificates:

1. General and Special Conditions.

F. Applications for Payment:

1. General Conditions.

G. Project Record Documents:

1. Section 01700 Contract Closeout.
2. General and Special Conditions.

- H. Warranties:
 - 1. Section 01700 Contract Closeout.
 - 2. General and Special Conditions.
- I. Final Paperwork:
 - 1. Section 01700 Contract Closeout.
 - 2. General and Special Conditions.

1.2 GENERAL

- A. Submittals shall be made early enough to account for processing described below and a reasonable period for thorough review by the Project Coordinator and applicable Design Consultant's.
- B. Contractor shall furnish, process, deliver, reproduce and perform other necessary functions incidental to scheduling and handling of shop drawings, project data and samples, operation and maintenance manuals, equipment record sheets, manufacturers' certificate of proper installation, and record drawings, as indicated on Drawings or as specified, and in accordance with provisions of the Contract Documents.
- C. See appropriate Specification and Contract Documents sections for specific items for which data and/or samples are required. See General Conditions for additional information.
- D. Review or acceptance of substitutions, schedules, shop drawings, lists of materials, and procedures submitted or requested by the Contractor shall not add to the Contract Price, and all additional costs which may result there from shall be solely the obligation of the Contractor. It shall not be the responsibility of the Owner to provide engineering or other services to protect the Contractor from additional costs accruing from such review or acceptance.
- E. No equipment or material for which listings, drawings, or descriptive material is required shall be installed until the Project Coordinator or Owner has approved copies of such accepted lists and the appropriately stamped final shop drawings.
- F. The review of drawings by the Project Coordinator or Owner will be limited to general design requirements only, and shall in no way relieve the Contractor from responsibility for errors or omissions contained therein.
- G. Submittals will be acted upon by the Project Coordinator or Owner as promptly as possible. Delays caused by the need for re-submittals shall not constitute reason for an extension of Contract Time.

- H. The Project Coordinator or Owner will perform only two (2) reviews on a specific submittal. If additional review by the Project Coordinator or Owner is required, all costs associated with the additional review will be borne by the General Contractor.

1.3 ADDRESS:

Submittals shall assigned by owner and be sent to either:

Allan Gill at the City of Louisville Parks, Recreation and Open Space Department
749 Main Street, Louisville, CO 80027

1.4 PROGRESS SCHEDULE

- A. Prior to commencement of work, the Contractor shall submit to the Project Coordinator, for approval, a schedule showing the time of commencement and proposed progress of the work.
- B. The schedule shall be in the form of a chart and indicate the start and completion of each of the elements on the Schedule of Values. The schedule shall indicate the major dependencies among elements on the schedule. The completion time shall be as specified in the Agreement. The schedule shall be revised when the completion time is revised by Change Order.
- C. Transmittals: Include a transmittal letter with each submittal, identify item specific product type and reference to the applicable Specification Section.
- D. The Contractor shall be required to cooperate fully and coordinate construction activities with all others performing work within the project limits.
- E. The Contractor's schedule for the construction of the various items of work shall reflect an orderly progression of construction which will provide continuous temporary drainage of the right-of-way and adjoining tributary properties during the entire construction period.
- F. Deviations: Any deviations from Contract Documents in submittals shall be clearly and distinctly denoted.

1.5 SHOP DRAWINGS

- A. Shop Drawings submitted for this work will make particular note of field-measured dimensions, as-built conditions, and conditions requiring special coordination with other contractors and the requirements of the activities of the Owner.
- B. Subcontractor: Submit six (6) prints per shop drawings sheet and specified number of Samples to the Contractor.
- C. Contractor:
 - 1. Review all Shop Drawings for accuracy, completeness, and conformity with the Contract Documents. Make note and corrections on prints, and date. Signature of individual who reviewed the Shop Drawings is required.

2. Print as required for Contractor's record.
 3. Send and electronic copy to the Project Coordinator unless noted otherwise within specification section.
 4. Shop Drawings not electronically signed by the Contractor will be returned.
- D. Project Coordinator/Consultant:
1. Check submittals by making notes and corrections on prints, stamp "No Exceptions Taken", "Revise and Resubmit", "Rejected", etc as required. Coordinate with City to ensure submittal complies with City Specifications.
- E. Contractor:
1. Send copies to Subcontractor(s).
- F. Subcontractor:
1. Print necessary copies for record, distribution, etc. also include an electronic copy for project records
- G. Re-submittal: In the event the Shop Drawings have to be resubmitted, the prints shall be returned directly to the Contractor. The Subcontractor shall make his corrections and re-route new electronic files.
- H. References: Shop Drawings shall be referenced to applicable drawings and Specification Sections to facilitate ease and accuracy of checking.

Shop Drawing Schedule: The following Shop Drawings are required for work under this project:

1.6 PRODUCT DATA

- A. Contractor: Contractor shall submit six (6) copies of brochure material and any required Samples.
- B. Routing: Routing will be as indicated above for Shop Drawings with the Owner the Consultant and subcontractor(s) (as applicable).
- C. Reference: Product data shall be referenced to applicable Drawings and Specification Sections to facilitate ease and accuracy of checking.
- D. When contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review. Data not marked up for clarification will be returned to the contractor.

1.7 JOB SITE DOCUMENTS

- A. Only accepted Shop Drawings or Product Data shall be kept at the job site. Keep a complete set of such documents on file at the job site.

1.8 FIELD MEASUREMENTS

- A. Required field measurements are the responsibility of the Contractor.

1.9 SAMPLES

- A. The Contractor will provide the Owner with items listed herein indicating all materials where color, texture or finish is subject to selection by the Owner and/or Consultant. Samples to be representative.
 - 1. Crusher fines.
 - 2. Landscape filter fabric.
- B. Promptly assemble and deliver to the Owner a complete collection of all required samples. Unless otherwise specified, submit one representative Sample which will be retained by the Owner.
- C. Samples shall bear a tag or label providing the following information:
 - 1. Project name and location.
 - 2. Manufacturer, supplier.
 - 3. Name, finish, and composition of material.
 - 4. Location of where material is to be used.
- D. Upon receipt of such a complete collection of Samples, the Owner will, with reasonable promptness, make the selections and note their acceptance on a Progress Meeting Notes or on a separate transmittal.

1.10 CERTIFICATES OF COMPLIANCE

- A. Where Certificates of Compliance are specified, show on each certification the name and location of the work, name and address of Contractor, quantity and date or dates of shipment or delivery to which the certificate applies, and name of the manufacturer. Certification shall be in the form of a letter or company standard forms. In addition, all laboratory test reports submitted with Certificates shall show date of testing, specified requirements for which testing was performed, and results of tests.

- B. All materials used on the basis of a Certificate of Compliance may be sampled and tested at any time. The fact that material is used on the basis of a Certificate of Compliance shall not relieve the Contractor of responsibility for incorporating material in the work which conforms to the requirements of the Contract Documents and any such material not conforming to such requirements will be subject to rejection whether in place or not.
- C. The Project Coordinator reserves the right to refuse permission for use of material on the basis of a Certificate of Compliance.
- D. The form of the Certificate of Compliance and its disposition shall be as directed by the Owner.

1.11 SUBMITTALS - ACCEPTANCE OR REJECTION

- A. Transmittals will be reviewed for overall design intent and returned to Contractor with action to be indicated by the Consultant or Project Coordinator. It shall be the Contractor's responsibility to assure that previously accepted documents are destroyed when they are superseded by a re-submittal as such.
- B. It shall be the Contractor's responsibility to insure that required items are corrected and resubmitted.
- C. If the items or system proposed are acceptable however the major part of the individual drawings or documents are incomplete or require revision, the submittal will be returned with requirements for completion.

END OF SECTION

QUALITY CONTROL

1.1 GENERAL CONDITIONS

A. These Project Contract Documents, shall govern the work of the Contractor. In resolving inconsistencies which may exist among the provisions contained therein, precedence shall be given in the following respective order:

1. Change Orders;
2. Agreement for Construction Contract;
3. The addenda to the Bid;
4. The Special Conditions of the Contract;
5. City of Louisville Construction Contract General Conditions, which includes Information & Instructions to Bidders and the Invitation to Bid
5. Technical Specifications
7. The Project Standard Specifications;
6. The Project Drawings or Plans;
7. Notice to Proceed;
8. Notice of Award;
9. Invitation to Bid;

1.2 TESTING - GENERAL

The Contractor shall provide such equipment and facilities as the Project Coordinator may require for conducting field tests and for collecting and forwarding samples. Materials or equipment represented by samples shall not be used until tests, if required, have been made and the materials or equipment found to be acceptable. Any product which becomes unfit for use after approval thereof shall not be incorporated into the work.

All materials or equipment proposed to be used may be tested at any time during their preparation or use. The required samples shall be furnished without charge and sufficient notice given prior to the placing of orders to permit the testing. Products may be sampled either prior to shipment or after being received at the site of the work.

The following tests shall be made by a testing laboratory, approved by the Project Coordinator and paid for by the City, unless the test fails. Retests are to be paid for by the Contractor.

A. Fill and Backfill Tests

A. Control tests of bedding, backfill and base course shall be made at such times and in such numbers as specified in Division 2 - Site Work.

B. Compaction tests

Where additional or specific information concerning testing methods, sample sizes, etc., is required, such information is included under the applicable sections of the Specifications. Any modification of, or elaboration on, these test procedures which may be included for specific materials under their respective sections in the Specifications shall take precedence over these procedures.

1.3 OTHER TESTING

If required by the Project Coordinator, the following testing shall be performed at the expense of the Contractor installing the material being tested:

- A. Material Substitution
Any tests of basic material or fabrication equipment offered as a substitute for a specified item on which a test may be required in order to prove its compliance with the Specifications.
- B. Test Failure
Any test that fails shall be paid for by the Contractor subject to the following conditions:
 - 1. Quantity and nature of tests will be determined by the Project Coordinator. All tests shall be taken in the presence of the Project Coordinator or his representative.
 - 2. Proof of noncompliance will make the Contractor liable for any corrective action which the Project Coordinator determines is prudent including complete removal and replacement of defective material.

Nothing contained herein is intended to imply that the Contractor does not have the right to have tests performed on any material at any time for his own information and job control so long as the Owner does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

1.4 TEST REPORTS

Reports of all tests made by testing laboratories shall be distributed by the testing laboratory as follows:

- 1 copy - Contractor
- 1 copy - applicable supplier or Subcontractor
- 1 copy - Owner
- Other copies - as directed.

1.5 CONTRACTOR'S QUALITY CONTROL SYSTEM

A. General

The Contractor shall establish a quality control system to perform sufficient inspection and tests of all items of work, including that of Subcontractors, to insure conformance to the Contract Documents for materials, workmanship, construction, finish, functional performance and identification. This control shall be established for all construction except where the Contract Documents provide for specific compliance tests by testing laboratories or engineers employed by the Owner. The Contractor's quality control system shall specifically include all testing required by the various sections of the Specifications.

The Contractor's quality control system is the means by which he assures himself that his construction complies with the requirements of the Contract Documents. Controls shall be adequate to cover all construction operations and shall be keyed to the proposed construction schedule.

B. Records

The Contractor shall maintain correct records on an appropriate form for all inspections and tests performed, instructions received from the Project Coordinator or other City inspectors and actions taken as a result of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.), proposed or directed remedial action, and corrective action taken. The Contractor shall document inspections and tests as required by each section of the Specifications.

C. Unexpected Conditions

The Contractor shall contact the Owner if unexpected conditions are found which will impact proper functioning of the design, or requiring modification to the design.

END OF SECTION

CONTRACT CLOSEOUT

1.1 PROJECT RECORD DOCUMENTS

- A. Job site Documents: Maintain at the job site one record copy of the following:
 - 1. As-Built Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Reviewed Shop Drawings.
 - 5. Change Orders.
 - 6. Other Modifications to Contract
 - 7. Field Test Records.
- B. Do not use record documents for construction purposes. Maintain documents in clean, dry legible condition, apart from documents used for construction.
- C. Record Information: Label each document "Record Document". Mark all information with contrasting color using ink. Keep each record current. Do not permanently conceal any work until required information is recorded.
- D. Record following information on As-Built Drawings:
 - 1. Depth of foundation and fill.
 - 2. Horizontal and vertical location of underground utilities.
 - 3. Location of internal utilities and appurtenances concealed in construction.
 - 4. Field changes of dimension and detail.
 - 5. Changes by change order or field order.
 - 6. Details not on original Contract Drawings.
- E. Record following information on Specifications.
 - 1. Manufacturer, trade name, catalog number and supplier of products.
 - 2. Changes by change order or field order.
 - 3. Other matters not originally specified.
- F. Maintain Shop Drawings as record documents recording changes made after review as specified for Drawings above.
- G. Submittal: At completion of project, deliver record documents to Owner with transmittal letter containing date, project title and number, Contractor's name and address, title and number of each record document, and certification that each document is complete and accurate. Submittal shall be signed by Contractor or his authorized representative.

1.2 CLOSEOUT PROCEDURES

- A. The following project closeout procedure defines the responsibilities of the Contractor, Owner and Design Consultant in closing the project.
 - Step #1 Contractor advises Owner in writing that he has reached "Substantial Completion" and provides a list of items to be completed or corrected. Closeout may be conducted by areas or portions of the work if requested by the Owner.

- Step #2 Owner notifies City Open Space personnel to spend up to 1 week in a Project Work Through, inspecting and operating project work and other areas to identify problems and coordinate solutions. Contractor completing list of items compiled by Parks personnel prior to Step #3.
- Step #3 Contractor and Owner inspect the work to determine if it is substantially complete, and Owner issues a Certificate of Substantial Completion plus a "Punch List" of items to be completed or corrected.
- Step #4 Contractor completes and/or corrects all punch list items and notifies the Owner in writing that his work is ready for final inspection. At this time, a final application for payment is submitted.
- Step #5 Contractor and Owner make final inspection. When the work is found to be acceptable under the Contract Documents, and the contract fully performed, Owner will issue Project Construction Acceptance. Advertisement for project Construction Acceptance will begin with the payment processed after the advertisement period is complete. One year warranty begins.

1.3 RE-INSPECTION FEES

- A. Should the Contractor fail to complete and correct punch list items such that additional inspections are required, the Contractor shall pay the City \$100 per hour per City employee with a one hour minimum. If the Contractor has any questions with regard to any items on the punch list, he shall request clarification before final inspection.

1.4 FINAL PAPERWORK

- A. Prior to release of final payment, the Contractor shall deliver the following items to the Owner:
 - 1. Inspection Certificates, as applicable, including but not limited to Certificate of Occupancy, Mechanical and Electrical Certificates of Inspection
 - 2. Contractor's One Year Guarantee of Materials and Workmanship from date of Construction Acceptance.
 - 3. Maintenance Manuals and Parts Lists, as specified.
 - 4. All Guaranties, Warranties and Submittals, as specified.
 - 5. Receipts for Extra Materials Deliver to the Owner
 - 6. Miscellaneous Keys, Switches, Etc.
 - 7. Final Application for Payment
 - 8. Contractor's Affidavit of Release of Liens
 - 9. Project Record As-Built Drawings and Documents.

The above items are described in following articles or applicable sections of the Specifications.

1.5 INSPECTION CERTIFICATES

- A. Each Subcontractor shall, upon completion of the work, secure in triplicate certificates from any state or local governing bodies having jurisdiction in dictating that the work is in strict accordance with the applicable codes and deliver same to the Contractor for transmittal to the Owner.

1.6 WARRANTIES

- A. Remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting there from, which shall appear in his work within a period of one year (unless otherwise specified) from the date of Notice of Construction Acceptance and in accordance with the terms of any special warranties provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness.
- B. Upon completion of his work, the Contractor shall deliver to the Owner in duplicate, a written warranty based on the provision of this Article properly signed and notarized. Warranty shall be addressed to the Owner.
- C. Extended Warranties: Deliver in duplicate extended warranties as specified and dated from the date of Notice of Construction Acceptance and signed by subcontractors and manufacturers.

1.7 WARRANTY PERIOD RESPONSIBILITIES:

- A. Seeded Areas: The health and vigor of all seeded areas shall be the responsibility of the Contractor throughout the warranty period. Reference the Reclamation Standards for Disturbances on City of Louisville Open Space Lands, Liability and Bond section for more information. Inspections of seeded areas shall be completed by Open Space staff.

END OF SECTION

RECLAMATION STANDARDS FOR DISTURBANCES ON CITY OF LOUISVILLE OPEN SPACE LANDS

OVERVIEW

These standards have been developed by City of Louisville and Boulder County Parks and Open Space (BCPOS) staff to conserve native flora and reduce introduction of noxious weeds to disturbed areas on open space lands. The standards have been specifically developed for native plant species and it is important that they be followed as written to ensure reclamation success. Site revegetation must occur in a timely manner following a disturbance to prevent weed invasions. Any party that disturbs open space land will be held responsible for its successful reclamation.

SEED BED PREPARATION

Seedbed should be well settled, firm, and friable to facilitate seed placement at required depths. The area should be free of weeds, soil clots, sticks, stones, and other debris in excess of 3 inches in any dimension. Topsoil should be scraped and appropriately stockpiled for redistribution after construction. If soils are compacted, compaction should be relieved by subsoiling, ripping or deep chiseling. Harrowing, disking, or other operations may be required to provide an acceptable seed bed. Disturbances shall be a minimum of 6 inches deep with no more than 7 inches between furrows; multiple passes may be required to accomplish this. Topsoil must not be imported without prior approval from the Open Space Division.

FERTILIZER

Fertilizer application may be assessed on a case-by-case basis. Soil tests that analyze macro and micronutrients may be necessary. Fertilizer use must be approved by the City of Louisville Parks & Recreation Director. Fertilizers that may be approved for use include organic fertilizers, such as compost, or slow release fertilizers, such as Biosol or Ringer.

Use of chemical fertilizers, especially nitrogen, is usually not necessary, especially if topsoil is appropriately salvaged and reapplied to disturbed areas. Late successional plant communities native to the Colorado Front Range have evolved to thrive in low fertility soils. Fertilization in some cases can stimulate establishment of early successional weedy species. Fertilizer will be appropriate on severely disturbed sites or reclamation of sites where topsoil is not available.

SEED

Seeding shall occur within 24 hours of seed bed preparation. Seed mixes must be approved by the Open Space staff and, in most cases, the seed mix will be provided by staff. If a certain species or variety of seed is not available, changes must be approved by Open Space staff. Certified seed will be used for named varieties of grasses. If the seed is purchased as a mix, bags must be clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, origin, the percent of weed seed content, the guaranteed percentage of purity and germination, pounds per live seed (PLS) of each seed species, and the total pounds of PLS in the container. All seeds shall be free of noxious weed seeds in accordance with state and local lists. The contractor shall supply a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within six months prior to the date of seeding. Seed which has become wet, moldy, or damaged in transit or in storage will not be accepted.

SEEDING METHODS

Seed must be planted with a drill that is specifically designed to accommodate variability in size and physical characteristics of native rangeland grass seeds. Drill depth should be placed between 1/4 and 1/2 inch below the soil surface, depending on grass species. Drill spacing should be no wider than 7 inches between rows. Packer wheels that firm the drill row are required. **Seed drills must be clean of seed from previous seeding jobs before any seeding is done.**

For slopes that are greater than 3:1, seeding may be broadcast by hand or mechanical spreader and incorporated into the upper soil layer (no deeper than 1/2 inch). Broadcasting may also be used on small areas or areas inaccessible for seed drilling. After broadcasting, seed may be incorporated by hand raking or harrowing. **Seed must not be incorporated and applied simultaneously with the hydromulch slurry.**

SEEDING RATES

Seeding rates and species composition will be created by the vegetation specialist on a case-by-case basis. Broadcast seeding rates must be double the drilled seeding rate.

SEEDING DATES

Spring seeding period: Spring thaw to June 1st. Fall seeding period: September 1st to consistent ground freeze. Seeding shall not be permitted if the top 1/2 inch of soil is frozen or saturated.

MULCH

Depending upon erosion potential, there are different erosion control products that vary in their degree of protection. The following types of mulch are described in order of increasing protection.

1. Cover Crop – For large acreages, such as highly erodible crop land, a sterile forage sorghum cover crop may be required. In some situations where the sorghum exceeds 18 inches in height, it may need to be mowed before the area can be drilled with seed. Sterile spring wheat, sterile winter wheat, and sterile oats are also acceptable cover crops.
2. Hay or Straw mulch – Blown onto the site after seed has been drilled, and then crimped into soil. The standard for the Open Space Division will be to use native hay/straw, certified by the Colorado Department of Agriculture as "Weed-Free Mulch" at a rate of two tons per acre.
3. Hydromulch – After seed has been drilled or broadcast, a slurry of fiber with an organic tackifying agent is sprayed onto site. The industry standard rate of 3000 lbs per acre of hydromulch and 80 lbs per acre of guar gum tackifier will be appropriate for most projects. Hydromulching shall occur within 24 hours of seeding. The operator shall apply the slurry of hydromulch according to manufacturer specifications.
4. Erosion Control Blankets – A variety of blankets are available for varying degrees of erosion potential, from moderate to severe. Blankets may consist of shredded aspen or coconut fibers with one or two sides backed with paper, or organic fiber. Only blankets with biodegradable netting are allowed; photodegradable polypropylene netting is not acceptable. Blankets must be placed according to manufacturer specifications.
5. Soilguard – "Spray-On Blanket" product by Weyerhaeuser; shredded alder wood and natural resins applied with a hydromulcher. Excellent product when properly applied; adheres to soil, reducing erosion and allows young plants to emerge.

6. Jute netting – For use on sites where overland water flow is likely; usually comprised of woven coconut fibers (without nylon netting) and available in various weights and grades. Effective on steeper slopes when installed properly.

MAINTENANCE AND WEED MANAGEMENT ON RECLAIMED AREAS

Reclaimed areas should be visited periodically for maintenance and weed management after reclamation. During this time, additional reseeding may be necessary, soil erosion should be repaired, and weeds should be controlled. Reclaimed areas may be mowed one or two times each growing season, depending upon existing weed species and appropriate phenological stage of growth to prevent weed seed production. Herbicide applications may be appropriate depending on the growth stage and establishment of native grasses. The Open Space Division or County Weed Manager can provide technical assistance as needed for weed management.

All equipment used must be cleaned of seed from previous work before entering the open space where the reclaimed area is located.

TIME FRAME OF RECLAMATION PROCESS

Reclamation with native species requires three to five years to determine stand establishment. It should be expected that early successional species (such as summer and winter annuals) will occupy the area before the desired native perennial stand dominates. Each year, the site will be reviewed by Open Space staff, after which parties will be advised regarding expected management practices to insure reclamation success. If, within the stand establishment period, the reclamation process is deemed successful by the Open Space staff, the obligation incurred by the responsible party will be released. Performing yearly reviews for the project will maintain communication between the two parties and will foster a general understanding for reclamation success.

LIABILITY BONDING

To guarantee revegetation, the responsible party will be required to provide a bond, letter of credit, or other financial assurance. The assurance monies will be equal to the costs of revegetation, and will be returned to the responsible party when it is determined by the Open Space Division that revegetation of the disturbed site(s) has been successful.

If, within three years from the initiation of reclamation, a successful stand of native grasses has not been established, the Division may, at its option, retain any or all of the assurance monies necessary in order to attempt revegetation of the site or extend the bonding period up to two more years.

RECLAMATION STANDARDS

While the Open Space Division will not place unreasonable demands on the expected outcome of the reclamation, the Division expects the reclaimed disturbed areas to be ecologically comparable to the surrounding, undisturbed land. This would be defined by the percentage of desired grass species compared to weedy annual broadleaf species (which usually requires no less than three years). A successful stand of native grasses is defined as being at a 75% establishment rate and/or having a desirable vegetation cover equal to or greater than the surrounding plant cover.

CONTACTS

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END OF SECTION

CITY OF LOUISVILLE SHORT NATIVE SEED MIX

3.3 pls# Blue Grama Grass - *Bouteloua gracilis*

3.3 pls# Buffalo Grass, Cody – *Buchloe dactyloides*, 'Cody'

2.0 pls# Sideoats Grama, Vaugh – *Bouteloua curtipendula*, 'Vaugh'

1.0 pls# Sandberg Bluegrass, Canbar – *Poa secunda*, 'Canbar'

0.7 pls# Prairie Junegrass - *Koeleria macrantha*

- Drill seed at a depth of $\frac{1}{4}$ - $\frac{1}{2}$ ", hand broadcast at double the seeding rate.
- Provide seed tags or photos of seed tags to the City of Louisville Open Space Division.
- Contact the Open Space Division when seeding has been scheduled to allow for inspection while seeding is in progress.