

Addendum #1



Capital Project Committee

Project Information

Project Name:	Island Grove Poudre River Trailhead
Bid Number:	FD21-01-001
Date:	January 27, 2021
Project Manager:	Dave Wells / Justin Scharton

Addendum Items

Due to the corona-virus, the City is requiring the following for submitting bids and the opening of bids:
see attached instructions for submittal of bid responses

See below for Bid Opening Instructions - Thursday, February 4, 2020 at 2:00pm

Join Zoom Meeting

<https://greeleygov.zoom.us/j/82194821589>

Meeting ID: 821 9482 1589

Passcode: 585684

Dial by your location

+1 346 248 7799 US (Houston)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

Clarification - on Landscape Plan, sheet 1 of 3 - delete "D Street" label.

Clarification - Concrete quantities are as per Section 00130 - Bid Schedule

Item 1 The following is added to Section 00620, Project Special Provisions: Porta-Let Enclosure

The Contractor shall provide footing design by a Professional Engineer based on local code and wind loading. The metal roof shall be 24 gage steel per Standard HR-36. Submit shop drawings for custom steel screens. Enclosure color shall be selected by Owner.

Item 2 Please provide a specification for the Rock Mulch

Rock mulch shall be 2"-4" grey river cobble. Refer to City of Greeley Standard Landscaping Specifications 02900.

Item 3	<p>Should the bid schedule be rectified to reflect the removal of wood mulch?</p> <p>No, install wood mulch around shrubs per Planting Details and City of Greeley Standard Landscape Specifications 02900 (attached)</p> <p>Wood mulch shall be Western Red Cedar.</p>
Item 4	<p>Please provide a specification for the Native seed mix</p> <p>Native seed shall conform to Low Grow Mix per City of Greeley Standard Landscaping Specifications 02920 and additional Natural Areas specifications (attached).</p>
Item 5	<p>Is there a soil amendment for the Native seed areas, should there be?</p> <p>Yes, 2 CY Compost is required per 1000 SF. Refer to City of Greeley Standard Landscaping Specifications 02920</p>
Item 6	<p>Please provide a detail for the Trash/ Recycling receptacle</p> <p>The Trash trash/ recycling receptacle - DuMor Receptacle 157-32, surface mount, color Textured Rust</p>
Item 7	<p>There are two details for the cedar rail fence, one on sheet 2 of 3, and the attached sheet labeled detail no. F-1. Which is correct?</p> <p>The one that was attached. Refer to Special Provisions page two, Clarifications and Revisions to Plans.</p>
Item 8	<p>The bid form calls for 8 site closure gates and I only see 4 gate locations. Is the 8 for 8 gate leaves or am I missing 4 gates?</p> <p>There are two gates at each location.</p>
Item 9	<p>The color and stamp pattern for this project?</p> <p>Refer to Special Provisions; Colored Concrete: Integral color is San Diego Buff, Release Agent color is Walnut Brown, Stamp is Small Canyon Stone.</p>
Item 10	<p>The seat and boulder will be provided for Bid Item #26 - Boulder Table/Seat, Install Only.</p>
Item 11	<p>It's assumed that a Grading and Erosion Control Permit will be required. Is that correct?</p> <p>A Land Grading permit is required from City of Greeley Public Works Department. A Stormwater Discharge Permit is required from Colorado Department of Health. Refer to Section 00620, Project Special Provisions, page 3, Permits.</p>

Item 12 Can you provide the As-Built for the irrigation system currently in place?

As-Built drawings for the existing irrigation system are not available. We do have paper construction drawings. There was a drip system for the trees and other shrubs along the existing chain link fence. This has been abandoned. The control valve (A18) for it is in place and assumed operable. It is located approximately midway between the parking lot entrance and the bridge at the Poudre River. It is on the west side of the sidewalk. The new drip system may connect downstream of this control valve.

Item 13 Removable Bollards shall be U-line Standard Safety Bollard, 4 1/2" x 42". Install per manufacturer's recommendations at location approved at site by City.

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SECTION 02900 - LANDSCAPING

PART 1 - GENERAL

1.1 SCOPE

- A. Furnish all labor, materials, supplies, equipment, tools, and transportation, and perform all operations in connection with and reasonably incidental to the complete installation of the plant material, and warranty as shown on the drawings, the installation details, and as specified herein. Items of work specifically included:
 - 1. Procurement of all applicable licenses and permits.
 - 2. Coordination of Utility Locates ("Utility Notification Center").
 - 3. Procurement and installation of Plant Material.
 - 4. Maintenance period.
 - 5. Warranty.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3 SUMMARY

- A. This section includes the following:
 - 1. Planting of B&B and container trees and shrubs.
 - 2. Plant quality.
 - 3. Planting seasons.
 - 4. Topsoil and soil amendments.
 - 5. Mulches.
 - 6. Stakes and guys.
 - 7. Inspection and warranties.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract, and Division 1 Specification Sections. Direct submittals to the Project Manager and receive approval in writing before work commences.
- B. Product certificates signed by manufacturers certifying that their products comply with specified requirements.
 - 1. Label data substantiating that plants, trees, shrubs, and planting materials comply with specified requirements.

- C. Samples of each of the following:
 - 1. 5 lbs. of organic mulch for material and composition required for project, in labeled plastic bags.
 - 2. 2 lbs. of organic compost required for project, in labeled and sealed plastic bags.
 - 3. 2 lbs. of topsoil required for project, in labeled and sealed plastic bags.
- D. Soil analysis from approved testing facility for all soil and compost products.
- E. Maintenance instructions: Recommended procedures to be established by Owner for maintenance of landscaping for one full year. Submit prior to completion of planting for review by Project Manager.
- F. Certification of Testing: The Contractor shall furnish to the City a signed statement certifying that the topsoil/compost product furnished is from the lot that has been tested.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this project and with a record of successful landscape establishment.
 - 1. Installer's Field Supervision: Installer shall provide a staff member with a minimum of 3 years of field experience as the supervisor on the project site full-time when landscaping is in progress.
- B. Quality:
 - 1. Provide quality, size, genus, species, and variety of trees and shrubs indicated, complying with applicable requirements of ANSI Z60.1 "American Standard for Nursery Stock", and conform to the requirements of the Colorado Nursery Act.
 - 2. All plants will have well-formed buds with size normal for the species. Growth increments of shoots for the previous year shall be of a length that is consistent with normal growth for that season.
 - 3. All plants shall be free of harmful insects, mites, diseases and mechanical injuries to trunks and major scaffold branches.
 - 4. The plants supplied under these specifications shall consist of plants coming from propagating houses, beds, frames or nurseries. "Collected stock" will not be accepted unless specified or as approved substitute. All plants shall conform to the most current Colorado Standards for Nursery Stock, Colorado Department of Agriculture.

C. Size:

1. All plants shall be of size(s) specified.
2. Measure trees and shrubs according to ANSI Z60.1 "American Standard for Nursery Stock", with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

D. Source Quality Control: Ship landscape materials with certificates of inspection as required by governing authorities. Comply with governing regulations applicable to landscape materials.

E. Growing Area:

1. Provide trees and shrubs grown in one of the following areas:
 - a. Colorado Grown: Trees and shrubs grown in Colorado nursery fields for major portion of plant life.
 - b. Out of State Container Grown: Plants from hardiness zones other than 1 through 5 which have been acclimatized to site conditions at time of planting.
 - c. Northern Grown: Trees and shrubs grown in nurseries for at least one year in USDA Hardiness Zones 1-5.

F. Planting Season: Unless otherwise agreed by Project Manager, balled and burlapped and machine-dug trees shall be planted in one of two planting seasons within a calendar year, namely, when plants are dormant in early spring and early fall no later than the end of October. Either of these seasons shall comprise that period of time in spring or fall that favors the recovery of plants from transplanting and encourages that resumption of healthy growth at the planting site.

G. Inspection: The Project Manager reserves the right to inspect trees and shrubs either at place of growth or at site before planting, for compliance with requirements for name, variety, size and quality. All plant material must be acceptable to Project Manager.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

- B. Trees and Shrubs: Deliver freshly dug or delivered trees and shrubs. Do not prune before delivery, except as approved by Project Manager. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy natural shape. Provide protective covering (shade cloth) during delivery. Apply anti-desiccants (Wilt Proof or equal) to all plant material prior to leaving the nursery. Do not drop trees and shrubs during delivery.
- C. Handle balled and burlapped stock by the root ball.
- D. Deliver trees, shrubs, ground covers, and plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, provide shade, and protect from weather and mechanical damage, and keep roots moist.
 - 1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - 2. Do not remove container grown stock from containers before time of planting.
 - 3. Water root systems of trees and shrubs stored on site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.7 PROJECT CONDITIONS

- A. Utilities: Determine location of above grade and underground utilities and perform work in a manner which will avoid damage. Hand excavate, as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned.
- B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Project Manager before planting.
- C. Open Holes or Pits: No hole or pit shall remain open without safety devices to protect the Owner from liability for personal accidental injury.
- D. Preservation of Properties: The Contractor shall be responsible for the preservation of all public or private property including: existing trees, shrubs, turf, fences and other landscape features. If any direct or indirect damage or injury is done to public or private properties by or on account of any act, omission, neglect or misconduct in the execution of the work, on the part of the Contractor, such property shall be restored by the Contractor, at his expense. Restoration shall be to a condition similar or equal to that existing before such damage or injury in such

other manner as may be acceptable to the Project Manager.

1.8 COORDINATION AND SCHEDULING

- A. The landscape construction schedule is to be provided at the Pre-Construction meeting depicting the dates the various stages of the project will start and when they will be completed.
- B. Coordinate installation of planting materials during normal planting seasons for each type of plant material required, only when weather and soil conditions permit and are in accordance with locally accepted practices, and approved by the Project Manager.
- C. If planting of trees and shrubs occurs after turf installation, protect lawn areas and promptly repair damage to lawns resulting from planting operations. Insure irrigation system is operating to provide adequate water.
- D. Trees shall be planted in the same growing season in which they were dug. Fall dug trees will be allowed.
- E. If plant material is to be stored on site for more than 8 consecutive hours, submit a detailed staging and care plan.

1.9 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Warrant the following living planting materials for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions, unusual for warranty period, or incidents such as damage due to vandalism, hail, fire, owner neglect, or other circumstances that are beyond Contractor's control.
 - 1. Trees
 - 2. Shrubs
 - 3. Perennials and Ground Covers
- C. Remove plants within seven (7) days of notification, replace dead planting materials within 10 days of notification from owner's representative unless

required to plant in the succeeding planting season.

- D. Replace planting materials that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
- E. All plant material is to be warranted throughout the warranty period and shall be replaced with plants of the same size and variety.

1.10 TREE AND SHRUB MAINTENANCE

- A. Maintain trees and shrubs by cultivating, watering, weeding, fertilizing, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree protection devices. Maintain trees and shrubs for the following period:
 - 1. Maintenance Period: Contractor responsible for plant and landscape maintenance up until project is turned over to owner upon acknowledgment of final acceptance.

PART 2 - MATERIALS

2.1 TREE AND SHRUB MATERIAL

- A. General: Furnish nursery-grown trees and shrubs conforming to ANSI Z60.1, and conform to the requirements of the Colorado Nursery Act, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully-branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
- B. Grade: Provide trees and shrubs of sizes and grades conforming to ANSI Z60.1, for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Project Manager, with a proportionate increase in size of roots or balls.
 - 1. Containers: All plants specified in containers shall be container grown as defined by the Colorado Nursery Act. Container grown stock will have a healthy vigorous root system, not overgrown, not rootbound, and no encircling roots. Containerized stock that has been transplanted up to the next container size will be well established in its new container.
 - 2. Balled and Burlapped: All plants specified as balled and burlapped (B&B), shall conform to or exceed the minimum sizes specified in the Colorado Nursery Act. No balled and burlapped plant shall be accepted if the ball is broken or the trunk loose in the ball or viable

roots exposed. Root balls will be solid (not soft, spongy or excessively sandy) and free from large cracks or other damage to the ball.

- a. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- b. Plants that do not appear to conform to the Colorado Standards for Nursery Stock may be subject to official inspection by a representative of the Colorado Department of Agriculture. If any plant or plants are condemned by the Colorado Department of Agriculture, replacement with plants that conform to the Colorado Standards for Nursery Stock will be at the expense of the Contractor.

2.2 SHADE AND FLOWERING TREES

- A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, conforming to ANSI Z60.1, for type of trees required.
 1. Branching Height: $\frac{1}{2}$ of tree height.
- B. Small Flowering Trees: Small upright or spreading type, branched or pruned naturally according to species and type, and with relationship of caliper, height, and branching recommended by ANSI Z60.1, and stem form as indicated on plan planting schedule.
- C. Provide balled and burlapped shade and flowering trees.

2.3 DECIDUOUS SHRUBS

- A. Form and Size: Deciduous shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1, for type, shape, and height of shrub.
- B. Provide container-grown deciduous shrubs as indicated. Container-grown stock to meet ANSI Z60.1, limitations.

2.4 CONIFEROUS EVERGREEN TREES AND SHRUBS

- A. Form and Size: Specimen-quality, exceptionally heavy, tightly knit, symmetrically shaped coniferous evergreens of the following grade:
 1. Heavy Grade: "XX"
- B. Provide balled and burlapped coniferous evergreen trees conforming to ANSI Z60.1, no options for container grown plant materials allowed.

- C. Provide container-grown coniferous evergreen shrubs subject to meeting ANSI Z60.1, limitations for container stock.

2.5 TOPSOIL

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 8, four percent (4%) organic material minimum, free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.
 - 1. Topsoil Source: Amend existing on-site soil excavated from tree pits to produce topsoil.

2.6 SOIL AMENDMENTS

- A. Compost: One hundred percent (100%) humus rich organic matter. The compost shall be a well decomposed, stable, weed free organic matter source derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings, or source-separated or mixed solid waste. Product must be certified as fully composted at permitted solid waste processing facility. Product to be registered with the Colorado Department of Agriculture and approved for use on Colorado Certified Organic Farms by the Division of Plant Industry of the State of Colorado. Product shall contain no solid particle of greater than one-half inch ($\frac{1}{2}$ ") in length or diameter and be free from un-composted or non-stabilized wood bulking agents. Product shall contain no substances toxic to plants and shall be reasonably free (<1% by dry weight) of man-made foreign matter. The compost will possess no objectionable odors and shall not resemble the raw material from which it was derived.
- B. Provide analysis for the following:
 - 1. Organic Matter Content: 30 - 70% (Dry Basis)
 - 2. Soluble Salt Concentration: 5 dS (mmhols/cm) or less (As Received)
 - 3. PH range: 5.5 to 8.0 (As Received)
 - 4. Final carbon to nitrogen ratio: 20:1 or less.
 - 5. Nutrient Content (dry weight basis): N 1% or above, P 1% or above, K 0.5% or above.
 - 6. Moisture Content: 35% - 55%
- C. Certification of Compost Testing: The Contractor shall furnish to the City a signed statement certifying that the compost furnished is from the lot that has been tested.

2.7 HERBICIDES

- A. Herbicides: Coordinate EPA registered and approved, of type utilized by

City of Greeley Parks Department maintenance program.

- B. Applicators must possess an applicators license issued by the Colorado Department of Agriculture.

2.8 WATER

- A. Water Source: Potable water from existing quick coupling valves at various locations on the site.

2.9 MULCHES

- A. Organic Mulch: Organic mulch, free from deleterious materials, noxious weed seed and all foreign matter harmful to plant life, suitable as a top dressing of trees and shrubs.
 1. Medium Bark Nuggets: Submit sample for approval.
 2. Western Red Cedar Mulch: Submit sample for approval.

2.10 STAKES AND GUYS

- A. Upright and Guy Stakes: Steel "T" posts, six feet (6') in length. Two stakes per tree required.
- B. Guy and Tie Wire: ASTM A 641 (ASTM A 641M), Class I, galvanized-steel wire, 2-strand, twisted, 0.080 inch in diameter.
- C. Chafing Straps: Two inch (2") wide nylon straps with grommets at each end, cut to lengths required to protect tree trunks from damage.
- D. Use safety caps on all T-Posts.
- E. Standard surveyor's plastic flagging tape, white, 6 inches long.

2.11 MISCELLANEOUS MATERIALS

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's instructions.
- B. Tree Wrap: Nurseryman's standard crepe tree wrap tape not less than 4" wide, consisting of two layers of crinkled paper cemented together with bituminous material and with a stretch factor of 33%.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive landscaping for compliance with requirements and for conditions affecting performance of work of this Section. Do not

proceed with installation until unsatisfactory conditions have been corrected.

- B. Prior to any excavation, all underground utilities shall be identified by the proper authority.

3.2 PREPARATION

- A. General: Requirements for approval of placement of plant materials prior to installation to be set forth during a pre-construction conference in accordance with Division I Specifications Section.
- B. Lay out individual tree and shrub locations and areas for multiple plantings in accordance with the plan. Stake locations, outline areas, and secure Project Manager's acceptance before the start of planting work. Make minor adjustments as may be required.

3.3 PLANTING SOIL PREPARATION

- A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
- C. Mix 33% organic compost with 67% on-site topsoil as required at rates indicated. If additional backfill material is needed, it shall be of the same soil type as found on the planting site.
- D. For tree pit or trench backfill, mix planting soil before backfilling and stockpile at site.
- E. Any and all excess material and or debris shall be removed from site and properly disposed of.

3.4 EXCAVATION FOR TREES AND SHRUBS

- A. Pits and Trenches: Tree planting pits may be excavated by hand or by mechanical means. Pits dug mechanically will have the resulting walls scarified to eliminate glazing. Excavate with vertical sides and with bottom of excavation slightly raised at center to assist drainage. Loosen hard subsoil in bottom of excavation.
- B. Balled and Burlapped Trees: Excavate pit a minimum of two times as wide as ball diameter, with ball depth (per drawings) so that top of the uppermost root flare is 1.5" above finish grade. The root ball shall be placed on firm, undisturbed soil in the planting pit to prevent settling.

- C. Container grown Trees and Shrubs: Excavate pit a minimum of two times container width, and depth per drawings.
- D. Obstructions: Notify Project Manager if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- E. Drainage: Notify Project Manager if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- F. Fill excavations with water and allow to percolate out, before placing and positioning trees and shrubs.

3.5 PLANTING TREES AND SHRUBS

- A. Inspect tree trunks for injury, improper pruning, and insect infestation and take corrective measures required before installation.
- B. Set balled and burlapped stock plumb, and in center of pit or trench with top of uppermost root flare raised above adjacent finish grades as indicated.
 - 1. Place stock on undisturbed soil at bottom of planting pit.
 - 2. Wire baskets will be removed completely prior to completion of backfilling. All twine or plastic will be removed and the burlap will be removed from trunk and from the top 1/3 of the root ball. Do not use planting stock if ball is cracked or broken before or during planting operation.
- C. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When pit is approximately ½ backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing and tamping final layer of backfill.
- D. Additional watering is required every two weeks, or as directed by the Project Manager, until final acceptance.
- E. Set container-grown stock plumb, and in center of pit or trench with top of ball raised above adjacent finish grades as indicated.
 - 1. All containers will be removed and root balls scarified. Carefully remove containers so as not to damage root balls.
 - 2. Place stock on undisturbed soil at bottom of planting pit.
 - 3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When pit is approximately ½ backfilled, water thoroughly before placing remainder of backfill.

Repeat watering until no more is absorbed. Water again after placing and tamping final layer of backfill.

- F. Set uppermost root flare 1.5" above adjacent finish grades, unless otherwise indicated.
- G. Do not cover top of root ball with backfill. A water retaining berm, sufficient to hold 10-15 gallons of water at one time, will be built and compacted just outside the edge of the planting pit.
- H. After backfilling and watering to settle all voids, all trees should be watered with a minimum of seven (7) gallons, and all shrubs with a minimum of two (2) gallons of root stimulant, 'Upstart' or equal, mixed at the manufactures recommended rate.
- I. Protect all trees with tree wrap as specified between Halloween and Easter.

3.6 TREE GUYING AND STAKING

- A. Upright Staking and Tying: Use a minimum of two stakes of length required to penetrate at least 24 inches below finish grade and to extend at least 48 inches above grade. One stake will be placed on the northwest side of the tree and the other 180 degrees opposite on the southeast side. Safety caps will be installed on all posts. Set vertical stakes in undisturbed soil to avoid penetrating balls or root masses. Support trees with two strands of tie wire attached to nylon tree straps at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Flag guy wire with standard surveyor's plastic flagging tape.

3.7 MULCHING

- A. Mulch all trees inside of bermed tree wells and around all shrubs as indicated.
- B. Organic Mulch: Apply the following average thickness of organic mulch and finish level with adjacent finish grades. Do not place mulch against trunks or stems.
- C. Thickness: Four inches (4").

3.8 INSTALLATION OF MISCELLANEOUS MATERIALS

- A. Apply antidesiccant using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage.

1. When deciduous trees or shrubs are moved in full-leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

3.9 CLEANUP AND PROTECTION

- A. During landscaping, store materials and equipment where directed.
- B. The City prohibits the tracking, dropping, or depositing of soils or any other materials onto City streets by or from a vehicle or machinery. Any inadvertent deposited material shall be removed by the end of business day.
- C. Protect landscaping from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed.
- D. At the end of construction, all holes, ruts, settlements, and depressions resulting from the work will be filled and graded to match elevations of adjacent surfaces, and all areas disturbed by construction shall be restored to their original condition to the maximum extent practicable and as acceptable to the Project Manager.

3.10 INSPECTION AND ACCEPTANCE

- A. When the landscape work is complete, the Project Manager will, upon request, make an inspection to determine acceptability.
 1. The landscape work may be inspected for acceptance in parts as agreeable to the Project Manager, provided the work offered for inspection is complete, and that the area comprises one complete unit or area of substantial size.
- B. Where inspected landscape work does not comply with the requirements, replace rejected work and continue specified maintenance until reinspected by the Project Manager and found to be acceptable. Replace all such plantings at one time and within 10 working days of notifications whether for acceptance or warranty inspections. Remove rejected plants and materials promptly from the project site.

3.11 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Upon completion of work, clean adjacent streets and site paving of dirt and debris accumulation.
- B. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of it off the

Owner's property.

END OF SECTION 02900

LANDSCAPING SPECIFICATIONS

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DIVISION 2-SITE WORK

SECTION 02920 - SOIL PREP AND SEEDING

PART 1 - GENERAL

1.01 SUMMARY:

- I. Section Includes:
 - A. Fine grading and preparing areas to be seeded.
 - B. Furnishing and applying soil amendments.
 - C. Furnishing and applying fertilizer, herbicides.
 - D. Furnishing and seeding new areas.

1.02 SUBMITTALS:

- I. Quality Control Submittals:
 - A. Certificates: State, Federal and other inspection certificates shall be submitted to the City prior to acceptance of material.
 - B. Seed: Certification of grass seed from seed vendor including the composition of each grass-seed mixture, stating the botanical and common name, percentage by weight of each species and variety, percentage of purity, germination, and weed seed. Include the year of production and date of packaging. Seed packaging and identification tags are to be submitted to the owner at completion of seeding.
 - C. Imported Soil Amendment Test Report: Submit test analysis to City for acceptance prior to delivery of material.
 - D. Fertilizer: State, Federal and other certificates shall accompany invoices for materials showing sources of origin. Submit to City prior to acceptance of material.

1.03 DELIVERY, STORAGE AND HANDLING:

- I. General: Handle and transport in a safe manner in compliance with local state, and federal regulations. Comply with MSDS requirements.
- II. Fertilizer: Deliver inorganic or chemical fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to state law, bearing name and warranty of producer.
- III. Soil Amendments: Do not stockpile. Distribute and till immediately upon arrival at site (same day).

- IV. Seed: Deliver seed in original sealed, labeled, and undamaged containers. All material shall be furnished in original manufactures shipping bags or containers, and remain in these bags or containers until used. All materials shall be stored in a manner which will prevent them from coming into contact with precipitation, surface water, or other contaminating substances. All materials which have become wet, moldy or otherwise damaged in transit, or stored improperly shall not be used.

1.04 PROJECT/SITE CONDITIONS:

- I. General: Do not perform work when climate and existing site conditions will not provide satisfactory results.
- II. Site Information: The Contractor shall be held to have examined the site, to ascertain the state thereof and the conditions under which the work is to be done. Note: Drawings typically indicate the physical dimensions of the site, but do not show the extent of all obstructions and subsurface conditions.
- III. Existing Utilities: Protect from damage any sewer, water, gas, electric, phone, cable TV, irrigation or other pipe lines or conduits uncovered during the work until the matter has been reviewed by the City. If such lines are found to be abandoned and not in use, remove without extra cost. If such lines are found to be in use, carefully protect and carry on work around them. If City deems it advisable to move such lines, City will pay cost of moving.
- IV. Existing Site Features: Protect from damage as noted herein or on drawings.
- V. Vehicular Access:
 - A. Vehicular accessibility on site shall be kept to a minimum. Repair damage to prepared ground and surfaces caused by vehicular movement during work under this Section to original condition at no additional cost to City. Repair, to original condition, vehicular damage to the surrounding area at no additional cost to the City.
 - B. Only those vehicles identified with Company Name/Logo are allowed in the parks.
- VI. Environmental Requirements:
 - A. Install seed between spring and fall; March 15 - September 30.
 - B. Do not install seed on saturated or frozen soil.
 - C. Do not install seed until soil preparations have been approved by the City.
 - D. Do not install seed until irrigation system is installed and tested.
 - E. Proceed with planting only when existing and forecast weather conditions are suitable for work.

PART 2 - MATERIALS

2.01 TOP SOIL AND SOIL AMENDMENTS: (Note that all percentages are by weight and not by volume.)

- I. Topsoil: ASTM D 5268, PH range of 6.3 to 8.2, three percent (3%) organic material minimum, free of extraneous materials harmful to plant growth.
 - A. Topsoil Source:
 1. The source of topsoil for this project is undesignated. Topsoil shall be fertile, friable, sandy loam or loam. Topsoil shall be of any admixture of subsoil or slag and shall be free of stones, lumps, refuse, plants or their roots, sticks, noxious weeds, salts, soil sterilant or other material detrimental to plant growth. Imported topsoil shall be obtained from a well-drained site that is free of flooding. Topsoil shall not be delivered or used onsite in any manner while in a frozen or muddy condition.
 2. All imported topsoil shall be from an approved point of origin satisfactory to the Project Manager prior to delivery or placement in planting areas. Should noxious weeds be present at the topsoil source, the Project Manager will make recommendations to the Contractor as to appropriate treatment of the topsoil prior to delivery to the project site. The Contractor shall supply a sample of topsoil to the Colorado State University Soil Testing Laboratory for analysis a minimum of thirty (30) days prior to delivery of topsoil to the project site. The Contractor shall also contact the Project Manager to inspect and approve all planting areas prior to delivery or placement of topsoil. The Contractor shall submit to the Project Manager a Certificate of Compliance from the CSU Testing Laboratory verifying organic matter content, pH, sodium absorption ratio, electrical conductivity (paste test) and nutrient levels.
 - B. Provide analysis for the following:
 1. Mechanical Analysis:
 - a. 1" Screen Passing = 100% Retained = 0%
 - b. ½" Screen Passing = 97 - 100% Retained = 3 - 0%
 - c. No. 100 Mesh Sieve Passing = 40 - 60% Retained = 60 - 40%
 2. Laboratory Analysis:
 - a. Organic Matter Content: 3 - 8% (dry basis)
 - b. Soluble Salts Concentration (EC paste test): 1.8 dS (mmhols/cm) or less (as received)
 - c. PH range: 6.3 to 8.0 (as received)
 - d. Nutrient Content (dry weight basis): N 1% or above, P 1% or above, K 0.5% or above.
 - e. Sodium Absorption Ratio (SAR): 8.0
 3. Certification of Topsoil Testing: The Contractor shall furnish to the City a signed statement certifying that the topsoil furnished is from the lot that has been tested.

II. Soil Amendments:

- A. Compost: One hundred percent (100%) humus rich organic matter. The compost shall be a well decomposed, stable, weed free organic matter derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings, or source-separated or mixed solid waste. Product must be certified as fully composted at a permitted solid waste processing facility. Product to be registered with the Colorado Department of Agriculture and approved for use on Colorado Certified Organic Farms by the Division of Plant Industry of the State of Colorado. Product shall contain no solid particle greater than one-half inch (½") in length or diameter and be free from un-composted or non-stabilized wood bulking agents. Product shall contain no substances toxic to plants and shall be reasonably free (<1% by dry weight) of man-made foreign matter. The compost will possess no objectionable odors and shall not resemble the raw material from which it was derived.
- B. Provide analysis for the following:
 - 1. Organic Matter Content: 30 - 70% (dry basis)
 - 2. Soluble Salt Concentration (EC paste test): 5 dS (mmhols/cm) or less (as received)
 - 3. PH range: 5.5 to 8.0 (as received)
 - 4. Final carbon to nitrogen ratio: 20:1 or less.
 - 5. Nutrient Content (dry weight basis): N 1% or above, P 1% or above, K 0.5% or above.
 - 6. Bulk Density: 800 - 1,000 lbs/yd³
 - 7. Moisture Content: 35% - 55%
- C. Certification of Compost Testing: The Contractor shall furnish to the City a signed statement certifying that the compost furnished is from the lot that has been tested.

III. Amended Topsoil: Offsite, mechanically combined product.

- A. Amended Topsoil: Components of the amended topsoil product (compost and topsoil) shall meet all previously outlined criteria for the individual components.
 - 1. The Contractor shall supply a sample of amended topsoil to the Colorado State University Soil Testing Laboratory for analysis a minimum of thirty (30) days prior to delivery of amended topsoil to the project site.
 - 2. The Contractor shall contact the Project Manager to inspect and approve all planting areas prior to delivery or placement of amended topsoil. The Contractor shall submit to the Project Manager a Certificate of Compliance from the CSU Testing Laboratory verifying testing levels.
- B. Provide analysis for the following:
 - 1. Organic Matter Content: 3 - 15% (dry basis)
 - 2. Soluble Salt Concentration (EC Paste Test): 2.7dS (mmhols/cm) or less (as received)
 - 3. PH Range: 5.5 to 8.0 (as received)
 - 4. Final carbon to nitrogen ratio: 20:1 or less.

5. Nutrient Content (dry weight basis): N 1% or above, P 1% or above, K 0.5% or above.
6. Moisture content: 35 to 55%
- C. Certification of Topsoil Testing: The Contractor shall furnish to the City a signed statement certifying that the topsoil furnished is from the lot that has been tested.

IV. Fertilizer:

- A. Before seeding, apply an inorganic mixture tilled thoroughly into the top six inches (6") of soil, unless otherwise stated:
 1. 1 lb. of Nitrogen (N) per one thousand (1,000) square feet.
 2. 2 lbs. Phosphorus (P205) per one-thousand (1,000) square feet.
 3. 1 lb. Sulfur (SO4-S) per one-thousand (1,000) square feet.

2.02 SEED:

- I. Grass Seed: Fresh, clean, dry, new-crop seed conforming to all State and Federal regulations and complying with the Association of Official Seed Analysts', "Rules for Testing Seeds" for purity and germination tolerances.
 - A. Seed Mixture: Provide seed of grass species and varieties, proportions by weight, and minimum percentages of purity, germination. All materials furnished shall be free of prohibited noxious weeds and meet State and City standards for restricted noxious weeds.
 - B. Proportions and Mixing: All seed shall be mixed by a wholesale seed supplier in the proportions-necessary to obtain the application rate specified.
 - C. Labels: All seed and seed mixes shall be furnished in bags or containers clearly labeled to show the name and address of the supplier, the common, scientific and variety name(s) of the seed(s), the lot number, net weight, percent of weed seed content and the guaranteed percent of purity and germination.
 - D. Certification of Seed Testing: The Contractor shall furnish to the City a signed statement certifying that the seed furnished is from the lot that has been tested and comply with the Colorado Seed Law.

2.03 HERBICIDES:

- I. Herbicide: EPA registered and approved, of type utilized by City of Greeley Parks Department.
- II. Applicators must possess both a Colorado Department of Agriculture license and City of Greeley pesticide applicator's license.
- III. The contractor making chemical applications must have a Qualified Supervisor on staff.

2.04 EROSION CONTROL NETTING, BLANKETS, MATS, FABRICS:

- I. Erosion control blankets, mats, of other commercial products for stabilizing disturbed areas may be required on certain projects. If so, the type, manufacturer, and installation method for these products will be agreed to prior to installation.

PART 3 - EXECUTION

3.01 EXAMINATION:

- I. General:
 - A. Verify that existing site conditions are as specified and indicated before beginning work under this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.
 - B. All work is to be performed by personnel thoroughly familiar with proper and accepted methods for soil preparation, herbicide applications, fertilizing, seeding, mulching, etc. All work is to be performed under the direct supervision of the Contractor's superintendent, who shall be thoroughly familiar with the provisions of these specifications.
- II. Damaged Earth: Inspect to verify that earth rendered unfit to receive planting due to concrete water, mortar, lime water or any other contaminant dumped on it has been removed and replaced with clean earth from a source approved by the Project Manager. All access roadways or compacted soil shall be ripped to loosen.
- III. Unsatisfactory Conditions: Report in writing to the City.
- IV. Acceptance: Beginning installation indicates acceptance of existing conditions by Contractor.

3.02 PREPARATION:

- I. Protection:
 - A. Locate structures, playground equipment, sewer, water, irrigation, gas, electric, phone, cable TV, other pipelines or conduits and equipment prior to commencing work.
 - B. Be responsible for proper repair to landscape, utilities, walls, soft surface paths, pavements and other site improvements damaged by operations under this section.
- II. Existing Vegetation:
 - A. Contractor shall keep a log of all pesticide applications performed throughout the duration of the project, detailing applications. Notes shall be submitted to Owner at the completion of project.

- B. Herbicides shall be applied using well maintained spraying equipment by individuals working for the Contractor who are appropriately licensed by the State or Federal agency having jurisdiction over such applications. It shall be the responsibility of the Contractor to be knowledgeable of any and all current laws and regulations pertaining to pesticide applications, and to advise the City immediately if any requests for applications made by the City are inappropriate as they pertain to these laws and regulations.
- C. Herbicides and other chemicals shall not be applied during periods when wind or other physical conditions cause the herbicides to be transported off site, or a distance of more than five (5') feet from the immediate area where they are being applied. It shall be the responsibility of the Contractor to notify the Project Manager immediately if any weather or other physical conditions exist which would make application inappropriate.
- D. All herbicides and other chemicals shall be applied at rates as determined by the Contractor and the Project Manager.
 - 1. Bluegrass areas:
 - a. Existing vegetation, excluding trees and shrubs, in all areas designated to receive new bluegrass seed, is to be sprayed with a contact non-selective post emergent herbicide (Roundup), a minimum of one (1) week and a maximum of (3) weeks prior to the ripping/tilling process.
 - 2. Native areas:
 - a. New seeding areas: Existing vegetation, excluding trees and shrubs, in all areas designated to receive new native seed mixes, shall be sprayed with a contact non-selective post emergent herbicide (Roundup), a minimum of one (1) week and a maximum of (3) weeks prior to the ripping/tilling process.
 - b. Over seeded areas: Spot treatment with selective post emergent herbicides may be required to eliminate undesirable vegetation in some areas. Coordinate herbicide application with the Project Manager a minimum of two (2) weeks prior to the seeding operation.
 - 3. Reapply herbicide if necessary to insure complete kill of existing vegetation.
- III. Surface Grade: Remove existing grass, weeds, debris and rocks larger than one and one half-inches (1½") in all areas designated to receive seed. Verify that all rough grades have been established.
- IV. Runoff: Take measure and furnish equipment, materials, and labor necessary to control the flow, drainage and accumulation of water on and off the site, as intended by the grading plans.
- V. Erosion Control: Take measure and furnish all labor, materials, and equipment necessary to control and prevent soil erosion, blowing soil and accumulation of wind-deposited material on the site throughout duration of work.

3.03 INSTALLATION:

I. SOIL/SEED BED PREPARATION:

- A. General: All ripping and tilling operations shall be done in a direction which follows the natural contours of the land on slopes of 3:1 or less. Soils on slopes greater than three 3:1 will be prepared for planting in a manner specified by the City. Any irregularities in the ground surface resulting from soil preparation operations shall be corrected and sloped to drain as intended by the grading plans.
- B. Ripping/Tilling:
 - 1. Any required soil amendments (e.g. organic soil conditioners, fertilizer, ect.) shall be uniformly spread on the surface of soil which is to be prepared as stated below and at the rates specified in section 3.03; II and 3.03; III, below.
 - 2. Soil shall be ripped or tilled to a minimum of eight inches (8"), with agricultural sub-soiler in all areas to receive seed. This includes any areas compacted by construction traffic during the construction process, with four (4) passes in at least two (2) directions.
 - 3. In areas where extremely stiff materials, or if debris is encountered during ripping, re-adjust equipment to avoid bringing up chunks of un-tillable material.
 - 4. The soils shall be worked until it has become loose and friable and no clods greater than two inches (2") in diameter remain, unless directed otherwise by the Project Manager, prior to the addition of any soil amendments, seed, or mulch.
 - 5. Remove stones larger than one and one-half inches (1½") in any dimension and sticks, roots, rubbish, and other extraneous matter.

II. Soil Amendments:

- A. Blue Grass Areas: Evenly distribute composted material in the bluegrass seed areas at the following rates:
 - 1. Apply the compost at four (4) cubic yards per one thousand (1,000) square feet.
 - 2. Spreading the compost shall be accomplished with either a truck or trailer mounted spreader, capable of being adjusted to apply varying rates of material at a given speed.
- B. Native Seed Areas: Evenly distribute composted material in the native seed areas at the following rates:
 - 1. Apply the compost at two (2) cubic yards per one thousand (1,000) square feet.
 - 2. Spreading the compost shall be accomplished with either a truck or trailer mounted spreader, capable of being adjusted to apply varying rates of material at a given speed.
 - 3. In areas inaccessible with a truck or trailer mounted spreader, the compost can be delivered and spread with a tractor and/or by hand.

- C. Over Seeding Native Seed into existing vegetation:
 - 1. No compost will be required in these areas.
 - 2. Fertilizer shall be spread evenly on the surface of the soil immediately after seeding operations have been completed. All fertilizer shall be applied using standard application equipment at the rates specified.

III. Fertilizer:

- A. See 2.01; II above.
- B. Areas receiving organic soil amendments:
 - 1. After applying soil amendments and fertilizer, thoroughly till area to a depth of six inches (6") minimum by rototilling, plowing, harrowing, or disking until soil is well pulverized.
- C. Fill, compact and grade the site to within +/- 0.1' (1 3/16 ") of grades indicated and specified.

IV. Fine Grading in all areas to receive seed:

- A. Do fine grading for areas prior to seeding: Perform as required to maintain positive drainage, prevent ponding and direct run-off into catch basins, drainage structures, etc. and as required to provide smooth well-contoured surface prior to proceeding.
- B. Prior to Acceptance of Grades: Hand-rake to a smooth even surface with a loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions. Remove debris, clods, rocks, vegetable matter, and any other objects that may interfere with planting or maintenance operations. Limit fine grading to areas that can be planted in the immediate future.
- C. Establish finish grades to within one-half inch (1/2") of grades indicated.
- D. Noxious weeds or parts thereof shall not be present in the surface grade prior to seeding.
- E. Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow the surface to dry before planting. Do not create muddy soil.
- F. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Leave graded surface clean and free of trash and debris. Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

3.04 SEEDING:

- I. The Contractor shall notify the Project Manager prior to any seeding work.
- II. The Project Manager will be on site during seeding operations, and will collect representative samples of the seed used on the project for possible later testing for contract compliance.
- III. All prepared areas, need to be firm, but not compacted, prior to seed application.

IV. Bluegrass Areas:

- A. Sow Bluegrass mix at a rate of 5 lbs. per 1,000 sq. ft.
- B. Sow turf grass seed using mechanical Type 3 drill, (Brillion) seeding machine for slopes 4:1 and flatter.
 - 1. Distribute seed evenly over entire area by sowing equal quantities in two directions at right angles of each other.
 - 2. For areas inaccessible to seeding machines, or areas with slopes steeper than 4:1, use broadcast method. See 3.04; VI below.

V. Native Areas:

- A. Seed the listed varieties in the areas designated on the drawings.
- B. All seed is to be drilled 0.25 inch to 0.50 inch into the soil at the specified PLS/acre rate listed in the Seed Mix Schedule, with a mechanical, power-drawn drill seeder. Rows shall be spaced not more than eight inches (8") apart.
- C. The contractor shall drill equal quantities in two directions at right angles of each other.
- D. Seeding rates need to be increased 50% on slopes 6:1 or greater.
- E. Seeding rates need to be increased 100% for areas that are seeded by hand broadcasting.
- F. Seeding native grasses into existing vegetation, or areas that have not been ripped and tilled to a minimum of 6 inches require the use of a seeder with:
 - 1. Double Disc openers with depth bands.
 - 2. Native Grass Seed Box with agitator and picker wheels.
 - 3. Press wheels.
 - 4. In hard ground areas, the Project Manager may require the use of a, no till Coulter unit.
- G. A cultipacker seeder (Brillion, Trillion type) is acceptable to use in well prepared (fine and firm) seed bed applications.
 - 1. The seeder should be equipped with seed boxes to handle the type of seed being planted.
 - 2. Native grass seed would need a seed box with an agitator and picker wheels.
 - 3. Seeding rates would need to be increased 50% with a cultipacker seeder since it is a broadcasting application.

- #### VI. Broadcast Seeding:
- Some areas may be inaccessible to a drill. In these mutually agreeable areas, seed shall be uniformly broadcast at 2 times the specified rate. Seed is to be evenly distributed and sown in equal quantities, in two directions at right angles to each other. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Hand broadcasted seeded areas need to be raked in to provide a minimum of ¼" cover and a maximum of ½" cover.

VII. Watering Newly Seeded Areas.

- A. Bluegrass areas: Coordinate with Project Manager the irrigation controller settings to provide adequate moisture for seed germination, and to avoid erosion.
- B. Native areas:
 - 1. Some native areas may have irrigation available, in which case follow the guidelines for Bluegrass areas above.
 - 2. Native areas without irrigation:
 - a. Spring Planting: Plan the planting operation to start as soon as the soil can be worked and prior to the spring rainy season.
 - b. Fall Planting: Place seed prior to the first hard frost in the fall, but after dormancy begins for the varieties being planted.

VIII. Companion Crops: Add the prescribed companion crop with the native seed mixes to be planted at the rate listed. If in doubt, coordinate with Project Manager.

IX. Erosion Protection:

- A. Slopes of 6:1 or less require no erosion protection.
- B. Protect seeded slopes exceeding 6:1 against erosion with jute or coir-fiber erosion-control mesh installed and stapled according to manufacturer's recommendations.
- C. Protect seeded slopes exceeding 4:1 against erosion with erosion-control blankets installed and stapled according to manufacturer's recommendations.

3.05 SEED MIXTURE SCHEDULE:

- I. Greeley Parks Mixes: Provide certified grass-seed blends or mixes, proportioned by weight, as follows. If the following mix is not available, contact the Parks Department for an approved mix, prior to proceeding:

BLUEGRASS SPECIES/VARIETY	% MIX	PURITY
Kentucky Bluegrass, Moonlight	30.00	85
Kentucky Bluegrass, NorthStar	30.00	85
Kentucky Bluegrass, Quantum Leap	30.00	85
Perennial Ryegrass	10.00	92

LOW GROW MIX	
Use a minimum 8' wide on sides of pathways. Use at property lines abutting residential properties. Used in open areas where short grasses are desired.	
SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Buffalograss	8.0
Blue grama	6.5

SLOPE MIX

Used on all slopes and berms.

SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Sideoats grama	2.0
Blue grama	2.0
Little Bluestem	2.0
Sand dropseed	.06

OPEN SPACE MIX

Used in open areas wher taller grasses are desirable.

SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Sideoats grama	2.0
Blue grama	2.0
Little Bluestem	2.0
Sand dropseed	0.2
Western Wheatgrass	2.0

POND MIX

Used in and around detention/retention ponds, and in areas that are designed to hold water, but are not necessarily wet the majority of the time.

SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Little Bluestem	3.0
Yellow Indian Grass	2.0
Switchgrass	1.0
Blue grama	0.6
Sideoats grama	4.0
Prairie Sandreed	1.5
Western Wheatgrass	6.5

RIPARIAN MIX

Used along irrigation ditches and in naturally wet areas.

SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Switchgrass	6.0
Reeds Canarygrass	6.0

<u>RIGHT – OF – WAY MIX</u>	
Used along public streets, in the right of way.	
SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Buffalograss	6.4
Blue grama	0.6
Sideoats grama	3.6
Western Wheatgrass	9.6
Thickspike Wheatgrass	2.2
Slender Wheatgrass	2.2

<u>Tree Lawn Mix</u>	
For use in specified tree lawns	
SPECIES	POUNDS PER 1,000 sq/ft
Buffalograss ‘Sundancer’	4.0
Blue grama ‘Alma’	1.0

<u>COMPANION CROP</u>	
Add the appropriate companion crop to the native seed mixes to be planted.	
SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Spring Planting: Oats	4.0
Fall Planting: Winter Wheat	2.0

3.06 NOTIFICATION AND INSPECTION:

- I. Inspection: Provide notice to Owner requesting inspection at least seven (7) days prior to anticipated date of completion.
- II. Deficiencies: If deficiencies exist, the City shall specify such deficiencies to the Contractor who shall make satisfactory adjustments and will again notify the City for final inspection.

3.07 CLEANING:

- I. Cleaning: Remove and haul from the site all excess materials and debris generated during the construction process. Perform daily cleaning during installation of the work, and upon completion of the work. Clean paved and finished surfaces soiled as a result of work under this section. Clean out drainage inlet structures as required. Repair any and all damage.

3.08 PROTECTION:

- I. General: Provide and install barriers as required and as directed by the City to

protect the seeded areas against damage from pedestrian and vehicular traffic until well established and accepted by the City. Provide any additional erosion control measures which are necessary for the successful establishment of grass areas.

END OF SECTION

Natural Areas

Low Grow Seed Mix

- A. Seed the listed varieties in the areas designated on the drawings.
- B. All seed is to be drilled 0.25 inch to 0.50 inch into the soil at the specified PLS/acre rate listed in the Seed Mix Schedule, with a mechanical, power-drawn drill seeder. Rows shall be spaced not more than eight inches (8") apart.
- C. The contractor shall drill equal quantities in two directions at right angles of each other.
- D. Seeding rates need to be increased 50% on slopes 6:1 or greater.
- E. Seeding rates need to be increased 100% for areas that are seeded by hand broadcasting.
- F. Seeding native grasses into existing vegetation, or areas that have not been ripped and tilled to a minimum of 6 inches require the use of a seeder with:
 - 1. Double Disc openers with depth bands.
 - 2. Native Grass Seed Box with agitator and picker wheels.
 - 3. Press wheels.
 - 4. In hard ground areas, the Project Manager may require the use of a no till Coulter unit.
- G. A cultipacker seeder (Brillion, Trillion type) is acceptable to use in well prepared (fine and firm) seed bed applications.
 - 1. The seeder should be equipped with seed boxes to handle the type of seed being planted.
 - 2. Native grass seed will need a seed box with an agitator and picker wheels.
 - 3. Seeding rates need to be increased 50% with a cultipacker seeder since it is a broadcasting application.

<u>LOW GROW MIX</u>	
Use a minimum 5' wide on sides of pathways. Use at property lines abutting residential properties. Use in open areas where short grasses are desired.	
SPECIES	POUNDS PER ACRE – PURE LIVE SEED
Buffalograss	8.0
Blue grama	6.5