



**CITY OF GREELEY
Purchasing**

**Request for Proposal
RFP #G12-08-152**

**Landscape Design and Installation
Glenmere Blvd. and 17th Avenue Intersection**

for

PUBLIC WORKS DIVISION

REQUEST FOR PROPOSALS (RFP)
RFP #G12-08-152

Procurement Contact: Gail Gaskins
Email Address: Gail.Gaskins@greeleygov.com
Telephone Number: 970-350-9870

Proposals must be received no later than:

August 28, 2012, before 5:00 p.m. local time

Proposals received after this date and time will not be considered for award.

The City only accepts proposals in hard copy format and does NOT accept proposals submitted via fax, email, or other electronic means. Proposals are to be submitted in a sealed package with the following on the outside of the envelope:

Company Name

RFP Title: Landscape Design and Installation at Glenmere Blvd. and 17th Avenue Intersection

RFP Number: G12-08-152

Due Date and Time: August 28, 2012 before 5:00 p.m.

Package must include:

- 2 Copies of Proposal

Deliver proposals to:

City of Greeley

Purchasing

1000 10th Street, Suite 215

Greeley, Colorado 80631

Schedule of Events (subject to change)	All times are given in local Colorado time
RFP Issued	August 16, 2012
Pre-Proposal Conference	August 21, 2012 at 2:00 p.m.
Inquiry Deadline	August 23, 2012 by 2:00 p.m.
Final Addendum Issued	By August 24, 2012 at 5:00 p.m.
Proposal Due Date and Time	August 28, 2012 before 5:00 p.m.
Notice of Award (tentative)	August 31, 2012

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SECTION I. BACKGROUND, OVERVIEW, AND GOALS

A. Background

The Project is located at the northwest corner of Glenmere Park in Greeley, Colorado. Under separate Contract, the City will remove the right turn lanes and islands and construct a conventional 4-way stop, residential street intersection

B. Overview

Proposals are requested for landscaping design and construction to extend or add landscaping from existing landscaping to new curb or sidewalk at Glenmere Blvd and 17th Avenue Intersection. Street intersection improvements will be constructed by others including removal of existing street improvements and import of 12" thick topsoil. New landscaping shall be similar in nature and complimentary to existing landscape at each corner of intersection. The total area of new landscape is approximately 6000 square feet. Landscape types include sod, flower bed, shrubs, trees, mulch, and xeriscape. All areas except xeriscape shall be irrigated by extending and/or expanding and modifying existing sprinkler systems. Landscape areas and details are shown and further described on the attached two drawings.

C. Goals

Construction of street improvements and topsoil import by others is planned to occur in late August and September. It is desired to have landscaping follow concrete work as soon as possible and concurrently with other street work with all landscaping complete this fall.

SECTION II. STATEMENT OF WORK

A. Scope of Services

Contractor shall develop detailed scaled drawings using base AutoCad drawing (DWG) provided by City. Drawings shall show location, type and size of all proposed plantings as well as irrigation systems. Drawings shall be reviewed and approved by City. Contractor and City shall meet individually with each property owner to review and approve plans. Minor adjustments and revisions to accommodate property owner's concerns and reasonable desires shall be anticipated and accommodated if practicable. All work shall comply with attached City of Greeley Landscape Specifications. Proposal shall include a man-hour estimate and hourly rates for design and sprinkler system work, as well as a schedule of proposed materials, quantities, sizes, and proposed installed unit prices.

B. Period of Award

The completion date of providing the required product and services shall be November 1, 2012.

C. Minimum Mandatory Qualifications of Offerors

Offerors shall have a minimum three years related contracting experience.

SECTION III. ADMINISTRATIVE INFORMATION

A. Issuing Office:

The City's contact name listed herein is to be the sole point of contact concerning this RFP. Offerors shall not directly contact other personnel regarding matters concerning this RFP or to arrange meetings related to such.

B. Official Means of Communication:

All official communication from the City to offerors will be via postings on an electronic solicitation notification system, the Rocky Mountain Bid System (www.rockymountainbidsystem.com). The Purchasing Contact will post notices that will include, but not be limited to, proposal document, addenda, award announcement, etc. It is incumbent upon offerors to carefully and regularly monitor the Rocky Mountain Bid System for any such postings.

C. Inquiries:

Prospective offerors may make written inquiries by e-mail before the written inquiry deadline concerning this RFP to obtain clarification of requirements. There will be opportunity to make inquiries during the pre-proposal conference, if any. No inquiries will be accepted after the deadline. Inquiries regarding this RFP (be sure to reference RFP number) should be referred to:

E-Mail: Gail.Gaskins@greeleygov.com
Subject Line: RFP #G12-08-152

Response to offerors' inquiries will be published as addenda on the Rocky Mountain Bid System in a timely manner. Offerors cannot rely on any other statements that clarify or alter any specification or other term or condition of the RFP.

Should any interested offeror, sales representative, or manufacturer find any part of the listed specifications, terms and conditions to be discrepant, incomplete, or otherwise questionable in any respect, it shall be the responsibility of the concerned party to notify the Purchasing Contact of such matters immediately upon discovery.

D. Insurance: (Exhibit 3)

The successful contractor will be required to provide a Certificate of Insurance or other proof of insurance naming the City of Greeley as "additional insured". Coverage must include COMMERCIAL GENERAL LIABILITY coverage with minimum limits of \$2,000,000, and WORKER'S COMPENSATION coverage with limits in accordance with State of Colorado requirements.

COMPREHENSIVE AUTOMOBILE LIABILITY with minimum limits for bodily injury and property damage coverage of at least \$1,000,000, plus an additional amount adequate to pay related attorneys' fees and defense costs, for each of Consultant's owned, hired or non-owned vehicles assigned to or used in performance of this Agreement.

The City shall be named as additional Insured for General and Auto Liability Insurance.

Awarded offeror must present the City with proof of PROFESSIONAL LIABILITY COVERAGE with a minimum limit of \$1,000,000.

E. Modification or Withdrawal of Proposals:

Proposals may be modified or withdrawn by the offeror prior to the established due date and time.

F. Minor Informalities:

Minor informalities are matters of form rather than substance evident from the response or insignificant mistakes that can be waived or corrected without prejudice to other vendors. The Purchasing Manager may waive such informalities or allow the vendor to correct them depending on which is in the best interest of the City.

G. Responsibility Determination:

The City will make awards only to responsible vendors. The City reserves the right to assess offeror responsibility at any time in this RFP process and may not make a responsibility determination for every offeror.

H. Acceptance of RFP Terms:

A proposal submitted in response to this RFP shall constitute a binding offer. The autographic signature of a person who is legally authorized to execute contractual obligations on behalf of the offeror shall indicate acknowledgment of this condition. A submission in response to this RFP acknowledges acceptance by the offeror of all terms and conditions as set forth herein. An offeror shall identify clearly and thoroughly any variations between its proposal and the RFP in the cover letter. Failure to do so shall

be deemed a waiver of any rights to subsequently modify the terms of performance, except as outlined or specified in the RFP.

I. Protested Solicitations and Awards:

Right to protest. Any actual or prospective bidder, offeror or contractor who is aggrieved in connection with the solicitation or award of a contract must protest in writing to the City Manager as a prerequisite to seeking judicial relief. Protestors are urged to seek informal resolution of their complaints initially with the Purchasing Manager. A protest shall be submitted within ten (10) calendar days after such aggrieved person knows or should have known of the facts giving rise thereto. A protest with respect to an invitation for bids or request for proposals shall be submitted in writing prior to the opening of bids or the closing date of proposals, unless the aggrieved person did not know and should not have known of the facts giving rise to such protests prior to bid opening or the closing date for proposals.

1. Stay of procurement during protests. In the event of a timely protest under Subsection (A) of this Section, the Purchasing Manager shall not proceed further with the solicitation or award of the contract until all administrative and judicial remedies have been exhausted or until the City Manager makes a written determination on the record that the award of a contract without delay is necessary to protect substantial interest of the City. (Ord. 75, 1984 §2 (part))

J. Confidential/Proprietary Information:

All proposals will be confidential until a contract is awarded and fully executed. At that time, all proposals and documents pertaining to the proposals will be open for public inspection, except for the material that is proprietary or confidential. However, requests for confidentiality can be submitted to the Purchasing Contact provided that the submission is in accordance with the following procedures. This remains the *sole responsibility* of the offeror. The Purchasing Contact will make no attempt to cure any information that is found to be at a variance with this procedure. The offeror may not be given an opportunity to cure any variances after proposal opening. **Neither a proposal in its entirety, nor proposal price information will be considered confidential/proprietary.** Questions regarding the application of this procedure must be directed to the Purchasing Contact listed in this RFP.

K. Acceptance of Proposal Content:

The contents of the proposal (including persons specified to implement the project) of the successful contractor shall become contractual obligations into the contract award. Failure of the successful offeror to perform in accordance with these obligations may result in cancellation of the award and such offeror may be removed from future solicitations.

L. RFP Cancellation:

The City reserves the right to cancel this RFP at any time, without penalty.

M. Negotiation of Award:

In the event only one (1) responsive proposal is received by the City, the City reserves the right to negotiate the award for the services with the offeror submitting the proposal in lieu of accepting the proposal as is.

N. RFP Response/Material Ownership:

All material submitted regarding this RFP becomes the property of the City of Greeley, unless otherwise noted in the RFP.

O. Incurring Costs:

The City is not liable for any cost incurred prior to issuance of a legally executed contract and/or a purchase order.

P. Utilization of Award by Other Agencies:

The City of Greeley reserves the right to allow other State and local governmental agencies, political subdivisions, and/or school districts to utilize the resulting award under all terms and conditions specified

and upon agreement by all parties. Usage by any other entity shall not have a negative impact on the City of Greeley in the current term or in any future terms.

Q. Non-Discrimination:

The offeror shall comply with all applicable state and federal laws, rules and regulations involving non-discrimination on the basis of race, color, religion, national origin, age or sex.

R. News Releases:

Neither the City, nor the offeror, shall make news releases pertaining to this RFP prior to execution of the contract without prior written approval of the other party. Written consent on the City's behalf is provided by the Public Information Office.

S. Certification of Independent Price Determination:

1. By submission of this proposal each offeror certifies, and in the case of a joint proposal each party, thereto certifies as to its own organization, that in connection with this procurement:
 - a) The prices in this proposal have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other offeror or with any competitor;
 - b) Unless otherwise required by law, the prices which have been quoted in this proposal have not been knowingly disclosed by the offeror and will not knowingly be disclosed by the offeror prior to opening, directly or indirectly to any other offeror or to any competitor; and
 - c) No attempt has been made or will be made by the offeror to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition.
2. Each person signing the Request for Proposal form of this proposal certifies that:
 - a) He/she is the person in the offeror's organization responsible within that organization for the decision as to the prices being offered herein and that he/she has not participated, and will not participate, in any action contrary to (1.a) through (1.c) above; or
 - b) He/she is not the person in the offeror's organization responsible within that organization for the decision as to the prices being offered herein but that he/she has been authorized in writing to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (1.a) through (1.c) above, and as their agent does hereby so certify; and he/she has not participated, and will not participate, in any action contrary to (1.a) through (1.c) above.
3. A proposal will not be considered for award where (1.a), (1.c), or (2.) above has been deleted or modified. Where (1.b) above has been deleted or modified, the proposal will not be considered for award unless the offeror furnishes with the proposal a signed statement which sets forth in detail the circumstances of the disclosure and the City's Purchasing Manager, or designee, determines that such disclosure was not made for the purpose of restricting competition.

T. Taxes:

The City of Greeley is exempt from all federal excise taxes and all Colorado State and local government sales and use taxes. Where applicable, contractor will be responsible for payment of use taxes.

U. Assignment and Delegation:

Neither party to any resulting contract may assign or delegate any portion of the agreement without the prior written consent of the other party.

V. Availability of Funds:

Financial obligations of the City of Greeley payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted and otherwise made available. In the event funds are not appropriated, any resulting contract will become null and void without penalty to the City.

W. Standard of Conduct:

The successful firm shall be responsible for maintaining satisfactory standards of employees' competency, conduct, courtesy, appearance, honesty, and integrity, and shall be responsible for taking such disciplinary action with respect to any employee as may be necessary.

The City may request the successful firm to immediately remove from this assignment any employee found unfit to perform duties due to one or more of the following reasons:

1. Neglect of duty.
2. Disorderly conduct, use of abusive or offensive language, quarreling, intimidation by words or actions or fighting.
3. Theft, vandalism, immoral conduct or any other criminal action.
4. Selling, consuming, possessing, or being under the influence of intoxicants, including alcohol, or illegal substances while on assignment for the City.

Agents and employees of Contractor or Consultant working in City facilities shall present a clean and neat appearance. Prior to performing any work for the City, the Contractor or Consultant shall require each of their employees to wear ID badges or uniforms identifying: the Contractor or Consultant by name, the first name of their employee and a photograph of their employee if using an ID badge. Their employee shall wear or attach the ID badge to the outer garments at all times.

X. Damages for Breach of Contract:

In addition to any other legal or equitable remedy the City may be entitled to for a breach of this Contract, if the City terminates this Contract, in whole or in part, due to Contractor's breach of any provision of this Contract, Contractor shall be liable for actual and consequential damages to the City.

Y. Other Statutes:

1. The signatory hereto avers that he/she is familiar with Colorado Revised Statutes , 18-8-301, et seq. (Bribery and Corrupt Influence) and 18-8-401, et seq. (Abuse of Public Office) as amended, and that no violation such provisions is present.
2. The signatory hereto avers that to his/her knowledge, no City of Greeley employee has any personal or beneficial interest whatsoever in the service or property described herein. See CRS 24-18-201 and CRS 24-50-507.

SECTION IV. PROPOSAL SUBMISSION

Following are the response requirements for this RFP. All specific response items represent the minimum information to be submitted. Deletions or incomplete responses in terms of content or aberrations in form may, at the City's discretion, render the proposal non-responsive.

Offerors shall submit in a sealed package:

- Two printed Copies of Proposal.

To facilitate the evaluation, offeror shall submit and organize all responses in the same order as listed in Section V. Proposals that are determined to be at a variance with this requirement may not be accepted. The City only accepts proposals in hard copy format and does not accept proposals submitted via fax, email, or other electronic means.

Late proposals will not be accepted. It is the responsibility of the offeror to ensure that the proposal is received at the City of Greeley's Purchasing Division on or before the proposal due date and time.

The outside of the package will include the following information:

- Company Name
- RFP Number
- RFP Title
- Due Date and Time

SECTION V. RESPONSE FORMAT

The following items are to be included in your proposal, in the order listed. Deviation from this may render your proposal non-responsive.

- A. Cover Letter.** Include a cover letter introducing your company, summarizing your qualifications, and detailing any exceptions to this RFP (please note that significant exceptions may make your proposal non-responsive). This letter should also provide principal contact information for this RFP, including address, telephone number, fax number, e-mail, and website (if applicable).
- B. Use of Subcontractors/Partners.** There may be areas for use of subcontractors or partners in this project. If you are utilizing this approach, your proposal must list the subcontractors/partners, their area(s) of expertise, and include all other applicable information herein requested for each subcontractor/partner. Please keep in mind that the City will contract solely with your company, therefore subcontractors/partners remain your sole responsibility.
- C. Minimum Mandatory Qualifications.** Include an itemized description of how your company meets each of the minimum mandatory qualifications outlined in Section II, C. Failure to meet or exceed these requirements will disqualify your response.
- D. Company Information**
1. Provide the following information as listed: Company Name, Address, Phone Number, and Names of Principals.
 2. Identify the year in which your company was established and began providing consulting services.
 3. Describe any pending plans to sell or merge your company.
 4. Provide a comprehensive listing of all the services you provide.
- E. Evaluation Criterion #1 Company and Personnel Qualifications**
1. Describe your customer service philosophy.
 2. Provide information from at least three accounts of similar scope. Include, at a minimum, the following information: 1) company name, 2) contact name, 3) phone number, 4) fax number, 5) email address, 6) brief description of project scope and value, 7) status of project. The City reserves the right to contact the references provided in your proposal as well as other references without prior notification to you.
 3. List the number of people that you can commit to working on this project and the amount of time each is expected to spend on the project.
 4. Provide the names and resumes of the key personnel that will be performing the proposed services, including the primary project manager.
 5. List the names of the subcontractors you expect to use, the services to be provided by the subcontractors and the amount of time that each is expected to spend on the project. Also, include the names and resumes of the key subcontractor personnel who will be working on the project.

6. Provide a specific timeline or schedule for the work. (Spell out mile marks if needed. Example: including development of preliminary design & cost estimates, meetings with City staff, completion of final design, cost estimates and bidding documents.) Show milestones and completion dates on the schedule.
7. Describe the methods and timeline of communication your firm will use with the City's project manager, other involved City staff, and other interested parties.

Evaluation Criterion #2 Approach to Scope of Work

1. Describe any project approaches or ideas that you would apply to this project and that you feel would enhance the quality of your services.
2. Describe how the team will handle quality control, specifically how design issues would be monitored and resolved, plans checked and cross-referenced and bid documents ensured to be complete, accurate, and coordinated with subcontractors.

Evaluation Criterion #3 Value/Cost of Efforts

1. Provide a cost for the consulting services and products broken down per task listed under the *Scope of Services*, above. Show a breakdown of all reimbursable expenses required to complete the work. If applicable, the subcontractors' costs must be shown as separate items. Also, provide hourly rates for your firm and all subcontractors. These rates will be considered valid throughout the project.

F. Proposal Acknowledgement. Include this form as provided in Exhibit 1.

G. Illegal Alien Certificate. This required form is included as Exhibit 2.

SECTION VI. EVALUATION AND AWARD

A. Proposal Evaluation

All proposals submitted in response to this RFP will be evaluated in accordance with the criteria described below. Total scores will be tabulated, and the highest ranked firm will enter into negotiations.

If the City requests presentations by short-listed offerors, committee members may revise their initial scores based upon additional information and clarification received in this phase. If your company is invited to give a presentation to the committee, these dates may not be flexible.

In preparing responses, offerors should describe in great detail how they propose to meet the specifications as detailed in the previous sections. Specific factors will be applied to proposal information to assist the City in selecting the most qualified offeror for this contract. Following is the evaluation criteria that will be used. Criteria will be assigned a points value.

1. Company and Personnel Qualifications (20 points)
2. Approach to Scope of Work (10 points)
3. Value/Cost of Efforts (70 points)

A presentation and/or demonstration may be requested by short-listed offerors prior to award. However, a presentation/demonstration may not be required, and therefore, complete information should be submitted with your proposal.

B. Determination of Responsibility of the Offeror

The City of Greeley awards contracts to responsible vendors only. The City reserves the right to make its offeror responsibility determination at any time in this RFP process and may not make a responsibility determination for every offeror.

The City of Greeley’s Municipal Code defines a “Responsible Offeror” as one who has “the capability in all respects to perform fully the contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance.” The City reserves the right to request information as it deems necessary to determine an offeror’s responsibility. If the offeror fails to supply the requested information, the City shall base the determination of responsibility upon any available information or may find the offeror non-responsible if such failure is unreasonable.

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SECTION 02810 IRRIGATION

PART 1: GENERAL

- 1.01 SCOPE: Furnish all labor, materials, supplies, equipment, tools, transportation, and perform all operation in connection with and reasonably incidental to the complete installation of the irrigation system, and guarantee/warranty as shown on the drawings, the installation details, and as specified herein. Items of work specifically included are:
- I. Procurement of all applicable licenses, permits, and fees.
 - II. Coordination of Utility Locates (Utility Notification Center of Colorado).
 - III. Coordination for, and provision of, testing of radio signal between new on-site satellite controller location and nearest existing Link Radio CCU prior to construction to ensure that effective communication exists with the City of Greeley Parks Division central control system.
 - IV. Connection of electrical power supply to the irrigation control system.
 - V. Sleeving for irrigation pipe and wire.
 - VI. Preparation of Record Drawings.
 - VII. Winterization and Spring Start-up.
 - VIII. Maintenance period.
- 1.02 WORK NOT INCLUDED: Items of work specifically excluded or covered under other sections are:
- I. Provision for electrical power supply to the irrigation control system.
 - II. Provision for water to the site (water meter).
- 1.03 SUBMITTALS
- I. Deliver four (4) copies of all submittals to the Project Manager within 10 working days from the date of Notice to Proceed. Provide information in a 3-ring binder with table of contents and index sheet. Provide sections that are indexed for different components and labeled with the specification section numbered and the name of the component. Submittals must be made for all the components on the material list. Indicate which items are being supplied on the catalog cut sheets when multiple items are shown on one sheet. Submittal package must be complete prior to being reviewed by the Project Manager. Incomplete submittals will be returned without review.
 - II. Materials List: Include sleeving, pipe, fittings, mainline components, sprinkler heads, drip irrigation components, control system components, shop drawings and all other components shown on the drawings and installation details or described herein. Components such as pipe sealant, wire, wire connectors, ID tags,

etc. must be included. Quantities of materials need not be included.

- III. Manufactures' Data: Submit manufactures' catalog cuts, specifications, and operating instructions for equipment shown on the materials list.
- IV. Shop Drawings: Submit shop drawings called for in the installation details. Show products required for proper installation, their relative locations, and critical dimensions. Note modifications to the installation detail.
- V. The City of Greeley is enrolled in the Maxicom² Dollars program and as such, receives equipment points for all Rain Bird equipment installed on sites they own. In order to properly determine and account for these purchases, the Contactor shall provide copies of all invoices pertaining to purchases of Rain Bird equipment required by and installed on this project. The invoices shall match the total installed quantities for the project. It shall not be necessary for the Contractor to demonstrate their pricing on the invoices, only quantities. All of the aforementioned invoices shall be provided by the Contractor to the City of Greeley prior to release of any and all retainage for the project.
- VI. The following items are required to receive Rain Bird's Installation Verification and warranty verification: Maxicom² Central Control Systems, Rain Bird Weather Stations, Rain Bird Cluster Control Units (CCU), Rain Bird Site Satellites (SITE-SAT), and Rain Bird Satellites (SAT). Prior to final acceptance of the project, the Contractor shall be responsible for contacting and coordinating installation verification for any and all of the aforementioned products required by and installed on this project. Prior to starting work on the project, the Contractor shall contact Rain Bird Services Corporation (hereinafter referred to as RBSC) and conduct an onsite meeting with a representative of RBSC to coordinate all required verification services in a timely manor. The Contractor shall provide documentation of this meeting to the City of Greeley. Prior to final acceptance of the Work, the Contractor shall provide proof of installation verification of all required equipment by RBSC to the City of Greeley.

1.04 RULES AND REGULATIONS

- I. Work and materials shall be in accordance with the latest edition of the National Electric Code, the Uniform Plumbing Code as published by the Western Plumbing Officials Association, City of Greeley Design Criteria and Construction Specifications, and applicable laws and regulation of the governing authorities.
- II. When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned

rules and regulations, provide the quality and size required by the contract documents.

- III. If quantities are provided either in these specifications or on the drawings, these quantities are provided for information only, it is the Contractor's responsibility to determine the actual quantities of all material, equipment, and supplies required by the project and to complete an independent estimate of quantities and wastage.
- IV. Notify Project Manager in writing prior to construction about discrepancies between contract documents and existing site conditions or manufacturer's specific recommendations for use or their product.
- V. Contractor is responsible for damage to site amenities during construction. Replace damaged items with identical materials of equal value to match existing conditions. Make replacements at no additional cost to contract price. Penalty for specific damage: as valued by an independent auditor or as mutually agreed to by Owner and Contractor.

1.05 QUALITY ASSURANCE

- I. Engage an experienced Installer who has completed irrigation work similar in materials, design, and extent to that indicated for this project and with a record of successful irrigation installations.
- II. Installer's Field Supervision: Installer shall have a Certified Landscape Technician (CLT) as the supervisor on the project site full-time when irrigation installation is in progress.

1.06 TESTING

- I. Notify the Project Manager three days in advance of testing.
- II. Pipelines jointed with rubber gaskets or threaded connection may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.
- III. Subsections of mainline pipe may be tested independently, subject to the review of the Project Manager.
- IV. Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct test or retests.
- V. All costs, including travel expenses for site visits by the Project Manager or Consultant, for any re-inspection that may be required due to non-compliance with the Construction Documents shall be the sole responsibility of the Contractor.
- VI. Hydrostatic Pressure Test (Solvent Weld Mainline Pipe)
 - A. Backfill to prevent pipe from moving under pressure. Expose couplings and fittings.
 - B. Expose all remote control valves their riser pipe and service tee fittings.

- C. Purge air from mainline pipe before test. Attach pressure gauge to mainline pipe in test section.
 - D. Subject mainline pipe to a hydrostatic pressure equal to 140 PSI for two hours. Test with mainline components installed.
 - E. Observe pressure loss on pressure gauge. If pressure loss is greater than 5 PSI, identify reason for pressure loss. Visually inspect irrigation pipe for leakage and replace defective pipe, fitting, joint, valve, or appurtenance. Repeat test until pressure loss is equal to or less than 5 PSI.
 - F. Cement or caulking to seal leaks is prohibited.
- VII. Volumetric Leakage Test (Mainline Pipe with Rubber Gaskets)
- A. Backfill to prevent pipe from moving under pressure. Expose couplings and fittings.
 - B. Purge air from pipeline before tests.
 - C. Provide all necessary pumps, bypass piping, storage tanks, meters, 3-inch test gauge, supply piping and fittings in order to properly perform testing.
 - D. Subject mainline pipe to 140 PSI for two hours. Maintain constant pressure.
 - E. Testing pump must provide a continuous 140 PSI to the mainline. Allowable deviation in test pressure is 5 PSI during test period. Restore test pressure to 140 PSI at end of test.
 - F. Water added to mainline pipe must be measured volumetrically to the nearest 0.10 gallons.
 - G. Use the following table to determine maximum allowable volume lost during test:

Leakage Allowable (Gallons per 100 joints/Hour)

Pipe Size (INCHES)	Test Pressure (PSI)								
	60	70	80	90	100	110	120	130	140
3"	0.48	0.51	0.55	0.58	0.62	0.65	0.68	0.70	0.73
4"	0.62	0.66	0.71	0.75	0.8	0.84	0.87	0.91	0.94
6"	0.90	0.97	1.04	1.11	1.18	1.23	1.29	1.34	1.40

VIII. Operational Test

- A. Activate each remote control valve in sequence from controller. The Project Manager will visually observe operation, water application patterns, and leakage.
- B. Replace defective remote control valves, solenoids, wiring, or appurtenance to correct operational deficiencies.
- C. Replace, adjust, or move water emission devices to correct operational or coverage deficiencies.
- D. Replace defective pipe, fittings, joint, valves, sprinkler, or appurtenance to correct leakage problems. Cement or caulking to seal leaks is prohibited.

- E. Repeat test(s) until each lateral passes all tests. Repeat tests, replace components, and correct deficiencies at no additional cost to the City.
- IX. Control System Acceptance Test
- A. Upon completion of construction, City of Greeley Parks Department Representatives will administer a System Acceptance Test.
 - B. Following construction completion and a Review by the Project Manager, an evaluation period will begin. After 30 days of continuous service without major system problems, the system will be accepted and the guarantee/warranty period will begin. If at any time during the 30 day evaluation period, a major system problem occurs, the source of the problem will be determined and corrected and the 30 day evaluation period will start again. Equipment will not be accepted until such time as the System Acceptance Test is passed.
 - C. If successful completion of the System Acceptance Test is not attained within 90 days following commencement of the evaluation period, the Project Manager has the option to request replacement of equipment, terminate the order, or portions thereof, or continue with the System Acceptance Test. These options will remain in effect until such time as a successful completion of the System Acceptance Test.
 - D. Final payment will be made after successful completion of the System Acceptance Test.
- X. Sensor Cable
- A. Test for leaks to ground per manufacturer's recommendations. Test results must meet or exceed manufacturer's guidelines for acceptance.
 - B. Test cable for continuity if cable is being installed for future expansion of the irrigation system.
 - C. Replace defective wire, underground splices, or appurtenances. Repeat test until manufacturer's guidelines are met.
- XI. Control System Grounding:
- A. Test for proper grounding of control system per manufacturer's recommendations. Test results must meet or exceed manufacturer's guidelines for acceptance.
 - B. Replace defective wire, grounding rod, or appurtenances. Repeat the test until the manufacturer's guidelines are met.
- XII. Mainline Pipe Tracing Wire
- A. Test mainline pipe tracing wire for continuity.
 - B. Testing shall be conducted in the presence of the Project Manager. Repair or replace defective tracing wire.
 - C. Testing shall be documented by the contractor and approved by the Project Manager.
- XIII. Testing Review

- A. Failure of initial testing review will require additional review. Payment of all cost, including travel expenses and site visits by City of Greeley Representative, for additional reviews that may be required due to non-compliance with the Construction Documents will be Contractor's responsibility.

1.07 CONSTRUCTION REVIEW: The purpose of on-site reviews by the Project manager is to periodically observe the work in progress, the Contractor's interpretation of the construction documents, and to address question with regard to the installation.

- I. Scheduled reviews such as those for irrigation system layout or testing must be scheduled with the Project Manager as required by these specifications.
- II. Impromptu reviews may occur at any time during the project.
- III. A review will occur at the completion of the irrigation system installation and Project Record Drawing submittal.

1.08 COORDINATION AND SCHEDULING

- I. The irrigation 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.

1.09 GUARANTEE/WARRANTY AND REPLACEMENT: The purpose of this guarantee/warranty is to insure that the Owner receives irrigation materials of prime quality, installed and maintained in a thorough and careful manner.

- I. For a period of one year from the commencement of the formal maintenance period, guarantee/warranty irrigation materials, equipment, and workmanship against defects. Fill and repair depressions. Restore landscape or structural features damaged by the settlement of irrigation trenches or excavations. Repair damage to the premises caused by defective item. Make repairs within seven days of notification from the Project Manager.
- II. Contract documents govern replacements identically as with new work. Make replacements at no additional cost to the contract price.
- III. Guarantee/warranty applies to originally installed materials and equipment and replacements made during the guarantee/warranty period.

PART 2: MATERIALS

2.01 QUALITY: Use materials that are new and without flaws or defects of any type and which are the best of their class and kind.

2.02 SUBSTITUTIONS

- I. Alternative equipment must be approved by the Project Manager prior to bidding. The Contractor is responsible for making any changes to the design to accommodate alternative equipment.
- II. Pipe sizes referenced in the construction documents are minimum sizes, and may be increased at the option of the Contractor.

2.03 SLEEVING

- I. Install a separate sleeve beneath paved areas to route each run of irrigation pipe or wiring bundle.
- II. Sleeving material beneath pedestrian pavements shall be PVC Class 200 pipe with solvent welded joints.
- III. Provide either continuous segment of DR-11 HDPE or Class 50 ductile iron pipe with mechanical joints for sleeving material beneath drives and streets. Coordinate with City of Greeley prior to construction.
- IV. Sleeving sizing: A minimum of twice the nominal diameter of solvent-welded pipe or wiring bundle, or as indicated on drawings. Sleeve diameter for gasketed pipe must accommodate outside diameter of joint-restraint casing spacers, refer to joint-restraint manufacturer's sizing recommendations.

2.04 PIPE AND FITTINGS

- I. Mainline Pipe and Fittings
 - A. Use rigid, unplasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe, extruded from material meeting the requirements of Cell Classification 12454-A or 12454-B, ASTM Standard D1784, with an integral belled end suitable for solvent welding.
 - B. Use Class 200, SDR-21, rated at 200 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 200 in the case of small nominal diameters that are not manufactured in Class 200.
 - C. Use rubber-gasketed pipe equipped with factory installed reinforced gaskets for mainline pipe with nominal diameter greater than or equal to 3-inches. Use Gasketed pipe joints conforming to "Laboratory Qualifying Tests" section of ASTM D3139. Use gasket material conforming to ASTM F477. Use Harco or approved equal rubber-gasketed deep bell ductile iron fittings conforming to ASTM A-536 and ASTM F-477. Use Lubricant approved by pipe manufacturer.
 - D. Use solvent weld pipe for mainline pipe with a nominal diameter less than 3-inches or where a pipe connection occurs in a sleeve. Use Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM Standards D2466 and D1784. Use primer

approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564.

- E. Mainline pipe within sleeves: Use solvent weld pipe for mainline pipe with nominal diameter 4-inches and smaller installed within sleeves. Use pipe equipped with factor installed reinforced gaskets for mainline pipe with nominal diameter of 6-inches and larger installed within sleeves. Provide restrained casing spacers where gasketed joints occur within sleeve.

II. Lateral Pipe and Fittings

- A. Use rigid, unplasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe, extruded from material meeting the requirements of Cell Classification 12454-A or 12454-B, ASTM Standard D1784, with and integral belled end suitable for solvent welding.
- B. Use Class 160, SDR-26, rated at 160 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 160 in the case of small nominal diameters that are not manufactured in Class 160.
- C. Use solvent weld pipe for lateral pipe. Use Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM Standards D2466 and D1784 for PVC pipe. Use primer approved by the pipe manufacture. Solvent cement to conform to ASTM Standard D2564, of a type approved by the pipe manufacturer.

III. Inline Drip Tubing and Fittings

A. Drip Tubing

- 1. Use UV resistant polyethylene drip tubing with integral pressure compensating drip emitters.
- 2. Emitter spacing and flow as noted in drawings and installation details.
- 3. Use emitters that are pressure compensating from 15 to 60 PSI.
- 4. Use tubing with outside diameter from 0.630" to 0.710", and inside diameter from 0.560" to 0.540".
- 5. Use tubing stakes or landscape fabric staples to hold above-ground pipe in place.
 - a. Place stakes or staples 18" to 24" OC, or as needed to secure tubing.

B. Blank Tubing

- 1. Use UV resistant polyethylene blank tubing for start connections between manifolds and drip tubing, and supply and exhaust manifolds, with flows less than three and one half (3.5) GPM.
- 2. Use tubing with outside diameter from 0.630" to 0.710". and inside diameter from 0.560" to 0.540".

3. Use tubing stakes or landscape fabric staples to hold above-ground pipe in place.
 - a. Place stakes or staples 18" to 24" OC, or as needed to secure tubing.

C. Fittings

1. Use fittings manufactured from UV resistant material.
2. Use Compression fittings for all tubing to tubing connections
 - a. Fittings shall accept tubing with outside diameters from 0.630" to 0.710" (16 – 18mm).
 - b. Acceptable manufacture and models:
Rain Bird Easy Fit Compression Fittings
3. Use Threaded by insert fittings for making connections from valves and/or PVC fittings to tubing.
 - a. Fittings shall accept tubing with outside diameters from 0.630" to 0.710" (16 – 18mm).
 - b. Acceptable manufacture and models:
Rain Bird Easy Fit Compression Fittings
Netafim 17mm Dripline Fittings

IV. Specialized Pipe and Fittings

A. Low Density Polyethylene Hose

1. Use pipe specifically intended for use as a flexible swing joint.
 - a. Inside diameter, 0.490 ± 0.010 inch.
 - b. Wall thickness, 0.100 ± 0.010 inch.
 - c. Color, Black.
2. Use spiral barbed fittings supplied by the same manufacturer as the hose.

B. Assemblies calling for flanged connections shall utilize stainless steel studs and nuts and rubber gaskets.

C. Assemblies calling for threaded pipe connections shall utilize PVC Schedule 80 and 40 threaded fittings and Rain Bird or Spears pre-manufactured swing-joint assemblies. Use PVC Schedule 80 nipples.

D. Joint sealant, use non-hardening, nontoxic pipe thread sealant formulated for use on threaded connections and approved by the pipe fitting and valve manufacturer. Where directed by valve manufactures, use threaded tape for threaded connections at valves and instead of thread paste.

E. Copper pipe, use Type "K" rigid pipe conforming to ASTM Standard B88. Use wrought copper or cast bronze fittings, soldered, flared mechanical, or treaded joint per installation details or local code. Use a 95 – percent tin and 5 – percent antimony solder.

V. Joint Restrain Harness

- A. Provide joint restraint harness components as recommended by pope and fitting manufacturer and in accordance with accepted

industry practices. For joint restrains on ductile iron pipe applications, use restraint components constructed of 60-42-10 ductile iron conforming to ASTM A536. For joint restraints on PVC pipe application, use restraint components constructed of 60-42-10 ductile iron conforming to ASTM A536-80 and ASTM F1674-96.

- B. Use bolts, nuts, retaining clamps, all-thread, or other joint restraint harness materials that are zinc plated or galvanized.
- C. Use on pipe greater than or equal to 3-inch diameter or any diameter rubber gasketed pipe.

VI. Thrust Blocks

- A. Use 3,000 PSI concrete. Use commercially pre-mixed concrete unless written approval is provided by Project Manager prior to construction.
- B. Use 2-mil plastic protective sheeting.
- C. Use No. 4 Rebar.

2.05 MAINLINE COMPONENTS

I. Backflow Prevention Device

- A. As presented in the installation details.
- B. This device shall protect against any Cross-Connection between the irrigation system and the public's potable water supply.
- C. This device shall provide protection against both Back-siphon and Backpressure conditions
- D. This device shall protect against High Hazard conditions.
- E. This device shall be Testable.
- F. The assembly shall be intended for use under continuous pressure applications
- G. Acceptable Manufacturers are, Feboc and Wilkins.

II. Backflow Prevention Device Enclosures

- A. Enclosures shall be designed to protect the Backflow assemblies against vandalism and theft, and shall be lockable.
- B. Enclosures shall be constructed with 1 1/4" Sch. 40 ASTM steel pipe end frames, 1" x 1" x 1/8" steel angle iron bases, and 1/2" #13 ga. diamond pattern flat rolled expanded steel top, side, and ends welded 4" o.c.
- C. Enclosures shall have no sharp corners or edges.
- D. Enclosures shall be Power Coated with a 1.5 to 2.0 mil thickness of polyester powder.
 - a. Green color.
- E. Acceptable Manufacturers are Guard Shack.

III. Master Valve Assembly

- A. As presented in the installation details.
- B. Acceptable Manufacturers are Bermad 410 Series normally open (unless otherwise specified).

IV. Flow Sensor Assembly

- A. As presented in the installation details.
- B. Acceptable Manufactures are Rain Bird.
- V. Isolation Gate Valve Assembly
 - A. As presented in the installation details.
 - B. Acceptable Manufactures are, American AVK, Clow, Kennedy, Mueller, Matco, Nibco, or Waterous.
- VI. Quick Coupling Valve Assembly
 - A. As presented in the installation details.
 - B. Acceptable Manufactures are Rain Bird.

2.06 SPRINKLER IRRIGATION COMPONENTS

- I. Remote control valves (RCV) Assembly for Sprinkler Laterals
 - A. As presented in the installation details.
 - B. Use wire connectors and waterproofing sealant to join control wires and solenoid valves.
 - C. Use standard Christy I.D. tags with hot-stamped black letters on a yellow background.
 - D. Install a separate valve box over a 3-inch depth of ¾"-inch gravel for each assembly.
 - E. Provide PRS-D Pressure Regulating Modules at all spray and rotor sprinkler remote control valves.
- II. Sprinkler Assembly
 - A. As presented in the installation details.
- III. Sprinkler Pressure Test Kit
 - A. Provide one assembly per project.
 - 1. Assembly shall include one Rain Bird PHG and one Rain Bird Pitot Tube (part no. 41017), for use in pressure adjustment for spray and rotor sprinklers.

2.07 DRIP IRRIGATION COMPONENTS

- I. Remote Control Valve (RCV) assembly for Drip Laterals
 - A. As presented in drawings and installation details.
- II. Flush Valve Assembly
 - A. As presented in the installation details.

2.08 CONTROL SYSTEM COMPONENTS

- I. Satellite Controller Assembly: As presented in drawings and installation details. All incidental parts which are not specified herein and are necessary to complete the system shall be furnished and installed as though such parts were shown on plans or specified. All systems shall be in satisfactory operation at the time of completion.
 - A. Communication Path
 - 1. Link Radio
 - a. The Link Radio communication for the irrigation interconnect as required from the CCU to the satellite

unit(s) shall be 2 watt, 450 MHz Motorola Radio/Modem unit(s) with RS-232 cable from CCU and satellite unit to radio/modem unit (9 pin only), RG-58 antenna cable, antenna (as specified).

- b. Each satellite and decoder shall be grounded by means that conform to the requirements of the National Electrical Code, current edition as adopted by the City, and the manufactures specifications. No solder connections will be allowed. Resistance to ground shall be no greater than 10 ohms.

B. Automatic Controller(s) and Related Equipment

1. Pre-assembled and tested by a local authorized Rain Bird Maxicom central control system representative, and as presented conceptually in the installation details.
2. Acceptable manufacture, Rain Bird Sprinkler Manufacturing Corp. Controller shall be installed per manufacturers specifications, and as specified herein.
3. The controllers shall be ESP – xx Sat-LW with PT-1502 flow monitors, one per point-of-connection. See drawings for number of stations.

C. Satellite Controller Assembly(s)

1. Controller enclosure shall be “Strong Box” manufactured by V.I.T. Products, Inc.
2. The above described product shall be a NEMA 3R rain-proof enclosure as listed by Underwriter Laboratories, INC.
3. The enclosure shall be of a vandal and weather resistant nature, manufactured entirely of 304 grade stainless steel. The main housing shall be louvered upper and lower body to allow for cross-ventilation. A stainless steel backboard shall be provided for the purpose of mounting electronic and various other types of equipment. The backboard shall be mounted on four stainless steel bolts that will allow for removal of the backboard.
4. All satellite assemblies shall be linked to a CCU via Link Radio.
5. The satellite assemblies shall be pre-assembled in a Strong Box stainless steel weatherproof, vandal resistant, lockable enclosure with flush mounted handles as manufactured by V.I.T. Products, Inc.
6. The satellite assembly shall consist of a stainless steel enclosure, stainless steel removable backboard, terminal interface board with radio interrupter duplex receptacle.
7. LSP-Line voltage Surge Protection
 - a. The assembly shall be protected on the line voltage side by a device that will control all surges coming in, and provide noise filtering and line conditioning.

8. ICL-Lightning Protected Interconnect Board
 - a. The assembly shall include a Control Tech USA station wiring Interconnect Board with Lightning Protection. The board shall protect the controller from lightning strikes coming in from the field through the field wires. Each station shall have three (3) levels of protection. The board shall have a DB35 universal remote connector for Rainmaster Pro Max UA remote operation. The board shall also have a master valve isolation relay. There shall also be a 2 Amp fuse-protected 24 VAC terminal for station testing and auxiliary equipment usage.
 9. DBL-Data Line Lightning Protection Board
 - a. This board shall have five (5) levels of lightning protection for the incoming flow sensing data line(s). It shall be capable of protecting two (2) or four (4) data lines, and provide protection for 5 VDC, 12 VDC, 30 VDC, or 35 VDC data lines, depending on specified flow sensor/monitor.
 10. Each satellite assembly shall have one (1) flow sensing assemblies for each point-of-connection, properly sized to monitor and react to excessive system flows. For Link Radio, the satellite assembly shall consist of a pulse transmitter.
 11. All components shall be properly and neatly wired to the appropriate terminal interface board. Bundle wires and tie with nylon zip-ties.
 12. The satellite assembly shall be covered by a five-year limited warranty. Warranty service shall be preformed in the field on the site where equipment is located.
- D. Wire Markers
1. Pre-numbered or labeled with indelible non-fading ink, made of permanent, non fading material.
- E. Lightning protection
1. Provide on 12" x 36" x 0.0625 ground plate, one 5/8" x 10 foot copper clad UL listed grounding rod, 30 feet of #6 AWG bare copper grounding wire, and one CADWELD connector, and two 6-inch round valve boxes at each satellite controller group.
- II. Power Wire
- A. Electrical wire from the power source to the satellite control unit shall be solid or stranded copper, Type UF single conductor cable or multi-conductor with ground cable, UL approved for direct underground burial. Power wires shall be black, white, and green in color. The Contractor is responsible for verifying that the power wire sizes are compatible and adequate for the control system being used.

- B. Splices
 - 1. Use 3M 82-A series connectors.
 - C. Conduit
 - 1. PVC Schedule 40.
 - D. Warning tape
 - 1. Insert plastic film highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. Three inches wide, colored yellow, and imprinted with "CAUTION: BURIED ELECTRIC LINE BELOW?"
- III. Low Voltage Control Wire
- A. Control Wire: Use American Wire Gauge (AWG) No.14 solid copper, 600 volt, Type UF or PE cable, UL approved for direct underground burial from the controller unit to each remote control valve.
 - B. Common Wire: Use American Wire Gauge (AWG) No. 12 solid copper, 600 volt, Type UF or PE cable, UL approved for direct underground burial from the controller unit to each remote control valve.
 - C. Color: Wire color shall be continuous over its entire length.
 - 1. Control wire: Red. Note: If project has multiple controllers use different color control wire for each controller.
 - 2. Common wire: White. Note: If project has multiple controllers use White wire with a colored stripe matching the Control wire color of the same controller.
 - 3. Spare control wire: Any color except those above.
 - 4. Spare common wire: Any color except those above.
 - D. Splices: Use 3M DBY-6 or 3M DBR-6.
 - E. Warning tape: Insert plastic film highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. Three inches wide, colored yellow, and imprinted with "CAUTION: BURIED ELECTRIC LINE BELOW?"
- IV. Sensor Cable
- A. Use shielded and jacketed, twisted pair, multi conductor PE-89 (6 pair), 19 AWG wire designed for direct burial, as recommended by central control system manufacturer.
 - B. Splices: Use 3m #SLiC with 3M "Insulation Displacement Connections" (316IR or UR-2), Ranger Serviseal Connectors, or approved equal, as recommended by central control system manufacturer.
 - C. Electrical Conduit: Use PVC Schedule 40 conduit conforming to dimensions and tolerances established by ASTM Standard D-1785. Use Schedule 40, Type 1, PVC solvent weld sweep fittings for PVC conduit conforming to ASTM Standard D2466 and D1784 for buried installations. Use rigid metallic conduit with sweep elbows for above grade installations.

- D. Warning Tape: Inert plastic film highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils. Three inches wide, colored red, and imprinted with 'CAUTION: BURIED ELECTRIC LINE BELOW'.

2.09 OTHER COMPONENTS

- I. Remote Control Unit: Provide one (1) Rainmaster Pro Max UA Universal radio remote transceiver package compatible with the specified control system.
- II. Tools and Spare Parts: Provide operating keys, servicing tools, spare parts and other items indicated in the General Notes of the Drawings.
- III. Other Materials: Provide other materials or equipment shown on the drawings or installation details that are part of the irrigation system, even though such items may not have been referenced in these specifications.

PART 3: EXECUTION

3.01 INSPECTIONS AND REVIEWS

- I. Site Inspections
 - A. Verify construction site conditions and note irregularities affecting work of this section. Report irregularities to the Project Manager prior to beginning work.
 - B. Coordinate and provide testing of radio signal integrity between on-site satellite controller and Link Radio CCU as designated by Project Manager.
 - C. Beginning work of this section implies acceptance of existing conditions.
- II. Utility Locates ("Utility Notification Center of Colorado")
 - A. Arrange for and coordinate with local authorities the location of all underground utilities.
 - B. Repair and underground utilities damaged during construction. Make repairs at no additional cost to the contract price.

3.02 LAYOUT OF WORK

- I. Stake out the irrigation system. Items to be staked include: backflow device; control valves; sleeving; mainline and lateral pipe; drip line grids; drip line flush valves; air/vacuum relief valves; quick coupling valves; isolation valves; controller assembly; and sprinklers.
 - A. Irrigation System Layout Review: Irrigation system layout review will occur after the staking has been completed. Notify the Project Manager one week in advance of review. Modifications will be identified by the Project Manager at this review.
- II. Install all mainline pipe and mainline components inside of project property lines.

3.03 EXCAVATION, TRENCHING, AND BACKFILLING

- I. Excavate to permit the pipes to be laid at the intended elevations and to permit work space for installing connections and fittings.
- II. Minimum cover (distance from top of pipe or control wire to finish grade)
 - A. 24-inches over mainline pipe and over electrical conduit.
 - B. 28-inches over control wire and sensor cable.
 - C. 18-inches over lateral pipe to sprinklers.
- III. Maintain at least 15-foot clearance from the centerline of any tree.
- IV. Backfill only after lines have been reviewed and tested.
- V. Excavated material is generally satisfactory for backfill. Backfill shall be free from rubbish, vegetative matter and stones larger than 2-inches in maximum dimension. Frozen material will not be allowed. Remove material not suitable for backfill. Backfill placed next to pipe shall be free of sharp objects that may damage the pipe.
- VI. Backfill un-sleeved pipe in either of the following manners:
 - A. Backfill and puddle the lower half of the trench. Allow to dry 24 hours. Backfill the remainder of the trench in 6-inch layers. Compact to density of surrounding soil.
 - B. Backfill the trench by depositing the backfill material equally on both sides of the pipe in 6-inch layers and compacting to the density of surrounding soil.
- VII. Enclose pipe and wiring beneath roadways, walks, curbs, etc., in sleeves. Minimum compaction of backfill for sleeves shall be 95% Standard Proctor Density, ASTM D698-78. Use of water for compaction around sleeves, "puddling", will not be permitted.
- VIII. Dress backfilled areas to original grade. Incorporate excess backfill into existing site grades.
- IX. Where utilities conflict with irrigation trenching and pipe work, contact the Project Manager for trench depth adjustments.

3.04 SLEEVING AND BORING

- I. Install sleeving at a depth that permits the encased pipe or wiring to remain at the specified burial depth.
- II. Extend sleeve ends six inches beyond the edge of the paved surface. Cover pipe ends and mark with stakes.
- III. Bore for sleeves under obstructions that cannot be removed. Employ equipment and methods designed for horizontal boring.

3.05 ASSEMBLING PIPE AND FITTINGS

- I. General
 - A. Keep pipe free from dirt and pipe scale. Cut pipe ends square and debur. Clean pipe ends.

- B. Keep ends of assembled pipe capped. Remove caps only when necessary to continue assembly.
- C. Trenches may be curved to change direction or avoid obstructions within the limits of the curvature of the pipe. Minimum radius of curvature and offset per 20-foot length of pipe by pipe size are shown in the following table. All curvatures results from the bending of the pipe lengths. No deflection will be allowed at a pipe joint.

SIZE	RADIUS	OFFSET PER 20' LENGTH
1 1/2"	25'	7'-8"
2"	25'	7'-8"
2 1/2"	100'	1'-11"
3"	100'	1'-11"
4"	100'	1'-11"
6"	150'	1'-4"

II. Mainline Pipe and Fittings

- A. Use only strap-type friction wrenches for threaded plastic pipe.
- B. PVC Rubber-Gasketed Pipe
 - 1. Use pipe lubricant. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
- C. PVC Solvent Pipe
 - 1. Use primer and solvent cement. Join pipe in a manner recommended by the manufacturer and in accordance with accepted industry practices.
 - 2. Cure for 30 minutes before handling and 24 hours before allowing water in pipe.
 - 3. Snake pipe from side to side within the trench.
- D. Fittings
 - 1. The use of cross type fittings is not permitted.
 - 2. Ductile iron fittings shall not be struck with a metallic tool. Cushion blows with a wood block or similar shock absorber.

III. Lateral Pipe and Fittings

- A. Use only strap-type friction wrenches for threaded plastic pipe.
- B. PVC Solvent Weld Pipe
 - 1. Use primer and solvent cement. Join pipe in the manner recommended by the manufacturer and in accordance with accepted industry practices.
 - 2. Cure for 30 minutes before handling and 24 hours before allowing water in the pipe.
 - 3. Snake pipe from side to side within the trench.
- C. Fittings: The use of cross type fittings is not permitted.

IV. Specialized Pipe and Fittings

- A. Low Density Polyethylene Hose: Install per manufacturer's recommendations.
- B. Flanged connections: Install stainless steel studs and nuts and rubber gaskets per manufacture's recommendations.
- C. PVC Threaded Connections
 - 1. Use only factory-formed threads. Field-cut threads are not permitted.
 - 2. Use only non-hardening, nontoxic thread sealant. Apply thread sealant in a manner recommended by component, pipe and sealant manufacturers and in accordance with accepted industry practices.
 - 3. When connection is plastic-to-metal, the plastic component shall have male threads and the metal component shall have female threads.
- D. Make metal-to-metal, threaded connection with non-hardening, nontoxic pipe sealant applied to the male threads only.
- E. Copper Pipe
 - 1. Use flux and solder. Join pipe in manner recommended by manufacturer and in accordance with local codes and accepted industry practices.
 - 2. Solder so that continuous bead show around the joint circumference.
- F. Thrust Blocks
 - 1. Use thrust blocks for fittings on pipe greater than or equal to 3-inch diameter, or any diameter of rubber gasketed pipe.
 - 2. Size, orient, and place cast-in-place concrete against undisturbed soil as shown on installation details.
 - 3. Wrap fittings or component with plastic to protect bolts, joint, gasket and fitting from concrete. Do not bury fitting or component in concrete.
 - 4. Commercially delivered concrete requires a 3,000 PSI mix.
 - 5. If pre-mix bags are used, mix per manufacture's recommendations (maximum 1 gallon of water to 80-pound bag of pre-mix).
 - 6. Contractor is responsible for performing a slup test (minimum of 2-inches to a maximum of 4-inches) if requested by the Project Manager.
- G. Joint Restraint Harness
 - 1. Use on pipe 3-inch diameter or any diameter of rubber gasketed pipe. Use a joint restrain harness wherever directional fittings or valves are not positively restrained by flanged fittings, threaded fittings, and/or thrust blocks.
 - 2. Use a joint restraint harness with transition fittings between metal and PVC pipe, where weak trench banks do not allow use of thrust blocks, or where extra support is required to retain directional fitting or joint.

3.06 INSTALLATION OF MAINLINE COMPONENTS

- I. Winterization Assembly: Provide per installation details where indicated on drawings. Brand "WA" on valve box lid in 2-inch high letters.
- II. Master valve Assembly: Provide per installation details where indicated on the drawings. Brand "MCV" on valve box lid in 2-inch high letters.
- III. Flow Sensor Assembly: Provide per installation details where indicated on the drawings. Brand "FS" on valve box lid in 2-inch high letters.
- IV. Isolation Gate Valve Assembly: Provide per installation details where indicated on the drawings. Install at least 12-inches from and align with adjacent walls or edges of paved areas. Brand "GV" on valve box lid in 2-inch high letters.
- V. Quick Coupling Valve Assembly: Provide per installation details where indicated on drawings. Brand "QC" on valve box lid in 2-inch high letters.

3.07 INSTALLATION OF SPRINKLER IRRIGATION COMPONENTS

- I. Remote Control Valve (RCV) Assembly for Sprinkler Laterals
 - A. Flush mainline before installation of RCV Assembly.
 - B. Provide per installation details where indicated on drawings. Use wire connector and waterproof to connect control wires to remote control valve wires. Use 3M DBY-6 or DBR-6 connectors and sealant per manufacturer's recommendations.
 - C. Provide only one RCV to a valve box. Locate valve box at least 12-inches from and align with nearby walls or edges of paved areas. Group RCV assemblies together where practical. Arrange grouped valve boxes in rectangular patterns. Allow at least 12-inches between valve boxes.
 - D. Adjust RCV assembly to regulate downstream operating pressure.
 - E. Attach ID tag with controller station number on control wiring.
 - F. Brand controller letter and station number on valve box lid in 2-inch high letters.
- II. Sprinkler Assembly
 - A. Flush lateral pipe before installing sprinkler assembly.
 - B. Provide per installation details at location shown on drawings.
 - C. Locate rotary sprinklers 6-inches from adjacent walls, fences, or edges of paved areas.
 - D. Locate spray sprinklers 3-inches from adjacent walls, fences, or edges of paved areas.
 - E. Install sprinklers perpendicular to finish grade.

- F. Supply appropriate nozzle and/or adjust arc of coverage and/or radius of throw of each sprinkler for best performance and uniform coverage.

III. Sprinkler Pressure Test Kit

- A. Use a pitot tube and pressure gauge at the worst-case rotor sprinkler assembly, from the respective remote control valve. Adjust PRS-Dial at each rotor remote control valve, to provide the design operating pressure at the worst-case rotor sprinkler head. Typically the worst-case sprinkler is the sprinkler furthest from the remote control valve. Complete pressure adjustments for every rotor remote control valve.
- B. Using pressure gauge and necessary fittings, place pressure gauge on worst-case spray sprinkler, from the respective remote control valve. Adjust PRS-dial at each spray remote control valve to provide an operation pressure of 30 PSI at the worst-case spray sprinkler head. Typically the worst-case sprinkler is the sprinkler furthest from the remote control valve. Complete pressure adjustment for each spray remote control valve.
- C. Turn over pitot tube and pressure gauge to the Project Manager at completion of construction.

3.08 INSTALLATION OF DRIP IRRIGATION COMPONENTS

I. Remote Control Valve (RCV) Assembly for Drip Laterals

- A. Flush mainline pipe before installing RCV assembly.
- B. Provide per installation details where indicated on drawings. Use wire connector and waterproof to connect control wires to remote control valve wires. Use 3M DBY-6 or DBR-6 connectors and sealant per manufacturer's recommendations.
- C. Provide only one RCV to a valve box. Locate valve box at least 12-inches from and align with nearby walls or edges of paved areas. Group RCV assemblies together where practical. Arrange grouped valve boxes in rectangular patterns. Allow at least 12-inches between valve boxes.

II. Inline Drip Tubing: Install inline drip tubing components in strict accordance with tubing manufacturers details, guidelines, and recommendations.

III. Flush Valve Assembly: Provide at end of each dripper line grid as show and directed on the drawing and installation details. Install at least 12-inches from and align with adjacent walls or edges of paved areas. Brand "FV" on valve box lid in 2-inch high letters.

3.09 INSTALLATION OF CONTROL SYSTEM COMPONENTS

I. Satellite Control Assemblies

- A. The location of the Satellite Controller Assemblies as depicted on the drawings is approximate; The Project Manager will determine the exact site location during sprinkler layout review.
- B. Assemble satellite control assembly, sensors, and appurtenance in satellite enclosure per authorized manufacturer representative recommendation and shop drawings. Provide pre-fabrication and testing of controller assembly by authorized Rain Bird Maxicom distributor representative prior to installation in field. Provide installation observation and wire connections in field by manufacturer's personnel or trained distributor personnel.
- C. Provide combination switch/GFCI outlet in accordance with local codes inside satellite controller assembly enclosure.
- D. Provide electrical service connection for Satellite Controller Assemblies under direction and observation of manufactures' personnel or trained distributor personnel. Utilize existing electrical source. Provide primary surge protection arrestors on incoming power lines in accordance with control system manufacturer recommendations.
- E. Lightning protection: Drive grounding rod into soil its full length. Space rod and grounding plate 20 feet apart in a straight line away from controller. Connect #6 AWG copper grounding wire to rod from plate using CADWELD connection. Install 6-inch round valve box over each CADWELD connection and grounding plate connection. Connection of grounding wire to the satellite must be per satellite manufacturer or distributor's recommendations.
- F. Attach wire markers to the ends of control wires inside the controller unit housing. Label wires with the identification number (see drawings) of the remote control valve to which the control wire is connected.
- G. Connect control wires to the corresponding controller terminal.

II. Power Wire

- A. Install with a minimum number of field splices. If a power wire must be spliced, make spice with recommended connector, installed per manufacturer's recommendations. Locate all splices in a separate 12-inch standard valve box. Coil 2 feet of wire in valve box.
- B. All power wire shall be laid in trenches. The use of vibratory plow is not permitted.
- C. Green wire shall be used as the ground wire from power source to all satellites.
- D. Carefully backfill around power wire to avoid damage to wire insulation or wire connectors.

- E. Unless noted on plans, install wire parallel with mainline pipe. Install wire a minimum of 2-inches below top of PVC mainline pipe.
- F. Encase wire not installed with PVC pipe, in electrical conduit with a continuous run of warning tape placed in the backfill, 6-inches above the wiring.

III. Low Voltage Control Wire

- A. Bundle control wires where two or more are in the same trench. Bundle with pipe wrapping tape spaced at 10-foot intervals.
- B. Provide a 24-inch length of wire in an 8-inch diameter loop at each 90-degree change of direction, at both ends of sleeves, and at 100-foot intervals along continuous runs of wiring. Do not tie wiring loop. Coil 24-inch length of wire within each remote control valve box.
- C. Install common ground wire and one control wire for each remote control valve. Multiple valves on a single control wire are not permitted.
- D. If a control wire must be spiced, make splice with wire connectors and waterproof sealant, installed per the manufacturer's instructions. Locate splice in a valve box that contains an irrigation valve assembly, or in a separate 12-inch standard valve box. Use same procedure for connection to valves as for in-line splices.
- E. Unless noted on plans, install wire parallel with and below PVC mainline pipe.
- F. Protect wire not installed with PVC mainline pipe with a continuous run of warning tape placed in the backfill six inches above the wiring.

IV. Sensor Cable

- A. Route cable between controller assembly and flow sensor with no field splices.
- B. Install cable using open trenches. Use of vibratory plow is not permitted.
- C. Carefully backfill around cable to avoid damage to wire insulation or wire connectors.
- D. Install cable parallel with mainline pipe unless noted otherwise on plans.
- E. Provide continuous run of warning tape above cable. Install warning tape six inches above cable.

V. Instrumentation

- A. Provide sensors as indicated on drawings and installation details, and in accordance with manufacturer's recommendations.
- B. Provide electrical connections between central control system hardware and sensors under direction and observation of manufacturer's personnel or trained distributor personnel.

3.10 INSTALLATION OF OTHER COMPONENTS

- I. Tools and Spare Parts: Prior to the Review at completion of construction, supply to the Owner operating keys, servicing tools, spare parts, and any other items indicated in the General Notes on the drawings.
- II. Other Materials: Install other materials or equipment shown on the drawings or installation details that are part of the irrigation system, even though such items may not have been referenced in these specifications.

3.11 PROJECT RECORD DRAWINGS

- I. The Contractor is responsible for documenting changes to the design. Maintain on-site and separate from documents used for construction, one complete set of contract documents as Project Documents. Keep documents current. Do not permanently cover work until as-built information is recorded.
- II. Record pipe and wiring network alterations. Record work that is installed differently than show on the construction drawings. Record accurate reference dimensions, measured from at least two permanent reference points, of each irrigation system valve, each backflow prevention device, each controller or control unit, each sleeve end, each stub-out for future pipe or wiring connections, and other irrigation components enclosed within a valve box.
- III. Prior to construction completion, obtain from the Project Manager an AutoCAD data file for this project. Using CAD, duplicate information contained on the project drawings maintained on site. Label each sheet "Record Drawings".
- IV. Turn over the "Record Drawings" to the Project Manager. Completion of the Record Drawings will be a prerequisite for the Review at the completion of the irrigation system installation.

3.12 WINTERIZATION AND SPRING START-UP

- I. Winterize the irrigation system in the fall after the installation, and start-up the irrigation system the following spring. Repair any damage caused in improper winterization at no additional cost to the Owner. Coordinate the winterization and start-up with the Project Manager.

3.13 MAINTENANCE

- I. Upon completion of construction and Review by the Project Manager, maintain irrigation system for a duration of 30 calendar days. Make periodic examinations and adjustments to irrigation system components so as to achieve the most desirable application of water.

- II. Following completion of the Contractor's maintenance period, the Owner will be responsible for maintaining the system in working order during the remainder of the guarantee/warranty period, for performing necessary minor maintenance, for trimming around sprinklers, for protecting against vandalism, and for preventing damage after the landscape maintenance operation.

3.14 CLEANUP

- I. Upon completion of work, remove from the site all machinery, tools, excess materials and rubbish.

END OF SECTION

LANDSCAPING SPECIFICATIONS
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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 have a Certified Landscape Technician (CLT) 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 City of Greeley pesticide applicator's license.

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. Redwood medium bark: 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 root ball is 1" 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 ball 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 1/2 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 1/2 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 collar one inch 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.

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 180E 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 - LAWNS AND GRASSES

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 (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 (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. 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.
 - 2. 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.
 - 3. 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.
 - 4. Remove stones larger than one and one-half inches (1½") in any dimension and sticks, roots, rubbish, and other extraneous matter.
 - 5. Any required soil amendments (e.g. organic soil conditioners, fertilizer, ect.) Shall be uniformly spread on the surface of soil which has been prepared as stated above and at the rates specified in section 3.03; II and 3.03; III, below.

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, Orfeo	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>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

LANDSCAPING SPECIFICATIONS

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SECTION 02930 – SOD INSTALLATION

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SOIL PREP AND SOD INSTALLATION

Part 1: GENERAL

1.01 SUMMARY:

- I. Section Includes:
 - A. Fine grading and preparing areas for sod.
 - B. Furnishing and applying soil amendments.
 - C. Furnishing and applying fertilizer, herbicides.
 - D. Furnishing and sodding 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. Imported Soil Amendment Test Report: Submit test analysis to City for acceptance prior to delivery of material.
 - C. Fertilizer: State, Federal and other certificates shall accompany invoices for materials showing sources of origin. Submit to City prior to acceptance of material.
 - D. 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.

1.03 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. Sod: Time delivery so that sod will be placed with in 24 hours after shipping.
- V. Deliver sod properly loaded on vehicles and protected from exposure to sun, wind and heat in accordance with standard practice and labeled in accordance wit the Federal Seed Act. Do not drop sod from loading carts, trucks or pallets.

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. Apply sod only when air temperature is above freezing and below 85° F.
 - B. Do not install sod on saturated or frozen soil.
 - C. Do not install sod until soil preparations have been approved by the City.
 - D. Do not install sod 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 SOIL AMENDMENTS: (Note that all percentages are by weight and not by volume.)

I. 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 Testing: The Contractor shall furnish to the City a signed statement certifying that the compost furnished is from the lot that has been tested.

II. Fertilizer:

- A. Before installing sod, 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 SOD:

I. Sod Materials:

- A. Sod shall be a true-to-name variety, blend or mixture as specified herein and be free of all noxious weeds. Sod shall have a moist, viable root system and of a density that it will not easily tear, break or crumble. Sod in rolls or pallets shall not be stored, after cutting from the sod farm, more than 48 hours and shall be protected from dehydration until installed.
- B. Provide strongly rooted sod, free of weeds and undesirable grasses, and machine cut to pad thickness of 0.75" (± 0.25 "), excluding top growth and thatch. Provide only sod capable of vigorous growth and development when planted.
- C. Provide sod of uniform pad sizes with maximum 5% deviation in either length or width. Broken pads or pads with uneven ends will not be acceptable. Sod pads incapable of supporting their own weight when suspended vertically with a firm grasp on upper 10% of pad will be rejected.
- D. Cut sod using an approved method, in accordance with local governing American Sod Producers Association.

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.

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:

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.

 - A. 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.
 - B. 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.
 - C. 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 sod, 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. 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 sod. Verify that all rough grades have been established.
- IV. 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/TURF 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. Soil shall be ripped or tilled to a minimum of eight inches (8"), with agricultural sub-soiler. This includes any areas compacted by construction traffic during the construction process, with four (4) passes in at least two (2) directions.
 2. 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.
 3. 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.
 4. Remove stones larger than one and one-half inches (1½") in any dimension and sticks, roots, rubbish, and other extraneous matter.

5. Any required soil amendments (e.g. organic soil conditioners, fertilizer, ect.) Shall be uniformly spread on the surface of soil which has been prepared as stated above and at the rates specified in section 3.03; II and 3.03; III, below.
- II. Soil Amendments:
 - A. Blue Grass Areas: Evenly distribute composted material in the bluegrass sod areas at the following rates:
 1. Apply the compost at four (4) cubic yards per one thousand (1,000) square feet.
 - B. 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.
 1. In areas inaccessible with a truck or trailer mounted spreader, the compost can be delivered and spread with a tractor and/or by hand.
- III. Fertilizer:
 - A. See 2.01; II above
 - B. 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. Grading in all areas to receive sod:
 - A. Do rough grading and eliminate low spots: 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. Grade areas along sidewalks and driveways approximately one and one half inches below top of concrete.
 - 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 SODDING:

- I. The Contractor shall notify the Project Manager prior to any sod work.
- II. The Project Manager will be on site during sod operations.
- III. Sodded areas shall be smooth and firm before lying. Sod shall be laid by staggering the joints. On slopes, sod shall run parallel to a 90° degree angle to the slope.
- IV. When in position, sod shall be watered and lightly rolled to ensure contact with the soil surface.
- V. Lay sod within 24 hours from time of stripping. Do not plant if ground is frozen.
- VI. Lay sod parallel to contours to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to sub grade or sod. Water and tamp or roll lightly to ensure contact with sub grade. Work sifted soil into minor cracks between pieces of sod. Remove excess soil.
 - A. Secure sod on slopes of 3.5:1 or more with wood pegs as required to prevent slippage.
- VII. Watering sod thoroughly with a fine spray immediately after planting or after completion of every 225 sq. ft.

3.05 SOD BLEND :

- I. Provide a drought tolerant, blended Kentucky Bluegrass made up of a minimum of 4 blended varieties that are proven performers for Northern Colorado. Approved equal may be substituted.

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 MAINTENANCE:

I. General:

- A. Begin maintenance of lawns immediately after each area is planted and continue for a period of not less than 30 days for sodded areas and until satisfactory growth is achieved.
- B. Maintain lawns by watering, fertilizing, weeding, mowing and trimming and other operations such as replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas up to and until final acceptance has been issued from project manager in writing.
- C. Resod bare areas using same materials specified for lawns.

II. Watering:

- A. Water new lawn area sufficiently to thoroughly moisten soil and in such a manner as to avoid erosion. Commence watering on the day of installation and continue as needed.
- B. A new sod watering permit will be required.
- C. Provide and maintain temporary piping, hoses and lawn watering equipment to convey water from sources and to keep lawn areas uniformly moist as required for proper growth up to and until final acceptance has been issued from project manager in writing.

III. Mowing: Mowing during maintenance period is the responsibility of the Contractor. Do not begin mowing until the sod has had at least 7 consecutive days from installation to root into the soil. Mowing height shall be no less than 2". Mow newly seeded areas when 75% of grass reaches 3" height.

3.08 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.

3.09 PROTECTION:

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

**EXHIBIT 1
PROPOSAL ACKNOWLEDGEMENT**

The offeror hereby acknowledges receipt of addenda numbers _____ through _____.

Falsifying this information is cause to deem your proposal nonresponsive and therefore ineligible for consideration. In addition, falsification of this information is cause to cancel a contract awarded based on one or both of the above preferences.

By signing below, you agree to all terms & conditions in this RFP, except where expressly described in your cover letter.

Original Signature by Authorized Officer/Agent

Type or printed name of person signing

Company Name

Title

Phone Number

Vendor Mailing Address

Fax Number

City, State, Zip

Proposal Valid Until (at least for 90 days)

E-Mail Address

Website Address

**PURCHASING DIVISION
EXHIBIT 2
ILLEGAL ALIEN CERTIFICATE**



**INFORMATION
FOR CONTRACTORS AND THE PUBLIC ABOUT COLORADO
REVISED STATUTES § 24-76-101, et seq. RESTRICTIONS
ON PUBLIC SERVICES AND COLORADO REVISED
STATUTES § 8-17.5-101, et seq. PUBLIC CONTRACTS FOR
SERVICES**

**EFFECTIVE IMMEDIATELY, THE CITY OF GREELEY MUST
COMPLY WITH STATE LAW REGARDING CONTRACTS FOR
PUBLIC SERVICES.**

**THE ATTACHED PAPERWORK MUST BE SIGNED AND
SUBMITTED PRIOR TO CONTRACT COMPLETION.**

**THE ATTACHED PAPERWORK WILL GUIDE YOU TO A
WEBSITE, WHICH WILL PROVIDE FURTHER
INFORMATION.**

**INFORMATION FOR CONTRACTORS REGARDING
C.R.S. § 8-17.4-101, et seq.- PUBLIC CONTRACTS FOR SERVICES**

Statutory Reference	C.R.S. § 8-17.4-101, et seq.
Requirements	<p>The City of Greeley may not enter into or renew a contract for services with a contractor who knowingly employs or contracts with an illegal alien to perform services under a public contract for services; or who contracts with sub-contractors who knowingly employ or contract with an illegal alien to perform services under the contract. The City may terminate a contract if the contractor has violated the terms of this law, and the City must notify the Secretary of State of any violation. Each contract for services must contain a certification with requirements as set forth in the law.</p> <p>Contractors must participate in the federal “E-verify” program or the Colorado Department of Labor and Employment program. Contractors must comply with all reasonable requests made in the course of an investigation by the Colorado Department of Labor and Employment.</p>
E-verify Program/ Dept. Labor and Employment program	See Attachment “A” for information.
Definition of Services	The furnishing of labor, time, or effort by a contractor or subcontractor not involving the delivery of a specific end product other than reports that are merely incidental to the required performance.
Applies to	<p>All contracts, except those specifically for the purchase of goods. See attachment “B” for the certification</p> <p>All vendors must execute the certification (attachment “B”) if they are providing services to the City under any form of written contract or verbal agreement.</p>
Consequences	The City of Greeley can terminate a contract for breach of the requirements set forth in C.R.S. § 8-17.4-101, et seq. and obtain consequential damages. If a contractor violates the terms of the law, the City will notify the Secretary of State of the violation.
Exceptions	Contract primarily for purchase of goods.

**Explanatory Information Concerning Contracting with
Illegal Aliens, now codified as CRS 8-17.5-101 et seq.**

Pursuant to new legislation (codified at CRS § 8-17.5-101) all of our service contracts are now required to include a certification that the contractor or contractor does not knowingly contract with illegal aliens. Part of that statute requires the certification from the contractor that the contractor has "registered with or certify that they are in compliance with the "E-verify" program or the Program established by the Colorado Department of Labor and Employment.

E-Verify

While this program is not necessarily new, it is unknown to most people doing business with municipalities in the State of Colorado. The "E-verify" program is a program run by the Federal Government within the Department of Homeland Security. The program requires a party to apply for entry into the program and make certain agreements with the Department of Homeland Security and Social Security programs. The information we have is that an application can be made to participate in the "E-verify" program over the internet by going to www.dhs.gov and search for the "E-verify" program. You can also go to the following address:

http://www.dhs.gov/ximgtn/programs/gc_1185221678150.shtm

This information should provide the proposed contractor with information sufficient to fill out the contractor's certification as required on our contracts.

Department of Labor and Employment Program

Pursuant to SB 08-193 which was signed by the Governor on May 12, 2008, the Department of Labor and Employment will create a Department program which can be used to verify the status of employees. Please contact the State of Colorado Department of Labor and Employment for information regarding this program.

This information regarding compliance with e-verify or department program requirements is given as a courtesy by the City and does not assure acceptance to the Federal or State program or acceptance of the proposed contract by the City. Should you have any questions regarding your rights or responsibilities under Colorado law, please consult your legal counsel.

**ATTACHMENT "B"
CERTIFICATION**

COMPLIANCE WITH C.R.S. § 8-17.5-101

- A. By signing this Agreement, the CONTRACTOR certifies that at the time of the Certification, it does not knowingly employ or contract with any Illegal alien who will perform work under this Contract.
- B. By signing this Agreement, the CONTRACTOR certifies that it shall not knowingly employ or contract with any illegal aliens to perform work under this contract; nor enter into a contract with any sub-contractor that knowingly employs or contracts with an illegal alien to perform work under this contract.
- C. CONTRACTOR has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this public contract for services through participation in either the E-Verify program or the Colorado Department of Labor and Employment Program.
- D. The CONTRACTOR is prohibited from using the E-Verify program or the Department of Labor and Employment Program procedures to undertake pre-employment screening of job applicants while the public contract for services is being performed.
- E. By signing this agreement the CONTRACTOR affirmatively acknowledges that if the contractor obtains actual knowledge that a subcontractor performing work under the public contract for services knowingly employs or contracts with an illegal alien, the contractor shall be required to:
 - (i) notify the subcontractor and the contracting state agency or political subdivision within three days that the contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and
 - (ii) terminate the subcontract with the subcontractor if within three days of receiving the notice required pursuant to subparagraph (i) of this subparagraph the subcontractor does not stop employing or contracting with the illegal alien; except that the contractor shall not terminate the contract with the subcontractor if during such three days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.
- F. The CONTRACTOR shall comply with all reasonable requests made in the course of an investigation by the Colorado Department of Labor and Employment.
- G. The CONTRACTOR shall, within twenty days after hiring an employee who is newly hired for employment to perform work under this contract, affirm that the CONTRACTOR has examined the legal work status of such employee, retained file copies of the Documents required by 8 U.S.C. § 1324(a) , and not altered or falsified the identification documents for such employees. The CONTRACTOR shall provide a written notarized copy of the affirmation to the CITY.
- H. If CONTRACTOR violates any provision of this Contract pertaining to the duties imposed by Subsection 8-17.5-102, C.R.S. the CITY may terminate this Contract. If this Contract is so terminated, CONTRACTOR shall be liable for actual and consequential damages to the CITY arising out of Contractor's violation of Subsection 8-17.5-102, C.R.S.
- I. By signing this Agreement, the CONTRACTOR certifies that it shall in all respects comply with the provisions of C.R.S. § 8-17.5-101, et seq.

CERTIFIED and AGREED to this _____ day of _____, 201__.

CONTRACTOR:

(Full Legal Name of Company)

BY: _____
Signature of Authorized Representative

THIS MUST BE COMPLETED IF YOU ARE A SOLE PROPRIETOR

**INFORMATION FOR CONTRACTORS AND THE PUBLIC
ABOUT HB 1023 – RESTRICTIONS ON PUBLIC SERVICES**

Effective Date	August 1, 2006
Statutory Reference	C.R.S. § 24-76.5-101
Effective for	grants, loans, professional licenses, commercial licenses; contracts, purchase orders and amendments entered into after Aug. 1, 2006; retirement, welfare, health, disability, public or assisted housing, postsecondary education, food assistance, unemployment benefit, or any other similar benefit applied for after August 1, 2006.
Applies to	Natural persons age 18 and over that complete an application for public benefits and sole proprietor contracts of all types.
Does not apply to	Corporations, partnerships, LLCs, or other business entities.
Requirements	The City must confirm status of all applicants for a public benefit by: 1. reviewing the natural person's identification; and 2. obtaining the applicant's signature on the "affidavit of lawful presence;" and 3. verifying lawful presence in SAVE program if person is an alien.
Step 1: ID	The only identification that is acceptable is the following: Current Colorado Driver's License or Permit Current Colorado Identification Card United States Military Card United States Military Dependent Identification Card United States Coast Guard Merchant Mariner Card Native American Tribal Document If applicant can not produce one of the identification documents listed above, please refer to Attachments A and B of the Department of Revenue's "Rules for Evidence of Lawful Presence" located at www.Colorado.gov
Step 2: Affidavit	See attached sample
Step 3: SAVE	If an individual applicant is an alien lawfully present in the U.S, the City must verify their lawful presence via the federal "SAVE" program operated through the Department of Homeland Security.
Implemented by	Each department within the City of Greeley who administers a public benefit program or prepares contracts with individuals or sole proprietorships will comply with this law.
Consequences	Applicants who knowingly make a false statement are guilty of perjury. It is unlawful for the City to provide a public benefit in violation of this law.
Exceptions	Emergency services, emergency medical services, immunizations; prenatal care; certain social services (such as soup kitchens, crisis counseling and short term shelter).

Sole Proprietors Only

AFFIDAVIT OF LAWFUL PRESENCE

I, _____, swear or affirm under penalty of perjury under the laws of the State of Colorado that (check one):

___ I am a United States citizen, or

___ * I am a Permanent Resident of the United States, or

___ * I am lawfully present in the United States pursuant to Federal law.

I understand that this sworn statement is required by law because I have applied for a public benefit. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to receipt of this public benefit. I further acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under Colorado Revised Statute 18-8-503 and it shall constitute a separate criminal offense each time a public benefit is fraudulently received.

Signature

Date

*If Affiant affirms that he/she is either a Permanent Resident or otherwise lawfully present in the United States, Agency must complete the S.A.V.E. verification.

For internal use only:

IDENTIFICATION PROVIDED

- ___ Current Colorado Driver's License or Permit
- ___ Current Colorado Identification Card Issued by Department of Motor Vehicles
- ___ United States Military Card
- ___ United States Military Dependent Identification Card
- ___ United States Coast Guard Merchant Mariner Card
- ___ Native American Tribal Document

For internal use only:

ALTERNATE I.D. REQUIREMENTS

If applicant can not produce one of the identification documents listed at left, please refer to Attachments A and B of the Department of Revenue's "Rules for Evidence of Lawful Presence" located at www.Colorado.gov

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
08/11/2010

PRODUCER ABC Insurance Company P. O. Box 1234 Anywhere, USA	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
	INSURERS AFFORDING COVERAGE	NAIC #
INSURED <p style="text-align: center;">Sample Certificate</p>	INSURER A: Financial Rating of A	
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
		GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR <hr/> GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$100,000 MED EXP (Any one person) \$5,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$1,000,000
		AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) \$1,000,000 BODILY INJURY (Per accident) \$2,000,000 PROPERTY DAMAGE (Per accident) \$1,000,000
		GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN EA ACC \$ AUTO ONLY: AGG \$
		EXCESS/UMBRELLA LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <hr/> <input type="checkbox"/> DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				<input checked="" type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$100,000 E.L. DISEASE - EA EMPLOYEE \$100,000 E.L. DISEASE - POLICY LIMIT \$500,000
		OTHER				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS
City of Greeley is named as Additional Insured on the General Liability. Waiver of Subrogation is included under the Workers' Compensation. This insurance is primary and noncontributory to any and all insurance policies held by the Additional Insured.

CERTIFICATE HOLDER <p style="text-align: center;">City of Greeley 1000 10th St Greeley, CO 80631-3808</p>	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL <u>30</u> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
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IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

EXHIBIT 4
LANDSCAPE DESIGN AND INSTALLATION
GLENMERE BLVD. AND 17TH AVENUE

Debarment/Suspension Certification Statement

The proposer certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any Federal, State, County, Municipal or any other department or agency thereof. The proposer certifies that it will provide immediate written notice to the City if at any time the proposer learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstance.

Name of Organization _____

Address _____

Authorized Signature _____

Title _____

Date _____



GENERAL CONDITIONS OF THE PURCHASE ORDER

ARTICLE 1. DEFINITIONS

PURCHASE ORDER - an enforceable contract in that it is written evidence of the purchaser's acceptance of the seller's previous and unretracted offer to perform the work subject of the purchase order for the price stated herein.

WORK - the material and/or labor the seller is to furnish to the purchaser by operation of the purchase order.

OWNER/PURCHASER - the City of Greeley, acting by and through the City Purchasing Agent or his designee.

CONTRACTOR/SELLER - the sole proprietorship, partnership or corporation to which the purchase order is addressed and any person having the contract with the City or a using agent thereof.

ARTICLE 2. INSPECTION OF WORK

The inspector assigned to the work any other authorized representative of the OWNER shall at all times have access on the site of the work for the purpose of inspection. The contractor shall provide safe, convenient and proper facilities for such access and inspection.

ARTICLE 3. SUPERINTENDENCE OF THE WORK

The CONTRACTOR shall keep a competent and reliable superintendent on the job at all times that labor is being performed. The superintendent, in the contractor's absence from the site, shall stand in the stead of the contractor, and any authoritative directions given to the superintendent shall be as binding as if given to the contractor.

ARTICLE 4. CHANGES IN THE WORK

The OWNER, without invalidating the purchase order contract, may order extra work, or make any other reasonably related changes by altering, adding to or deducting from the work. The contract price and the time for completion of the work may be adjusted accordingly by mutual agreement.

ARTICLE 5. DEDUCTION FOR UNCORRECTED WORK

If the OWNER deems inexpedient the correction of damaged work or of work not performed in accordance with the contract, the OWNER shall make an equitable reduction of the contract price.

ARTICLE 6. INSURANCE

The CONTRACTOR shall procure, at his own expense, and maintain for duration of any work, adequate insurance coverage. The CITY shall be issued certificates as an additional insured. The coverage shall include Standard Worker's Compensation and Employer's Liability coverage covering all employees engaged in performance of work at the OWNER'S place of business, in the amount required by State Statutes. The CONTRACTOR shall also maintain comprehensive General Public Liability and Property Damage Insurance in an amount acceptable to the OWNER. Evidence of all insurance coverage shall be submitted to the CITY upon demand in a form acceptable to the City of Greeley.

ARTICLE 7. USE OF PREMISES

The CONTRACTOR shall confine his apparatus, storage of materials, and operations of the workmen to such places and within such limits as to cause least inconvenience to the users of the site.

ARTICLE 8. CLEANING UP

The CONTRACTOR shall at all times observe good housekeeping practices and on completion of the work remove all tools, scaffolding and surplus materials from the premises and leave the area of his operations clean.

ARTICLE 9. OWNER'S RIGHT TO TAKE OVER THE WORK

If the CONTRACTOR should fail to prosecute the work properly and diligently or default in performance of any of the provision of the purchase order and its collateral documents, the OWNER, after seven days' written notice to the CONTRACTOR and his surety (if there is such) may, without prejudice to any other remedy the OWNER may have, dismiss the CONTRACTOR and complete the work and may deduct the cost from so doing from any unpaid balance of contract price due to become due the CONTRACTOR. If such cost of completing the work is in excess of the unpaid balance of the contract price, the CONTRACTOR shall reimburse the OWNER such excess, and the OWNER shall have a cause of action at law for the amount of such excess and all costs of prosecution of such action, including attorney's fees.

ARTICLE 10. OWNER'S RIGHT TO SUSPEND CONTRACTOR'S PERFORMANCE

For good and sufficient cause such as (a) unsuitable weather, (b) faulty workmanship, (c) improper superintendence, (d) contractor's failure to carry out any reasonable order or to perform any provision of the purchase order and collateral documents, or (e) any other circumstance unfavorable for prosecution of the work, the OWNER shall have the right to suspend the CONTRACTOR'S performance of the work. Notice of such suspension shall be in writing. The CONTRACTOR shall resume performance of the work promptly when so notified in writing.

ARTICLE 11. ACCEPTANCE AND FINAL PAYMENT

Within ten days after the CONTRACTOR'S declaration of completion of the work, the OWNER will make a final inspection thereof to determine whether the work has been completed in accordance with the purchase order contract and collateral documents. If any punch-list results of such final inspection, the CONTRACTOR shall promptly rectify all items appearing thereon.

When the OWNER indicates acceptance of the work, the CONTRACTOR may requisition final payment, including retainage, on account of the purchase order contract price.

Any unpaid creditor of the CONTRACTOR who supplied labor and/or material for the work has those ten days in which to file with the OWNER a verified statement of the amount due and unpaid. The OWNER must withhold from payment to the CONTRACTOR the total amount of such claim for a period of ninety days after the date in the notice fixed for settlement, but the OWNER may not directly make payment to the creditor(s). If within those ninety days a creditor does not reach settlement with the CONTRACTOR, he must serve on the OWNER a notice of "lis pendens" that he has brought action at law, otherwise the OWNER at expiration of ninety days will pay the CONTRACTOR for the amount withheld.

ARTICLE 12. GUARANTY AND WARRANTIES

The CONTRACTOR shall furnish the OWNER with a written guaranty for one (1) year covering all labor, materials and workmanship incorporated in the work. The CONTRACTOR, in instances of work performed or material or equipment furnished for which warranties are required by the specification, shall procure such warranties and deliver them to the OWNER on completion of the work. Such warranties will nowise lessen the CONTRACTOR'S responsibilities, under the purchase order documents. Whenever warranties or guaranties are required by the specifications for a period longer than one (1) year, such longer period shall govern.

ARTICLE 13. POST-COMPLETION INSPECTIONS

Final payment made to the CONTRACTOR on account of the work shall not operate to relieve the CONTRACTOR of responsibility for faulty material or workmanship and, unless otherwise provided, the CONTRACTOR shall remedy any defect due thereto and pay for any damages resultant therefrom which shall appear within one year from the date of final acceptance of the work, which date will be that of the Notice of Acceptance of the work.

If the CONTRACTOR fails promptly to pick up the punch-list items of such inspections, the OWNER may correct such defects and deficiencies and back charge the CONTRACTOR for the cost thereof.

ARTICLE 14. DISPUTES

Any dispute arising under this contract which is not disposed of by agreement shall be decided by the OWNER, who shall reduce his decision to writing and furnish a copy thereof to the contractor. The decision of the OWNER shall be final. Pending final decision of a dispute hereunder, the CONTRACTOR shall proceed diligently with the performance of this contract.

ARTICLE 15. PURCHASING ORDINANCE

This solicitation and purchase order are done in accordance with Chapter 4.20 of the Greeley Municipal Code, which law is incorporated by reference as if fully set forth herein.

ARTICLE 16. GENERAL TERMS

The City certifies the following:

A. An amount of money equal to or greater than the contract amount has been appropriated and budgeted for the project which this contract concerns.

B. No change order which requires additional compensable work to be performed by the contractor issued by the City unless an amount of money has been appropriated and budgeted sufficient to compensate the contractor for such additional compensable work unless such work is covered under the remedy-granting provisions of this contract.

C. As used in this paragraph, "remedy granting provision" shall mean any clause of this contract which permits additional compensation in the event of a specific contingency or event occurs. This term shall include, but not be limited to, change clauses, differing site conditions clauses, variation in quantities clauses, and termination for convenience clauses.

ARTICLE 17

Cancellation due to unavailability of funds in succeeding fiscal periods. When funds are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal period, the contract may be cancelled.