

Rifle I-70 Gateway Landscape Construction



PROJECT MANUAL

**CITY OF RIFLE
202 RAILROAD AVENUE
RIFLE, COLORADO 81650**

2021

Advertised For Bids: Monday, September 27th, 2021

Mandatory Pre-Bid Meeting: Friday, October 15, 2021 (10:00 am)

Last Day for Questions: October 29, 2021

(Email all questions to cspaulding@rifleco.org – phone inquiries not accepted)

Bid Due Date: Friday, November 5, 2021

Award Date: December 1, 2021

Construction Start Date: Spring 2022

Substantial Completion Date: TBD at Contract Execution

Project Directory

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- 6 G06-SURVEY CONTROL DIAGRAM
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- 8 G08-STANDARDS PLANS LIST
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- M-609-1 (4 TOTAL) CURB, GUTTERS, AND SIDEWALKS
- S-613-1 (6 TOTAL) ROADWAY LIGHTING
- S-630-1 (24 TOTAL) TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION
- S-630-2 BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP)

The contractor shall keep a set of 11" x 17" color drawings on site along with a set of 24"x36" black & white drawings on site at all times.

Background Documents

1. Irrigation Drawings for Existing Landscape South of I-70
2. CDOT Sign Manual
3. City of Rifle Public Works Manual

Advertisement For Bids

Separate sealed BIDS for the construction of the **Rifle I-70 Gateway Landscape Construction** will be received at the **Council Chambers, Rifle City Hall, 202 Railroad Avenue, Rifle, CO.** until 2:00pm, on Friday, November 5, 2021, at which time they will be publicly opened and read aloud.

Project Description: This project provides landscape enhancements, new branding and signage elements and lighting improvements at the west bound I-70 off ramp (Exit 90) and along Colorado Highway 13 north of I-70. The intention is to improve the appearance of this area for west bound travelers coming to Rifle and to bring this area up to a level of finish found in the existing landscape and hardscape south of I-70.

New curb and gutter will be added to both sides of the off ramp near the intersection to define the road edge, provide a stable location for landscape to establish and to control storm flow into the existing basin so native grasses can be established. Both sides of the off ramp will receive a large, drip-irrigated planting bed as well as irrigated native seed. A new gateway sign matching the “Rifle” sign to the north will be added in the northern bed. The aggregate infill in the existing curbed, center-islands will be replaced with a colored concrete cap to match similar hardscape improvements to the north and south.

Additional “Cobra Head” lighting will be provided at the intersection and to the intersection to the north (just before the bridge). Additionally, pedestrian globe lights matching the ones on the river bridge, will be extended south and under the I-70 overpass. Existing wall packs attached to the bridge abutments will be replaced and refed to provide further improved pedestrian lighting along the sidewalk.

The project will extend the existing irrigated turf from the south to improve the look and finish of the sidewalk area along the west side of Highway 13. Other than this turf area, all other landscape improvements will be native and adapted species with the intention of improving the look in this area while minimizing additional watering requirements.

A new curb will be constructed on the east side of 13 (under the I-70 overpass). A cobble swale will be established behind the curb to improve drainage and the appearance of this area.

Traffic control will be the responsibility of the contractor. Traffic control plans will be required for submittal and approval. The contractor will be required to submit a phasing plan and work with the City and the Project Engineer to determine a plan of least impact to businesses in the downtown area. Access to businesses shall remain open for the duration of the project.

A Bid Bond in the amount of 5% of bid price is required, and a Performance and a Payment Bond, each in the amount of 100% of bid, will be required. Bid Award will be the December 1, 2021 Council Meeting. Time of Commencement of the Work is anticipated to be no later than Spring 2022, with completion by TBD at Contract Execution .

A PREFERENCE FOR LOCAL CONTRACTORS WILL BE APPLIED BY THE OWNER WHEN SELECTING A CONTRACTOR.

Please issue all question via email to Craig Spaulding.

Digital copies of the Contract Documents may be downloaded from the City website at <http://www.rifleco.org/216/Projects-Out-To-Bid> for free. Contact Craig Spaulding, cspaulding@rifleco.org, 970-665-6556 for questions or issues with downloading the documentation.

Instructions to Bidders

1.0 Defined Terms

Terms used in these Instructions to Bidders, which are defined in the General Conditions of the City of Rifle Public Works Manual, have the meaning assigned to them in the General Conditions. The term “Bidder” means one who submits a Bid directly to Owner, as distinct from a sub-bidder, who submits a Bid to a Bidder. The term “Successful Bidder” means the lowest, qualified, responsible and responsive Bidder to whom Owner (on the basis of Owner’s evaluation as hereinafter provided) makes an award. The term “Bidding Documents” includes the Advertisement for Bids, Instructions to Bidders, the Bid Form, and the Contract Documents (including all Addenda issued prior to receipt of Bids).

2.0 Copies of Bidding Documents

2.1 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents. The City of Rifle Public Works Manual, Part I-General Conditions, Part II-Construction Materials and Methods and Part III Minimum Design Standards, shall be followed unless otherwise specified herein. In case of conflict, follow the Supplementary General Conditions section 25, Precedence of Contract Documents. Copies of the Public Works Manual are available on Rifle’s web site www.rifleco.org.

2.2 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the work and do not confer a license or grant for any other use.

3.0 Qualifications of Bidders

The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work, and to demonstrate qualifications to perform the Work. Each Bidder must be prepared to submit within five days of Owner's request written evidence of the types set forth in the Supplementary Conditions, such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the Project is located. Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the contract. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

4.0 Examination of Contract Documents and Site

4.1 It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work, (c) consider federal, state and local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder’s observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors or discrepancies in the Contract Documents.

4.2 Information and data reflected in the Contract documents with respect to Underground Facilities at or contiguous to the site are based upon information and data furnished to Owner and Engineer by owners of such underground facilities or other, and Owner does not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.

4.3 Before submitting a Bid, each Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the work and which Bidder deems necessary to determine its Bid for performing and furnishing the work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.4 On request, in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill and patch all holes, clean up, and restore the site to its former condition upon completion of such exploration.

4.5 The lands upon which the work is to be performed, rights-of-way, and easements for access thereto and other lands designated for use by Contractor in performing the work, are identified in the Contract Documents. All additional lands, and access thereto, required for temporary construction facilities or storage of materials and equipment, are to be provided by Contractor.

4.6 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the work.

5.0 Interpretations and Addenda

5.1 All questions about the meaning or intent of the Contract Documents are to be directed to Engineer. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than five (5) days prior to the date of opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Engineer.

6.0 Conditions of Work

Each Bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract. Insofar as possible, the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor or danger to the public.

7.0 Substitute or "Or-Equal" Items

The Contract, if awarded, will be on the basis of materials and equipment described in the drawings or

specified in the specifications, without consideration of possible substitute or “or-equal” items. Whenever it is indicated in the drawings or specified in the Specifications that substitute or “or-equal” items of materials or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the effective date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in the General Conditions and may be supplemented by the Supplementary Conditions.

8.0 Subcontracts

The Bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the Owner. The bidder shall submit, with their bid, a completed list of subcontractors they propose to use on this contract.

9.0 Bid Form

9.1 The Bid Form is included with the Bidding Documents; additional copies may be obtained from City Hall of Rifle, 202 Railroad Avenue, Rifle, Colorado.

9.2 All blanks on the Bid Form must be completed in ink, by typewriter, or electronically and printed. NOTE: The spreadsheet is offered for your convenience only. The contractor is responsible for use and confirmation of any formulae or calculations therein. The submittal may be on the pdf. All tracking of project progress will be through that spreadsheet.

9.3 Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign), and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

9.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

9.5 All names must be typed or printed below the signature.

9.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).

9.7 The address, email, and telephone number for communications regarding the Bid must be shown.

10.0 Submission of Bids

Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the project title (and, if applicable, the designated portion of the project for which the Bid is submitted) and name and address of the Bidder and accompanied by the required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation “BID ENCLOSED” on the face of it. Any submission received after the advertised Bid Opening shall be returned unopened to the sender.

11.0 Modification and Withdrawal of Bids

11.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a

Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

11.2 If, within twenty-four (24) hours after Bids are opened, any Bidder files a duly signed, written notice with Owner and Engineer and promptly thereafter demonstrates to the reasonable satisfaction of Owner and Engineer that there was a material and substantial mistake in the presentation of its Bid, that Bidder may withdraw its Bid.

12.0 Bids to Remain Subject to Acceptance

All Bids will remain subject to acceptance for sixty (60) days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid prior to that date.

13.0 Award of Contract

13.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities, and to negotiate Contract terms with the Successful Bidder, and the right to disregard all nonconforming, non-responsible, unbalanced or conditional Bids. Also, Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the project to make an award to that Bidder, whether because the bid is not responsible, or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner.

13.2 In evaluation of Bids, Owner will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

13.3 Owner may consider the qualifications and experience of subcontractors, suppliers and other persons and organizations proposed for those portions of the work as to which the identity or subcontractors, suppliers, and other persons and organizations may be submitted as provided in the Supplementary Conditions. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the work when such data is required to be submitted prior to the Notice of Award.

13.4 Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of Bidders, proposed subcontractors, suppliers and other persons and organizations to perform and furnish the work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

13.5 If the Contract is to be awarded, it will be awarded to the lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

13.6 Section 2.26 of the General Conditions of the City of Rifle's Public Works Manual and section 16.00 of the Supplementary Conditions set forth Owner's requirements as to performance and other Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by the required Contract Security.

13.7 If the Contract is to be awarded, Owner will give the successful Bidder a Notice of Award within sixty (60) days after the date of the Bid opening.

14.0 Laws and Regulations

The Bidders' attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

15.0 Complete Prices

All lump sum, alternate, and unit prices must include all required General Conditions line items necessary to complete the work, including, but not limited to the following (as required): all permits, insurance, and taxes (except as specified in Article 3.0 of the Supplementary General Conditions); supervision; layout and survey as needed; protection of all surrounding materials; lifting/hoisting; equipment and personnel; off-site management and administrative assistance; trash disposal to a separate dumpster; miscellaneous equipment; mobilization; as-built drawings; fuel, watchmen, flagmen, and site security; scheduling; small tools; drawings and printing expenses and mailing costs.

15.1 On bid items to be paid as lump sum that may extend beyond a single pay estimate, a schedule of values shall be submitted to OWNER a minimum of 10 days prior to commencement of work. Adequate detail shall be given to allow a value to be placed on work completed during any given pay estimate.

16.0 Permits and Fees

Bids shall include all sales tax (except as specified in Article 3.0 of the Supplementary General Conditions) and all other applicable taxes and fees related directly to the construction of this project. Fees for permits and inspections directly related to this construction will be paid by the BIDDER; however, no tap fees or access charges for this or subsequent work will be the responsibility of the BIDDER. City has Tax Exemption, a copy of which will be provided to the Contractor. Contractor and all subcontractors shall hold a current license to perform work in Rifle, Garfield County, and the State of Colorado.

17.0 Authorities

Technical Specifications included herein supplement the Standard Specifications and take precedence. Work shall be completed as per these specifications and accepted by the Owner or proper agencies having jurisdiction before final payment is requested of the Owner.

18.0 Subsurface Investigations

Geotechnical reports, if available, are included in the appendix of the Project Manual. Contractor use of such reports shall be in accordance with section 18.00 "Soils Investigation", of the Supplemental General Conditions.

19.0 Completion of Work

Work shall be completed as per the City of Rifle Public Works Manual (and as modified by these specifications) and accepted by the Owner or proper agencies having jurisdiction before final payment is requested of the Owner.

****Contractor shall provide a daily estimate of progress to the Public Works Director or City representative to verify quantities and that we shall stay within the contracted price. The City shall not pay for work above the contract price.**

20.0. Bid Bond

Bid security shall be made payable to the Owner in the amount of 5% of the bidder's maximum bid price in the form of a certified check or a bid bond, using the form herein, issued by a surety meeting the requirements of the Supplementary General Conditions. The bid security of the successful bidder will be retained until such bidder has executed the agreement and furnished the required contract security whereupon it will be returned; if the successful bidder fails to execute and deliver the agreement and furnish the required contract security within ten (10) days of the Notice of Award, the Owner may annul Notice of award and the bid security of that bidder will be forfeited. Owner will return bid bonds or checks of unsuccessful bidder within or by 60 days after the bid submittal date.

21.0 Payment Bond

Payment Bond form is found in Agreement Documents section of this package.

22.0 Performance Bond

Performance Bond form is found in Agreement Documents section of this package.

23.0 Work By Illegal Aliens Prohibited

Work By Illegal Aliens Prohibited. Pursuant to Section 8-17.50191, C.R.S., *et. Seq.*,

Contractor warrants, represents, acknowledges, and agrees that:

1. Contractor does not knowingly employ or contract with an illegal alien.
2. Contractor shall not knowingly employ or contract with an illegal alien to perform works or enter into a contract with a subcontractor that fails to certify to Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this Agreement.
3. Contractor has participated in or attempted to participate in the basic pilot employment verification program created in Public Law 208, 104th Congress, as amended, and expanded in Public Law 156, 108th Congress, as amended, administered by the Department of Homeland Security (hereinafter, "Basic Pilot Program") in order to verify that Contractor does not employ illegal aliens. If Contractor is not accepted into the Basic Pilot Program prior to entering into this Agreement, Contractor shall forthwith apply to participate in the Basic Pilot Program and shall submit to the City written verification of such application within five (5) days of the date of this Agreement. Contractor shall continue to apply to participate in the Basic Pilot Program and shall verify such application to the City in writing, every three (3) months until Contractor is accepted or this Agreement is completed, whichever occurs first. This Paragraph 3 shall be null and void if the Basic Pilot Program is discontinued.
4. Contractor shall not use the Basic Pilot Program procedures to undertake pre-employment screening of job applicants while this Agreement is being performed.
5. If Contractor obtains actual knowledge that a subcontractor performing work under this Agreement knowingly employs or contracts with an illegal alien, Contractor shall be required to:
 - (a) notify the subcontractor and the City within three (3) days that Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and
 - (b) terminate the subcontract with the subcontractor if within three (3) days of receiving the notice required pursuant to this subparagraph the subcontractor does not stop employing or contracting with the

illegal alien; except that Contractor shall not terminate the contract with the subcontractor if during such three (3) days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

6. Contractor shall comply with any reasonable request be the Colorado Department of Labor and Employment (“Department”) made in the course of an investigation that the Department is undertaking pursuant to the authority established in subsection 8-17.5-102(5), C.R.S.

7. Contractor violates this Addendum; the City may terminate this Agreement for breach of contract. If this Agreement is so terminated, Contractor shall be liable for actual and consequential damages to the City arising out of said violation.

24.0 Local Contractor Preference

Primary and secondary preference will be given to contractors when determining the lowest responsible bidder for work on this project. Local contractors, who have a principle place of business, are 1) for primary preference, within the City of Rifle or within 3 miles of the City Limits and 2) for secondary preference, outside of the three mile limit but within Garfield County.

For projects of \$5,000 or more in value, to determine the lowest bidder, an amount equal to the percentage shown below will be deducted from the total price proposed for the work. The contract however, will be awarded for the total bid price proposed.

Contract Amount	Primary Preference	Secondary Preference
\$5,000 to \$25,000	6% discount	3% discount
\$25,001 to \$100,000	5% discount	2.5% discount
\$100,001 or above	4% discount	2% discount

25.0 Scopes of Bids

General Scope of Project: This project provides landscape enhancements, new branding and signage elements and lighting improvements at the west bound I-70 off ramp (Exit 90) and along Colorado Highway 13 north of I-70. The intention is to improve the appearance of this area for west bound travelers coming to Rifle and to bring this area up to a level of finish found in the existing landscape and hardscape south of I-70.

New curb and gutter will be added to both sides of the off ramp near the intersection to define the road edge, provide a stable location for landscape to establish and to control storm flow into the existing basin so native grasses can be established. Both sides of the off ramp will receive a large, drip-irrigated planting bed as well as irrigated native seed. A new gateway sign matching the “Rifle” sign to the north will be added in the northern bed. The aggregate infill in the existing curbed, center-islands will be replaced with a colored concrete cap to match similar hardscape improvements to the north and south.

Additional “Cobra Head” lighting will be provided at the intersection and to the intersection to the north (just before the bridge). Additionally, pedestrian globe lights matching the ones on the river bridge, will be extended south and under the I-70 overpass. Existing wall packs attached to the bridge abutments will be replaced and refed to provide further improved pedestrian lighting along the sidewalk.

The project will extend the existing irrigated turf from the south to improve the look and finish of the sidewalk area along the west side of Highway 13. Other than this turf area, all other landscape improvements will be native and adapted species with the intention of improving the look in this area while minimizing additional watering requirements.

A new curb will be constructed on the east side of 13 (under the I-70 overpass). A cobble swale will be established behind the curb to improve drainage and the appearance of this area.

Traffic control will be the responsibility of the contractor. Traffic control plans will be required for submittal and approval. The contractor will be required to submit a phasing plan and work with the City and the Project Engineer to determine a plan of least impact to businesses in the downtown area. Access to businesses shall remain open for the duration of the project.

END OF INSTRUCTIONS TO BIDDERS

Required Bid Documents

Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the project title (and, if applicable, the designated portion of the project for which the Bid is submitted) and name and address of the Bidder and accompanied by the required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it. Any submission received after the advertised Bid Opening shall be returned unopened to the sender. Required Bid Documents are in the Bid Submittal Checklist Below

- _____ **Bid Form**
- _____ **List of Materials Suppliers/ Subcontractors**
- _____ **Contractor's License**
- _____ **Bid Schedule**
- _____ **Bid Bond**

CITY OF RIFLE

BID FORM - Page 1

**FOR CONSTRUCTION OF:
Rifle I-70 Gateway Landscape Construction**

DATE: _____

OWNER: City of Rifle
202 Railroad Avenue
Rifle CO 81650
Attn: Craig Spaulding

BIDDER: Name of Bidder _____

Address of Bidder _____

Phone Number _____

Email Address _____

Contact Name _____

THE UNDERSIGNED BIDDER, having familiarized himself with the Work required by the Contract Documents, the site and conditions where the Work is to be performed, local labor conditions, and all laws, regulations, and other factors affecting performance of the Work, and having satisfied himself of the expense and difficulties attending performance of the Work,

HEREBY PROPOSES and agrees, if this Bid is accepted, to enter into Agreement with the Owner to perform all work, including the assumption of all obligations, duties, and responsibilities necessary to the successful completion of the contract and the furnishing of all materials and equipment required to be incorporated in and form a permanent part of the Work; tools, equipment, supplies, transportation, facilities, labor, superintendence, and services required to perform the Work; and bonds, insurance, submittals; and all fees as indicated or specified in the Contract Documents to be performed or furnished by BIDDER for the amount identified and detailed in the BID SCHEDULE and further totaled below ("Bid Proposal Amount"):

_____ Dollars (\$ _____)
(written) (numeric)

CITY OF RIFLE

BID FORM - Page2

DOCUMENTS AND ADDENDA:

The BIDDER submits that he has carefully examined the site of the proposed work and the existing conditions, as well as the drawings and specifications. Also, he has thoroughly reviewed the proposal form, Instructions to Bidders, General Conditions, Supplementary Conditions, General Requirements, and the Specifications and Drawings, and acknowledges that the following addenda covering revisions to the drawings and/or specifications, and the cost, if any, of such revisions has been included in the Total Bid Price.

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

CHANGES TO THE WORK:

BIDDER agrees to perform all the WORK for the Total Base Bid price identified in the “Bid Proposal Amount.” If circumstances arise during construction of this project which dictate a change in quantity, then the pricing for that particular portion of the job will be adjusted up or down with the BIDDER’S Schedule of Values (as included in the Contract Documents) to the revised quantity required by the construction circumstances of these plans. Final payment will be based upon count or measurement of items in place upon completion of the project at the units of measure and unit prices, with the exception of lump sum items.

For changes not covered by a contract unit price, BIDDER proposes that all such changes ordered to the work which increases the Scope of Work shall be priced in advance of the work and such unit prices will be approved by the Owner prior to commencement of work.

PERFORMANCE AND LABOR & MATERIAL PAYMENT BONDS:

By signing and submitting this Bid Proposal, the BIDDER certifies that upon demand, Performance and Labor & Material Payment Bonds can be furnished in amounts sufficient to cover the total proposed cost of work.

TIME OF COMMENCEMENT, COMPLETION, AND DAMAGES:

The BIDDER agrees that, if awarded the Contract, the Work will be substantially complete, ready for occupancy by Owner, according to the schedule submitted by BIDDER of within the indicated construction durations specified within the Contract Documents except for delays caused by Acts of God, neglect of the Owner or the

CITY OF RIFLE

BID FORM - Page 3

Representative of the Owner or other causes beyond the BIDDER'S control, and allows for no time due to labor disputes or strikes. Weather (unless severe) is not considered as an excuse for delay of the work.

Time is expressly declared to be of the essence in completion of the Work covered by the Contract Documents. Where additional time is allowed under the Agreement for the Completion of the work, the new time limits shall be of the essence of the Agreement.

GENERAL AGREEMENTS:

The BIDDER agrees to the following:

The BIDDER has had an opportunity to examine the Site of the work and has examined the Contract Documents therefore.

The BIDDER has carefully prepared the bid proposal upon the basis thereof and has carefully examined and checked the Bid Proposal and the materials, equipment and labor required thereunder, the cost thereof, and figures therefore, and hereby states that the amount or amounts set forth in the Bid Proposal is, or are, correct and that no mistake or error has occurred in the Bid Proposal or in the BIDDER's computations upon which the Bid Proposal is based and the BIDDER agrees that no claim for reformation, modification, rescission or correction of the Bid Proposal will be made after the scheduled closing time for the receipt of Bid Proposals.

The BIDDER understands that the Owner reserves the right to reject any or all Bids for any or no reason and to waive any informality in the bidding.

The BIDDER understands that this Bid shall not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving bids.

The BIDDER understands that unless a bid item is included on the "Bid Schedule", no separate payment shall be made for items required to complete the work in accordance with the contract. If included on the bid schedule, then work under the item will be paid at the unit or units given and shall include all necessary work complete and in place.

In preparing the Bid Proposal, the BIDDER has verified and is reasonably assured of the availability of all labor, materials, and products in this document.

The BIDDER has carefully reviewed the Bid Documents in their entirety and has agreed to meet these requirements.

CITY OF RIFLE

BID FORM - Page 4

DOCUMENT EXECUTION:

DATED This _____ day of _____, 2021

(Name of Firm)

(Street Address)

(City, State, Zip)

(Signature)

(Printed Signature)

(Title)

Please check as appropriate:

_____ An individual

_____ A Partnership Between: _____

_____ A Corporation organized under the laws of the State of _____

END OF BID FORM

LIST OF MATERIALS SUPPLIERS / SUBCONTRACTORS

Provide the name of the materials supplier or subcontractor included in your base bid price. Any changes in the providers listed below can be made only with the approval of the Owner. Any amount of work greater than 10% of the amount bid shall be considered as a subcontractor/Materials Supplier.

Name of Subcontractor /Materials Supplier	Work Item Performed or Provided	% of Value
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

CITY OF RIFLE

BID SCHEDULE

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____

as Principal, and _____

held and firmly bound unto _____

in the penal sum of _____

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed this _____ day of _____, 2021. The condition of the above obligation is such that whereas the Principal has submitted to the **CITY OF RIFLE, COLORADO**, a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Rifle I-70 Gateway Landscape Construction

NOW, THEREFORE,

[a] If said Bid shall be rejected, or

[b] If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as Amended) and be authorized to transact business in the state where the project is located.

CONTRACTOR'S LICENSING STATEMENT FORM

The undersigned is licensed in accordance with the laws of Colorado providing for the registration of Contractors: License Number _____; Class _____.

Name of Contractor's Firm _____

Business Address and Telephone Number _____

Name of Individual Owner (print) _____

Signature of Owner _____

OR

Signature, Title, and Address of members signing on behalf of the partnership:

Name _____ Title _____

Address _____

Name _____ Title _____

Address _____

Name _____ Title _____

Address _____

OR

Corporation organized under the laws of the State of _____

Signature of President of Corporation

Signature of Secretary of Corporation

(Place Seal Here)

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 2021, by and between, CITY OF RIFLE hereinafter called "OWNER", and _____ doing business as a Corporation, hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of: _____
Rifle I-70 Gateway Landscape Construction
2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other service necessary for the construction and completion of the WORK described herein.
3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within **14** calendar days after the date of the NOTICE TO PROCEED and will complete the same by **as indicated in the contract documents**, unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The Contractor agrees to perform all of the Work described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of (\$ _____) dollars or as shown in the BID SCHEDULE.
5. The term "CONTRACT DOCUMENTS" means and includes the following:
 - A. ADVERTISEMENT FOR BID
 - B. INSTRUCTIONS TO BIDDERS
 - C. BID
 - D. BID BOND
 - E. AGREEMENT
 - F. GENERAL CONDITIONS (CITY OF RIFLE PUBLIC WORKS MANUAL)
 - G. SUPPLEMENTARY GENERAL CONDITIONS
 - H. PAYMENT BOND
 - I. PERFORMANCE BOND
 - J. NOTICE OF AWARD
 - K. NOTICE TO PROCEED
 - L. LIST OF DRAWING SHEETS
 - 1 G01-COVER SHEET
 - 2 G02-GENERAL NOTES 1 OF 2
 - 3 G03-GENERAL NOTES 2 OF 2
 - 4 G04-TABULATION TABLES -1 OF 2
 - 5 G05-TABULATION TABLES -2 OF 2
 - 6 G06-SURVEY CONTROL DIAGRAM
 - 7 G07-PROJECT ALIGNMENT CONTROL PLAN
 - 8 G08-STANDARDS PLANS LIST
 - 9 C01-OVERALL EXISTING CONDITIONS AND REMOVAL PLAN
 - 10 C02-EXISTING CONDITIONS AND REMOVAL PLAN ENLARGEMENT
 - 11 C03-OVERALL LAYOUT AND MATERIALS PLAN
 - 12 C04-LAYOUT AND MATERIALS PLAN ENLARGEMENT
 - 13 C05-LAYOUT AND MATERIALS PLAN ENLARGEMENT
 - 14 C06-OVERALL LANDSCAPE PLAN
 - 15 C07-LANDSCAPE PLAN ENLARGEMENT

- 16 C08-OVERALL GRADING, DRAINAGE, AND EROSION CONTROL PLAN
- 17 C09-GRADING, DRAINAGE, AND EROSION CONTROL PLAN ENLARGEMENT
- 18 C10-SITE DETAILS
- 19 C11-OVERALL IRRIGATION PLAN
- 20 C12-IRRIGATION PLAN ENLARGEMENT
- 21 C13-IRRIGATION DETAILS
- 22 E01-SITE LIGHTING PLAN
- 23 E02-SITE LIGHTING -DETAILS
- 24 E03-SITE LIGHTING -DETAILS

CDOT STANDARD DETAILS

- M-208-1 (11 TOTAL) TEMPORARY EROSION CONTROL
- M-214-1 PLANTING DETAILS
- M-216-1 (2 TOTAL) SOIL RETENTION COVERING
- M-605-1 SUBSURFACE DRAINS
- M-609-1 (4 TOTAL) CURB, GUTTERS, AND SIDEWALKS
- S-613-1 (6 TOTAL) ROADWAY LIGHTING
- S-630-1 (24 TOTAL) TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION
- S-630-2 BARRICADES, DRUMS, CONCRETE BARRIERS (TEMP)

- M. TYPICAL SPECIFICATIONS noted in the City Public Works Manual and CDOT Specifications.
- N. TECHNICAL SPECIFICATIONS
- O. ADDENDA: No. _____, dated _____ 2021.

**CITY OF RIFLE
AGREEMENT**

- 6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the GENERAL CONDITIONS such amounts as required by the CONTRACT DOCUMENTS.
- 7. This AGREEMENT shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this AGREEMENT in triplicate, each of which shall be deemed an original on the date first above written.

CITY OF RIFLE

OWNER: _____
BY: _____
NAME: _____
TITLE: _____

(SEAL)

ATTEST (OWNER): _____
(Please Type)

NAME: _____

TITLE: _____

CONTRACTOR: _____
BY: _____
NAME: _____
ADDRESS: _____

(SEAL)

ATTEST (CONTRACTOR): _____
(Please type)

NAME _____

TITLE: _____

Contingency Allowances

Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

FORCE ACCOUNT ITEMS

DESCRIPTION

This special provision contains the Department's estimate for force account items included in the Contract. The estimated amounts marked with an asterisk will be added to the total bid to determine the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with PWM Section 2.30. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at \$5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

<u>Force Account Item</u>	<u>Quantity</u>	<u>Estimated Amount</u>
F/A Minor Contract Revisions	F.A.	TBD

Force Account Descriptions

F/A Minor Contract Revisions – This work consists of minor work authorized and approved by the Engineer, which is not included in the contract drawings or specifications, and is necessary to accomplish the scope of work of this contract.

Construction Schedule

Certificate of Insurance

Certificates of Insurance from the contractor and subcontractor's insurance carriers shall name the City of Rifle as an additional insured party. Submission of Certificates of Insurance shall be provided prior to commencing any work.

Performance Bond Form

KNOW ALL MEN BY THESE PRESENTS that

Name of Contractor

Address of Contractor

a _____

Corporation, Partnership or Individual

Hereinafter called Principal, and _____

Name of Surety

Address of Surety

Hereinafter called Surety, are held and firmly bound unto _____

Name of Owner

Address of Owner

Hereinafter called OWNER, in the penal sum of _____ Dollars (\$ _____) in lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, _____, a copy of which is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms conditions and agreements of said contract during the original term thereof, and any extensions thereof, which may be granted by the OWNER, with or without notice to the SURETY and during the one-year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall full indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

Performance Bond

PROVIDED, FURTHER, THAT THE SAID surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the terms of the contract or to the WORK to be performed hereunder or the SPECIFICATIONS accompanying the same shall in any way affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____
(number of copies)

counterparts, each one of which shall be deemed an original, this ____ day of _____, _____.

Principal (signature)

By: _____
Type/print

Address

ATTEST:

(Principal) Secretary

Address

(SEAL)

Witness as to Principal

Address

SURETY: _____

By: _____
Attorney-in Fact

Address

ATTEST:

Witness as to Surety

Address

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is partnership, all partners should execute BOND. IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the WORK is located.

Payment Bond Form

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal,
(Corporation, Partnership, Individual)

and _____
(Name of Surety)

(Address of Surety)

Hereinafter called Surety, are held and firmly bound unto _____

(Name of Owner)

(Address of Owner)

hereinafter called "OWNER" in the penal sum of _____ dollars,
(\$_____) in lawful money of the United States, for the payment of which sum well and truly
to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these
presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the OWNER, dated the _____ day of _____, _____, a copy of which
is hereto attached and made a part hereof for the construction of:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms,
SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the
prosecution of the WORK provided for in such contract, and any authorized extension or
modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and
coke, repairs or machinery, equipment and tools, consumed or used in connection with the
construction of such WORK, and all insurance premiums on said WORK, and for all labor
performed in such WORK, whether by SUBCONTRACTOR or otherwise, then this obligation shall
be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that
no change, extension of time, alteration or addition to the terms of the contract or to the WORK
to be performed there under or the SPECIFICATIONS accompanying the same shall in any way
affect its obligation on this BOND, and it does hereby waive notice of any such change, extension
of time, alteration or addition to the terms of the contract or to the WORK or to the
SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____
(number)

counterparts, each one of which shall be deemed an original, this _____ day of _____, _____.

Principal

ATTEST:

(Principal) Secretary By: _____ (s)

(Address)

Witness as to Principal:

(Address)

(Surety)

By: _____
(Attorney-In-Fact)

(Address)

ATTEST:

Witness as to Surety

(Address)

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the WORK is located.

CITY OF RIFLE

Notice of Award

Dated

TO: _____
Bidder

OWNER'S PROJECT NO. _____

PROJECT: Rifle I-70 Gateway Landscape Construction

CONTRACT FOR: FULL CONSTRUCTION SERVICES

You are notified that your Bid dated _____, 2021, for the above Contract has been considered. You are the apparent successful Bidder and have been awarded a contract for CONSTRUCTION SERVICES AS PER PLANS DATED _____.

Contract Price of your Contract is _____ Dollars (_____).

Three copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award, that is by _____, 2021 _____.

- 1. You must deliver to the OWNER three fully executed counterparts of the Agreement, including all the Contract Documents, Performance and Payment Bonds. Each of the Contract Documents must bear your signature on the cover.
- 2. You must deliver with the executed Agreement the Contract Security (Bonds)
- 3. You must deliver with the executed Agreement, proof of insurance coverage as specified in the General Conditions (section 2.32) and Supplementary General Conditions (paragraph 2.00). Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited. Within ten days after you comply with those conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

City of Rifle
Owner

By: _____
Authorized Signature

Civil Engineer: _____
Title

CITY OF RIFLE

Notice to Proceed

To: _____

Date: _____

Project: _____

You are hereby notified to commence WORK in accordance with the Agreement
dated _____, 2021, on or before _____, 2021_.

By: _____
Owner

Title: _____

ACCEPTANCE OF NOTICE Receipt of the above NOTICE TO PROCEED is hereby acknowledged

By _____

this the _____ day of _____, 2021.

By: _____

Title: _____

General Conditions

PWM Section 2.1. ADDITIONAL INSTRUCTIONS, MODIFICATIONS AND DETAIL DRAWINGS

The engineer may, during the duration of the contract agreement and in accordance with Sections 2-16, 2-17, and 2-18 of these General Conditions, furnish the contractor written instructions, modifications or detail drawings necessary to illustrate changes in the work.

The additional written instructions and detailed drawings thus supplied shall become a part of the contract documents, without invalidating the contract agreement, and the contractor shall perform the work as modified or altered.

PWM Section 2.2. EXECUTION, CORRELATION, INTENT, INTERPRETATION AND FURNISHING OF CONTRACT DOCUMENTS

The contract documents shall be executed in triplicate by the owner and contractor.

By executing the contract agreement the contractor represents that he has visited the sight of the work, familiarized himself with the locale, subsurface and site conditions under which the work is to be performed, and correlated his observations with the available information included with and required by the contract documents.

The contract documents are complementary and what is required by any one shall be as binding as if required by all. The intention of the documents is to include all labor, materials, equipment and incidentals necessary for the proper execution and completion of the work. It is not intended that work not covered under any heading, section, class or trade of the specifications shall be supplied unless it is required elsewhere in the contract documents or is reasonably inferable there from as being necessary to produce the intended results. Words, which have well known technical or trade meanings, are used herein in accordance with such recognized meanings. Well-known technical standards are used herein in accordance with the latest edition and revisions thereof.

Written interpretations necessary for the proper execution or progress of the work, in the form of drawings or other wise, will be issued with reasonable promptness by the engineer and in accordance with any approved schedule, upon written request from the contractor. Such interpretations shall be consistent with and reasonably inferable from the contract documents and may be effected by field order.

Unless otherwise provided in the contract documents, the contractor will be furnished, free of charge, three (3) copies of drawings and specifications necessary for the execution of the work. All drawings and specifications thus furnished shall not be reused on any other project.

PWM Section 2.3. SCHEDULES, REPORTS AND RECORDS

The contractor shall submit to the owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the owner may request concerning work performed or to be performed.

Prior to the first partial payment estimate the contractor shall submit to the engineer schedules indicating:

- A. Partial payments that he anticipates he will earn during the course of the work.
- B. The order in which he proposes to carry on the work, including dates at which he will start the various parts of the work, estimated date of completion of each part; and as applicable:
 - 1. The dates at which special detailed drawings will be required from the engineer.
 - 2. The date that the contractor will submit shop drawings to the engineer.
 - 3. Respective dates that manufacturing will begin, the testing and the installation of materials, supplies and equipment.

Schedules submitted by the contractor shall reflect:

- C. The timely and orderly completion of:
 - 1. Specific portions of the work as called for in the Special Conditions.
 - 2. The work in accordance with allowed contract time.
- D. The inability to perform work on Saturdays, Sundays, holidays or between the hours of 7:00 p.m. and 7:00 a.m. on any working day, without written permission from the engineer.

- E. The safety, adequacy and efficiency of his plant equipment, tools, labor and methods of performing the work.
- F. The availability of materials, equipment and incidentals to be incorporated in the work.
- G. Maintenance and control of traffic.

PWM Section 2.4. DRAWINGS, SPECIFICATIONS, CONFLICTS AND DISCREPANCIES

The intent of the drawings and specifications is that the contractor shall furnish all labor, materials, tools, equipment, incidentals and transportation necessary for the proper execution of the work in accordance with the contract documents to complete the project in an acceptable manner, ready for use, occupancy or operation by the owner.

In case of conflict between the drawings and specifications, the specifications shall govern. Figured dimensions on drawings shall govern over scale dimensions, detailed drawings shall govern over General Drawings and Special Conditions shall govern over Standard Specifications. Any discrepancies between the drawings and specifications and site conditions; or any inconsistencies, errors, omissions or ambiguities in the drawings or specifications; or any errors or omissions in the layout as given by survey points and instructions shall be immediately reported to the engineer, in writing, who shall promptly verify and correct such inconsistencies or ambiguities in writing. Work performed by the contractor after such discovery, until authorized or corrected by the engineer, shall be done at the contractor's risk.

PWM Section 2.5. SHOP DRAWINGS AND MATERIAL SAMPLES

The contractor shall provide shop drawings, in triplicate, as may be necessary for the prosecution of the work (i.e. vault piping, electrical systems, reinforcing, non-detailed items, etc.) as required by the contract documents. The engineer shall promptly review all shop drawings. The engineer's approval of any shop drawing shall not release the contractor from responsibility for deviations from the contract documents. The approval of any shop drawing, which substantially deviates, from the requirement of the contract documents shall be evidenced by a Change Order.

When submitted for the engineer's review, shop drawings shall bear the contractor's certification that he has reviewed, calculated non-detailed dimensions, checked and approved the shop drawings and that they are in conformance with the requirements of the contract documents.

Portions of the work requiring a shop drawing or material sample submission shall not begin until the shop drawing or submission has been approved by the engineer. A copy of each approved shop drawing and each approved material sample shall be kept in good order by the contractor at the site and shall be available to the engineer.

PWM Section 2.6. MATERIALS, SERVICES, AND FACILITIES

It is understood that, except as otherwise specifically stated in the contract documents, the contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete and deliver the work within the specified time.

Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.

Manufactured articles, materials and equipment shall be fabricated, furnished, applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer or in accordance with the latest revision to or edition of well known technical standards (i.e. ASTM, AWWA, Colorado Department of Transportation, etc.) referred to in the Specifications or Special Conditions. Materials, supplies and equipment shall be in accordance with samples submitted by the contractor and approved by the engineer.

Materials, supplies or equipment to be incorporated into the work shall not be purchased by the contractor or the subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

PWM Section 2.7. INSPECTION AND TESTING

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with generally accepted standards and as required by the contract documents.

The owner shall provide technical personnel, acting under the supervision of the engineer, for the inspection and testing of the work in progress to ascertain that the completed work complies in all respects with the requirements of the contract documents.

If the contract documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the contractor, the contractor will give the engineer timely notice of readiness. The contractor will then furnish the engineer the required certificates of inspection, testing or approval. Neither observations by the engineer nor inspections, tests or approvals by any person shall relieve the contractor from his obligations to perform the work in accordance with the requirements of the contract documents.

The engineer and his representative will at all times have access to the work whenever it is in preparation or in progress. In addition, authorized representatives and agents of any participating federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The contractor will provide proper facilities for such access and observation of the work and also for any inspection thereof.

If any work is covered contrary to instructions or without approval or consent from the engineer, it must if required by the engineer, be uncovered for his examination and properly restored at the contractor's expense.

If any work has been covered which the engineer has not specifically requested to observe prior to its being covered, or if the engineer considers it necessary or advisable that covered work be inspected or tested by others, the contractor, at the engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the engineer may require, that portion of the work in question, furnishing all necessary labor, materials, tools and equipment. If it is found that such work is defective, the contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such work is not found to be defective, the contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate Change Order shall be issued. Any work done or materials used without inspection by an authorized Department representative may be ordered uncovered, removed, or restored at the Contractor's expense.

PWM Section 2.8. SUBSTITUTIONS

Whenever a material, article or piece of equipment is identified on the drawings or specifications by reference to brand name or catalog number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The contractor may request, in writing, the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the contract documents by reference to brand name or catalog number, and if, in the opinion of the engineer, such material, article, or piece of equipment is of equal substance and function to that specified, the engineer may approve its substitution and use by the contractor. Any cost differential shall be deductible from the contract price and the contract documents shall be appropriately modified by Change Order. The contractor warrants that if substitutes are approved, no major changes in the function or general design of the project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the contractor without a change in the contract price or contract time.

PWM Section 2.9. PATENTS

The contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the owner harmless from loss on account thereof, except that the owner shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified by the owner; notwithstanding anything above to the contrary, if the contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information, in writing, to the engineer.

PWM Section 2.11. LICENSES, PERMITS, AND REGULATIONS

All contractors and subcontractors performing work on the project shall have a current City of Rifle Municipal or Building Contractor's License, whichever is applicable to their trade. Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the contractor. Permits, licenses, and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the owner, unless otherwise specified. The contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the engineer in writing, and any necessary changes shall be adjusted as provided in the Contract Documents for changes in the work.

PWM Section 2.12. PROTECTION OF WORK, EMPLOYEES, PUBLIC AND PROPERTY

The contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and the public who may be affected thereby, all the work and all the materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including pedestrian and vehicular traffic, trees, shrubs, lawns, fences, walks, pavements, roadways, structures and utilities, shown or not shown on the plans which are not designated for removal, relocation or replacement in the course of construction.

The contractor will comply with all applicable laws, ordinances, rules, regulations and order of any private or public body having jurisdiction. He will notify owners and users of adjacent utilities when prosecution of the work may affect them. He shall keep adjacent highways, streets and private access open to traffic and free of dirt and litter resulting from handling operations. He shall take reasonable precautions to protect private property adjacent to the project from such nuisances as dust, dirt, rock and excessive noise. The contractor shall remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except such as may be due to errors in the Contract Documents, or caused by agents or employees of the owner.

PWM Section 2.13. EMERGENCIES

In emergencies affecting the safety of life or the work or property at the site or adjacent thereto, the contractor, without special instruction or authorization from the engineer or owner, shall act to prevent threatened damage, injury or loss.

He will give the engineer prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved, except when the emergency is attributed to acts of the contractor in performing the Work.

PWM Section 2.14. LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS

The contractor shall keep himself fully informed of, and shall comply with all applicable laws, ordinances, rules, regulations and orders of the city, county, state, federal or public bodies having

jurisdiction affecting the work. He shall provide, erect and maintain all necessary, police, watchmen, flagmen, firemen, shoring, signing, traffic devices, barricades and sanitary facilities, as required by the conditions and progress of the work, and all other necessary safeguards for safety and protection, as set forth by the United States Department of Labor, Occupational Safety and Health Administration.

The contractor must conform to the rules and regulations of the Industrial Commission of Colorado. Prior to starting excavation the contractor shall obtain from the Commission and file with the engineer a copy of his "Notice of Intent to Excavate."

The contractor shall comply with the requirements of CRS § 8-17-101 (1985 Supp.) by employing not less than 80 percent Colorado residents in the several classifications of skilled and common labor employed on the project.

The contractor shall be an equal opportunity employer and adhere specifically to all the City of Rifle resolutions and ordinances pertaining thereto.

The contractor shall protect and indemnify the owner and its agents against any claim or liability arising from or based on the violations of such ordinances, regulations, or laws, caused by the negligent actions of the contractor, his agents or employees.

PWM Section 2.15. SUPERVISION AND DISCIPLINE BY CONTRACTOR

The contractor will supervise and direct the work. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the contractor as the contractor's representative at the site. The supervisor shall have full authority to act on behalf of the contractor and all communications given to the supervisor shall be as binding as if given to the contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.

The contractor shall at all times enforce strict discipline and good order among his employees and shall avoid employing on the project anyone unskilled in the work assigned.

PWM Section 2.16. CHANGES IN THE WORK

At any time during the progress of the work, the owner, through its city manager, may order alterations or changes in the plans, specifications, character or quantity of work, without invalidating the contract agreement. When the total arithmetic dollar value of all such changes, both additive and deductive, does not exceed 25 percent of the contract price, bid unit or lump sum prices, where applicable, shall be used. Should the dollar value of the changes exceed 25 percent of the contract price, the value of the changes over 25 percent shall be based on negotiated unit or lump sum prices, where applicable.

The engineer, also, may at any time, by issuing a Field Order, make changes in the details of the work, the contractor shall proceed with the performance of any changes in the work so ordered by the engineer unless the contractor believes that such Field Order entitles him to a change in contract price or time, or both, in which event he shall give the engineer written notice thereof within fifteen days after the receipt of the ordered change, and the contractor shall not execute such changes pending the receipt of an executed Change Order or further instruction from the owner.

PWM Section 2.17. CHANGES IN CONTRACT PRICE

The contract price may be changed only by a Change Order. The value of any work covered by a Change Order or of any claim for increase or decrease in the contract price shall be determined by one or more of the following methods in the order of precedence listed below.

- A. Contract Unit Prices. If a change is ordered in an item of work covered by a contract unit or lump sum price, then an adjustment in the contract price will be made based upon the increase or decrease in quantity of the contract unit or lump sum price.
- B. Agreed Prices. Adjustments in contract price for changes ordered that are not covered by contract unit or lump sum price or exceed the limitation in Section 2.16, will be determined by agreement between contractor and owner. If unable to reach agreement, the owner may direct the contractor to proceed on the basis of extra work in accordance with Paragraph C.
- C. Extra Work. When the price for extra work cannot be agreed upon, the owner will pay for the extra work based on the accumulation of costs as provided herein below.
 1. Daily Reports by Contractor. At the close of each working day, the contractor shall submit a daily report to the engineer, together with applicable delivery tickets, listing all labor, materials, and equipment for that day, and for other services and expenditures when authorized. An attempt shall be made to reconcile the report daily, and it shall be signed by the engineer and the contractor. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by subcontractors or others shall be submitted through the contractor.
 - a. Labor. The report shall show the names of workers, classifications, and hours worked.
 - b. Material. The report shall describe and list quantities of materials used.
 - c. Equipment. The report shall show type of equipment, size and hours of operation, including loading and transport, if applicable.
 - d. Other Services and Expenditures. Other services and expenditures shall be described in such detail as the engineer may require.
 2. Basis for Establishing Costs.
 - a. Labor. The costs of labor will be the actual cost for wages for each craft or type of workers at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, and other direct costs resulting from federal, state or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the extra work cost will not be permitted unless the contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
 - b. Materials. The cost of materials, or equipment to be incorporated in the work, shall be at invoice or lowest current price at which such materials are locally available and delivered to the job site in the quantities involved, plus freight and delivery.

The owner reserves the right to approve materials and sources of supply, or to supply materials to the contractor if necessary for the progress of

the extra work. No markup shall be applied to any material provided by the owner.

c. Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$400 or less.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed rates approved or authorized by the Colorado Department of Transportation at the time the extra work is performed. (Dataquest-Rental Rate Blue Book)

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance and all incidentals.

Necessary loading and transportation costs for equipment used in performing the extra work shall be included.

If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the owner than holding it at the work site, it shall be returned, unless the contractor elects to keep it at the work site at no expense to the owner.

The reported rental time for equipment already at the job site shall be the duration of its use on the extra work, commencing at the time it is first put into actual operation on the extra work.

d. Other Items. The owner may authorize other items, which may be required on the extra work. Such items include labor, services, material and equipment which are different in their nature from those required for the work and which are of a type not ordinarily available from the contractor or any of the subcontractors.

Invoices covering all such items in detail shall be submitted with the request for payment.

e. Invoices. Vendors' invoices for material, equipment rental, and other expenditures, shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, the engineer may establish the cost of the item involved at the lowest price which was current at the time of the report.

3. Markup.

a. Work by Contractor. The following percentage shall be added to the contractor's costs and shall constitute the markup for all overhead and profits:

Labor (1.32 x certified payroll) 15

Materials 15

Equipment Rental 15

Other Items and Expenditures 15

To the sum of the costs and markups provided for in this subsection, one percent shall be added as compensation for bond and liability insurance.

b. Work by Subcontractor. When all or any part of the extra work is performed by a subcontractor, the markup established herein shall be applied to the subcontractor's actual cost of such work, to which a markup of five percent on the subcontracted portion of the extra work may be added by the contractor.

4. Any other cause which, in the opinion of the engineer, entitles the contractor to additional time, including but not restricted to acts of the public enemy, acts of any government in either its sovereign or any applicable contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unforeseeable severe abnormal weather.

PWM Section 2.18. CHANGES IN CONTRACT TIME

The contract time may be changed only by a Change Order. The contractor shall notify the engineer promptly and in writing of any occurrence or conditions which, in the contractor's opinion, entitle him to an extension or reduction in contract time. Such notice shall be submitted in ample time to permit full investigation and evaluation of the contractor's claim. Failure to provide such notice shall constitute a waiver by the contractor of any claim. The engineer shall acknowledge the contractor's notice within seven days of its receipt.

Changes in contract time for the completion of the work shall be stipulated by Change Order:

- A. When changes in the work occur.
- B. When work is suspended by the owner.
- C. For unforeseeable causes beyond the control and without the fault or negligence of the contractor, his subcontractor or supplier and which were not the result of their fault or negligence.
- D. When delays in the progress of the work caused by:
 - 1. Any act or neglect of the owner, his employees or agents.
 - 2. Other contractors employed by the owner.
 - 3. Any delay in furnishing of drawings, information or return of shop drawings by the engineer.
 - 4. Any other cause which, in the opinion of the engineer, entitles the contractor to additional time, including but not restricted to acts of the public enemy, acts of any government in either its sovereign or any applicable contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unforeseeable severe abnormal weather.

PWM Section 2.19. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

The date of beginning and the time for completion of the work are essential conditions of the contract documents and the work embraced shall be commenced on the date specified in the Notice to Proceed.

The contractor will proceed with the work at such rate of progress to insure full completion within the contract time. It is expressly understood and agreed, by and between the contractor and the owner, that the contract time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

A daily charge will be made against the contractor for each working day, including free time, that any work shall remain uncompleted after elapse of contract time. This daily charge, determined by the original contract amount for the project from the table herein below, will be deducted from any money due the contractor. This deduction will not be considered a penalty but as liquidated damages.

The schedule of liquidated damages set forth below is an amount, agreed to by the contractor and the City of Rifle, as reasonably representing additional construction engineering costs incurred by the City if the contractor fails to complete performance within the contract time.

The schedule of liquidated damages will be:

Original Contract Amount Daily Charge

From To and

More than Including

\$ 0 \$ 25,000 \$ 270

25,000 50,000 465

50,000 100,000 540

100,000 500,000 950

500,000 1,000,000 1,250

1,000,000 2,000,000 1,400

2,000,000 4,000,000 1,750

4,000,000 8,000,000 1,970

8,000,000 10,000,000 2,050

Over \$10,000,000 - daily charge will increase by \$100 increments for each \$2,000,000 over \$10,000,000.

Permitting the contractor to continue and finish the work or any part thereof after elapse of contract time will not operate as a waiver on the part of the City of any of its rights under the contract.

Any deduction assessed as liquidated damages under this section shall not relieve the contractor from liability for any damages or costs resulting from delays to other contractors on the project or other projects caused by a failure of the assessed contractor to complete the work according to contract times.

The contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following and the contractor has promptly given written notice of such delay to the owner or engineer.

A. To any preference, priority or allocation order duly issued by the owner.

B. To unforeseeable causes beyond the control and without the fault or negligence of the contractor, including but not restricted to, acts of God, or of the public enemy, acts of the owner, acts of another contractor in the performance of a contract with the owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unforeseeable severe abnormal weather.

The owner shall have the right to deduct the amount of liquidated damages from any monies due or to become due to the contractor, or to sue for and recover compensation for damages for non-performance of the work, from the contractor and his surety, as stipulated in the contract documents.

PWM Section 2.20. CORRECTION OF WORK

The contractor shall promptly remove from the premises all material and work condemned by the engineer for failing to comply with the contract documents, whether incorporated in the construction or not, and the contractor shall promptly replace and re-execute the work in accordance with the contract documents and without expense to the owner and shall bear the expense of making good all work and material of other contractors destroyed or damaged by such removal or replacement.

All removal and replacement Work shall be done at the contractor's expense. If the contractor does not take action to remove such condemned work and materials within ten days after receipt of written notice, the owner may remove such work and store the materials at the expense of the contractor.

PWM Section 2.21. SUBSURFACE CONDITIONS

The contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, which jeopardizes the safety of the project and/or persons thereon, notify the owner in writing of:

A. Subsurface or latent physical conditions at the site differing materially from those indicated in the contract documents.

B. Previously unknown physical or other conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract documents.

The engineer shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, an equitable adjustment shall be made and the contract documents shall be modified by a Change Order. Any claim of the contractor for adjustment hereunder shall not be all wed unless he has given the required written notice; provided that the engineer may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

PWM Section 2.22. SUSPENSION, DELAY OR INTERRUPTION OF WORK

The owner may, at any time and without cause, suspend the work or any portion thereof for a period of not more than ninety calendar days or such further time as agreed upon by the contractor, by written notice to the contractor and the engineer which notice shall fix the date on which work shall be resumed. The contractor will resume that work on the date so fixed. The contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to any suspension.

If the performance of all or any portion of the work is suspended, delayed or interrupted as a result of a failure of the owner or engineer to act within the time specified in the contract documents, or if no time is specified, within a reasonable time, an adjustment in the contract price or an extension of the contract time, or both, shall be made by Change Order to compensate the contractor for the costs and delays necessarily caused by the failure of the owner or engineer.

PWM Section 2.23. OWNER'S RIGHT TO TERMINATE OR ABANDON WORK

If the contractor is adjudged bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to subcontractors or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the work or if he disregards the authority of the engineer, or if he otherwise violates any provision of the contract documents, then the owner may, without prejudice to any other right or remedy and after giving the contractor and his surety a minimum of ten days from delivery of a written notice, terminate the services of the contractor and take possession of the project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the contractor, and finish the work by whatever method he may deem expedient. In such case the contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price exceeds the direct and indirect costs of completing the project, including compensation for additional professional services, such excess shall be paid to the contractor. If such costs exceed such unpaid balance, the contractor will pay the difference to the owner. Such costs incurred by the owner will be determined by the engineer and incorporated in a Change Order.

Where the contractor's services have been so terminated by the owner, said termination shall not affect any right of the owner against the contractor then existing or which may thereafter accrue. Any retention or payment of monies by the owner due the contractor will not release the contractor from compliance with the contract documents.

After ten calendar days from delivery of a written notice to the contractor, the owner may, without cause and without prejudice to any other right or remedy, elect to abandon the project and terminate the contract. In such case, the contractor shall promptly remove all of his equipment, temporary facilities and supplies from the premise, clean up the project and contiguous properties. Otherwise, the owner shall perform such housekeeping at the expense of the contractor. However, the contractor shall be paid for all work executed and any expense sustained plus reasonable profits as a result of such action by the owner.

PWM Section 2.24. CONTRACTOR'S RIGHT TO TERMINATE OR STOP WORK

If, through no act or fault of the contractor, the work is suspended for a period of more than ninety calendar days by the owner or under an order of court or other public authority, or the engineer fails to act on any request for payment within thirty calendar days after it is submitted, or the owner fails to pay the contractor substantially the sum approved by the engineer within thirty calendar days of its approval and presentation, then the contractor may, after ten calendar days from delivery of a written notice to the owner and the engineer, terminate the contract and recover from the owner payment for all work executed and all expenses sustained. In addition and in lieu of terminating the contract, if the engineer has failed to act on a request for payment or if the owner has failed to make any payment as aforesaid, the contractor may upon ten calendar days notice to the owner and the

engineer stop the work until he has been paid all amounts then due, in which event and upon resumption of the work, Change Orders shall be issued for adjusting the contract price or extending the contract time, or both, to compensate for the costs and delays attributable to the stoppage of the work.

PWM Section 2.25. SUBCONTRACTING

The contractor may utilize the services of subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

The contractor shall not award work to subcontractor(s), in excess of fifty percent of the total contract price, without prior written approval of the owner.

The contractor shall be fully responsible to the owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

The contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the contractor by the terms of the contract documents insofar as applicable to the work of subcontractors and to give the contractor the same power as regards terminating any subcontract that the owner may exercise over the contractor under any provision of the contract documents.

Nothing contained in this contract shall create any contractual relation between any subcontractor and the owner.

PWM Section 2.26. CONTRACT SECURITY

The contractor shall, within seven calendar days after the receipt of the Notice of Award, furnish the owner with a Performance and Payment Bond in the penal sum of the total contract price, conditioned upon the performance by the contractor of all Change Orders, undertakings, covenants, terms, conditions and agreements of the contract documents, and upon the prompt payment by the contractor to all persons supplying labor, equipment and materials in the prosecution of the work provided by the contract documents. Such bond shall be executed by the contractor and a corporate bonding company licensed to transact such business in the State of Colorado and listed in the most recent revision of "Surety Companies Acceptable on Federal Bonds" as published in the U.S. Treasury Department Circular No. 570. The expense of the bond shall be borne by the contractor. If at any time a surety on any such Bond is declared a bankrupt or loses its right to do business in the State of Colorado, or is disapproved by the owner, the contractor shall, within ten calendar days after notice from the owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the owner. The premiums on such bond shall be paid by the contractor. No further partial payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the owner.

PWM Section 2.27. PARTIAL COMPLETION AND OCCUPANCY

At any time during the performance of the work that a portion of the permanent construction has been satisfactorily completed, in accordance with the contract documents, which is not required for the operation of the contractor but is needed or required by the owner, the engineer shall issue to the contractor a written notice of partial completion, and thereupon or at any time thereafter, the owner may take over, occupy, operate and use that portion of the construction therein described.

The notification of partial completion shall in no way be construed to constitute an extension in contract time for the completion of all the work or as a waiver of the right of the owner to require the fulfillment of all the terms of the contract documents. If such prior use should cause an increase in the cost of, or in the time required for, performance of the Work, as determined by the engineer, an equitable adjustment to the contractor shall be made and the contract documents modified by a Change Order.

PWM Section 2.28. MEASUREMENT OF QUANTITIES FOR PAYMENT

Measurement for pay items in the contract shall be as defined in the Measurement and Payment Section of the City of Rifle Standard Specifications for Design and Construction or as modified in

the Special Conditions. The methods of measurement and computation to be used in determination of quantities; of work performed, of materials to be furnished and/or installed; will be those methods generally recognized as conforming to good engineering practice.

Sundry items, which are incident to or required in the construction of the work, but are not included as items in the Bid Schedule, shall be considered an integral part of the work to be performed. All labor, materials, etc., required for such items shall be furnished and installed, and the costs shall be included in the applicable contract unit price or lump sum amount bid.

PWM Section 2.29. SCOPE OF PAYMENT

Payment to the contractor will be made only for the actual quantities of contract items constructed and installed in accordance with the plans and specifications.

Payment made at the contract unit price or lump sum amount bid shall be full compensation for furnishing all labor, materials, equipment, appurtenances, taxes, insurance, permits and incidentals necessary to complete the work as shown on the plans and as required by the Specifications. Each item, fixture, piece of equipment, etc., shall be complete in place, operational and accepted.

No additional payment, over the amount bid, will be made for related work to any item unless specifically called for in the contract. Neither will payment be made for materials wasted, rejected or placed outside of plan limit lines.

PWM Section 2.30. PARTIAL PAYMENT AND CERTIFIED TAX REPORTS

The engineer, on or about the twenty-fifth day of the month in which work on the project is performed, shall prepare for contractor's approval, a partial payment estimate of the work performed and materials placed in accordance with the contract documents.

Not more than eighty (80) percent of the cost of materials and equipment delivered and suitably stored at or near the project site, but not incorporated in the work may be included in an estimate; provided however, the contractor furnishes invoices and supportive data establishing title in the name of the owner, to the engineer.

The amount to be retained from partial payments will be ten percent of the value of completed work, exclusive of mobilization and payment for materials on hand. When the retainment on contracts exceeding \$80,000 in value has reached five percent of the amount of the contract, no further retainment will be made. Amount of retainment will be held until such time as final payment is made with the following provision: When ninety-seven and one-half percent of the work has been completed, the engineer may, at his discretion and The amount to be retained from partial payments will be ten percent of the value of completed work, exclusive of mobilization and payment for materials on hand. When fifty percent of the work required by contracts exceeding \$150,000. has been performed, no further retainment will be made if in the opinion of the City, satisfactory progress is being made on the work. Amount of retainment will be held until such time as final payment is made with the following provision: When ninety-seven and one-half percent of the work has been completed, the engineer may, at his discretion and with the consent of the Surety, reduce the retained amount to twice the value of the work remaining to be done. Any amount retained under this provision shall be subject to the requirements of Colorado Revised Statute § 24-91-103.

Earnings so retained on contracts exceeding \$150,000. in value may be withdrawn by the contractor provided the contractor provides the City with an irrevocable letter of credit in a form and from a financial institution acceptable to the owner. Any amounts so retained by the owner under this provision shall be subject to Colorado Revised Statute. § □ 24-91-105.

The contractor upon receipt of each partial payment estimate shall either indicate his approval by signing and returning a copy to the engineer, or return the estimate unsigned and indicate in writing his reason for refusing payment.

The owner, within fifteen- (15) days of presentation to the engineer of an approved partial payment estimate, shall pay the contractor the amount due thereon.

Upon receipt from the contractor of an approved designated semifinal estimate, as prepared by the engineer:

- A. The contractor shall, in writing, request the engineer to make a semifinal inspection in preparation for final acceptance of the work by the owner.
- B. The contractor shall prepare and furnish the engineer certified city and county sales and use tax reports covering the equipment and materials incorporated in the work.

The engineer, upon receipt of written request for semifinal inspection, shall promptly make said inspection of the work and issue to the contractor a written notice advising him of any deficiencies, corrective measures or clean up that he must complete prior to preparation of the final payment request.

All work covered by partial payment made shall thereupon become the sole property of the owner, but this provision shall not be construed as relieving the contractor of the sole responsibility for the care and protection of the work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the owner to require the fulfillment of all terms of the contract documents.

PWM Section 2.31. FINAL PAYMENT REQUEST, ACCEPTANCE AND RELEASE

Upon completion of the work, cleanup of the project site, the engineer's receipt from the contractor in triplicate of certified tax receipts, the engineer, within ten calendar days thereafter shall:

- A. Prepare a final payment request, for contractor's approval, showing the total value of the work completed in accordance with the contract documents and as modified by any Change Orders, less the value of:
 - 1. Partial payments previously made by the owner to the contractor.
 - 2. Retention of any claims, on file with the owner, against the contractor
 - 3. Estimated costs of completing any incomplete or unsatisfactory items of the work.
 - 4. Payments advanced by the owner, to subcontractors, material and equipment suppliers or others which are known by the contractor to have been made but not previously accounted for.
 - 5. Liquidated damages not previously paid to the owner by the contractor.
- B. Advise the owner and contractor by written notice that:
 - 1. The work has been inspected and accepted by him under the conditions of the contract documents.
 - 2. The work, effective the date of the notice, is placed under warranty, at the contractor's expense, for a period of two years.
 - 3. The entire balance shown on the final payment request, as prepared by the engineer, is due and payable within thirty calendar days from date of approval thereof by the contractor.

Upon approving the final payment request, as prepared by the engineer, the contractor by such act, indemnifies and saves the owner and his agents harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men and furnishers of machinery and parts thereof, equipment, tools, and all supplies incurred in the furtherance of the performance of the work. The contractor shall, at the owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged or waived. If the contractor fails to do so, the owner may, after having notified the contractor, either pay unpaid bills or withhold from the contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, in accordance with the terms of the contract documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the owner to either the contractor, his surety, or any third party. In paying any unpaid bills of the contractor, any payment so made by the owner shall be considered as a payment made under the contract documents by the owner to the contractor and the owner shall not be liable to the contractor for any such payments made in good faith.

The acceptance by the contractor of final payment shall be and shall operate as a release to the owner of all claims and all liability to the contractor other than claims in stated amounts as may be specifically excepted by the contractor for all things done or furnished in connection with this work and for every act and neglect of the owner and others relating to or arising out of this work. Any

payment, however, final or otherwise, shall not release the contractor or his sureties from the warranty period or any other obligations under the contract documents or the Performance and Payment Bond.

In the event the owner fails to make final payment as herein provided, there shall be added daily interest at the rate of six percent per annum, commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor.

PWM Section 2.32. INSURANCE

The contractor shall at its own expense keep in full force and effect during the term of this contract insurance as follows:

The contractor shall secure and maintain statutory workmen's compensation.

The contractor agrees to secure, at his own cost, a policy or policies of insurance sufficient to insure against the liability assumed by the contractor pursuant to the provisions of paragraph 2.36 of these General Conditions. The contractor's insurer must be rated "B+" or better, according to Best's Key Rating Guide and must be admitted to do business in the State of Colorado. The contractor shall provide the owner with a certificate of insurance from a properly qualified representative of the insurer, that any policy purchased pursuant to this contract complies with the conditions required by this contract. The certificate of insurance must show current name and address of the insured(s) named in the policy. The contractor shall not commence any work under this contract, and shall not allow any subcontractor or any officer, employee, or agent of the contractor or any subcontractor to commence any work under this contract, until any such certification has been received and approved by the owner.

The contractor shall not be relieved of any liability assumed pursuant to the foregoing paragraph by reason of its failure to secure insurance as required by this contract or by reason of its failure to secure insurance in sufficient amounts, of sufficient durations, or of sufficient types to cover such liability. The required policy shall meet the following conditions:

A. The policy limits shall be as follows:

1. The limit for an injury to one person in any single occurrence shall be no less than \$1,000,000, and the limit for an injury to two or more persons in any single occurrence shall be no less than \$2,000,000. Costs of defense shall not be included within such limits or, if they are so included, the minimum limits shall be \$1,000,000 combined single limits.

2. The general aggregate limit shall be unlimited or at least \$2,000,000.

B. The policy shall include the owner as an additional insured. The parties hereto understand and agree that the owner is relying on and does not waive or intend to waive by this contract, any provision hereof, including the provisions of this paragraph, the monetary limitations (presently \$1,000,000 per person and \$2,000,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, C.R.S. 24-10-101, et seq., as from time to time amended, or otherwise available to the owner.

C. The insurer shall give the owner notification of any cancellation or termination by refusal to renew the policy or any change in coverage of the policy in the manner provided by law. If no such notification is provided by law, the insurer shall give the owner at least thirty (30) days prior written notification of any cancellation or termination by refusal to renew the policy or of any change in coverage of the policy, unless cancellation or termination is for non-payment of premium, in which case, the industry standard of ten (10) days prior written notification shall apply.

D. The contractor shall be solely responsible for any deductible losses under the policy.

E. If the policy is a claims made policy, the policy shall provide the contractor the right to purchase, upon cancellation or termination by refusal to renew the policy, an extended reporting period of not less than two years. The contractor agrees to purchase such an extended reporting period should the policy be cancelled or terminated.

- F. If the policy is a claims made policy, the policy shall give the owner the right to purchase the extended reporting period described in paragraph E above if the contractor fails to purchase such an extended reporting period as required by this contract. The owner's exercise of such right shall not relieve the contractor of any liability for its failure to purchase such an extended reporting period as required by this contract.
- G. If the policy is a claims made policy, the retroactive date of any renewal of such policy shall be no later than the date this contract is signed by the parties hereto.
- H. If the contractor purchases a subsequent claims made policy in place of any prior policy, the retroactive date of such subsequent policy shall be no later than the date the contract is signed by the parties hereto.

The contractor shall secure and maintain, at his own expense, if applicable or called for in the Special Conditions, the following insurance coverage:

Fire, extended coverage and vandalism insurance on the project to the full insurable value thereof for the benefit of the owner, the contractor and subcontractors.

"All Risk" type builder's risk insurance for work to be performed. Unless otherwise authorized by the owner, the amount shall not be less than the contract price totaled in the Bid Proposal. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft and smoke during the contract time and until the work is accepted by the owner. The policy shall name as the insured the contractor, the owner and their designated agents.

Special Comprehensive General Bodily Injury and Property Damage for the period of time that work being performed is encroaching on property owned or controlled by individuals, partnerships or corporations such as irrigation companies and railroads, state or federal agencies, and to limits set forth in their permit. The policy shall be issued to the permittee and name as the insured the contractor, the owner and their designated agents.

The contractor must comply with the owner's requirements for filing certificates of insurance, as determined by the Risk Management Division. A certificate of insurance acceptable to the Risk Management Division must be provided at the time the contract is executed by the parties hereto unless both parties arrange otherwise.

The contractor is responsible for submitting certificate(s) of insurance, subject to the insurance requirements described above, for all subcontractors. All certificates of insurance are subject to periodic verification and approval by the owner.

PWM Section 2.33. SEPARATE CONTRACTS

The owner reserves the right to let other contracts in connection with this project, or contiguous thereto. The contractor shall afford other contractors, utility companies or owner's forces reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. If the proper execution or results of any part of the contractor's work depends upon the work of any other contractor, the contractor shall inspect and promptly report to the engineer any defects in such work that render it unsuitable for such proper execution and results.

If the performance of additional work by other contractors, utility companies or the owner is not noted in the contract documents prior to the execution of the contract, written notice thereof shall be given to the contractor by the engineer, prior to starting any such additional work. If the contractor believes that the performance of such additional work by the owner or others entitles him to a change in contract price or time, or both, he may, by written notice to the engineer, request a Change Order as provided under Changes in the Work.

PWM Section 2.34. HOUSEKEEPING AND CLEANUP

At all times during the progress of the work the contractor, at his expense, shall maintain the site, storage yard, adjacent properties, both public and private, policed and free of litter or trash. All material and equipment to be incorporated in the work shall be stored in a neat appearing manner

and protected from damage or the elements until accepted in accordance with the contract documents.

Prior to final payment, the contractor, at his expense, shall remove from the project site and from contiguous private and public property, all temporary structures, equipment, rubbish and waste materials resulting from his operations. He shall clean up, police around and over all facilities that the owner will acquire maintenance thereof.

Disposal areas for waste material, from the contractor's operation, shall be those areas that comply in every way with local ordinances and are approved by the engineer.

PWM Section 2.35. ASSIGNMENT

Neither the contractor nor the owner shall sell, transfer, sublet as a whole, or otherwise dispose of the contract or any portion thereof without the written consent of the other and its surety; nor shall the contractor assign any monies due or to become due to him thereunder, except to a bank or financial institution acceptable to the owner.

PWM Section 2.36. INDEMNIFICATION

The contractor agrees to indemnify and hold harmless the owner, its officers, employees, insurers, and self-insurance pool, from and against all liability, claims and demands on account of personal injuries, including without limitation worker compensation claims and death claims, or property loss or damage, or any other loss of any kind whatsoever, which arises out of or are in any manner connected with this contract, whether or not such injury, loss, or damage is caused by, or is claimed to be caused by, the act, omission, negligence or other fault of the contractor, any employees of the contractor, or any other person or entity; or by accident; or by any other cause. Nothing herein is intended to constitute a covenant, promise, or agreement to indemnify and hold harmless the owner from any liability or damages directly caused by or attributable to the owner's own negligence. The contractor agrees to investigate, handle, respond to, provide defense for, and defend against, any liability, claims, or demands arising from, connected with, or related to the contract at the sole expense of the contractor regardless of whether the liability, claim, or demand is related to the owner's own negligence and the contractor further agrees to bear all other costs and expenses, related thereto, including court costs and attorney fees, whether or not the claim or claims alleged are groundless, false, or fraudulent. Nothing herein is intended to be, or may be construed as, a waiver or the immunities, protections, or limitations on damages provided to The City of Rifle by the Colorado Governmental Immunity Act, C.R.S. § 24-10-101 through 24-10-120, as it may from time to time be amended.

PWM Section 2.37. ENGINEER'S STATUS AND DECISIONS

The engineer shall act as the owner's representative during the construction period. He shall decide questions which arise in the execution of the work. He shall perform technical inspections in the field, in laboratories, at factories, at sources of supply and wherever he feels the necessity to determine the quality and acceptability of material and equipment furnished and work performed. He shall reject all material, equipment and work which fails to conform to the specifications. He shall stop the performance of the work whenever such stoppage may be necessary to insure the proper execution of the contract documents. He shall determine the quantity of work to be paid for and prepare all partial payments, estimates and the final payment request for submittal to the owner after obtaining the contractor's approval thereof.

The engineer will not be responsible for the construction means, controls, techniques, sequences, procedures or construction safety.

The engineer shall, within a reasonable time after presentation, make decisions by written notice on all claims of the owner or the contractor on all matters relating to the execution and progress of the work or the interpretation of the contract documents.

PWM Section 2.38. LAND, RIGHTS-OF-WAY, EASEMENTS AND ENCROACHMENTS

Prior to issuance of Notice to Proceed, the owner shall obtain all land and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the contract documents, unless otherwise stated in the Special Conditions or mutually agreed to.

The owner shall indicate on the drawings or provide to the contractor information which delineates and describes the lands owned, rights-of-way and easements acquired, and encroachments over lands upon which the work is to be performed.

Delays in furnishing land for the work by the owner may be deemed proper cause for a change in the contract price, contract time, or both.

The contractor shall provide, at his own expense and without liability to the owner, any additional land and access thereto that the contractor may desire for temporary construction facilities, or for storage of materials and equipment.

PWM Section 2.39. GUARANTY AND WARRANTY

The contractor shall guarantee all material and equipment incorporated in, and warrant all workmanship on, the project for a period of two years from the date of written notice of acceptance of the project or portions thereof. The contractor shall within forty-eight hours after notification from the owner, subsequently verified by written notice, make all needed repairs and corrections which develop or result from defective workmanship, materials or equipment.

In the event the contractor should fail to make such repairs, adjustments, or performs other necessary work required to correct any deficiencies, the owner may do so and charge the contractor the cost thereby incurred. The Performance and Payment Bond shall remain in full force and effect through the guarantee and warranty period.

PWM Section 2.40. TAXES

The contractor will pay all applicable sales, use and other similar taxes required by the laws of the State of Colorado. When taxes are due, the developers, other responsible parties, and/or their subcontractors, prior to requesting final warranty on their project shall furnish the engineer, in triplicate on the City form, certified receipts of sales, use and other similar taxes, required by law, paid on all materials and equipment incorporated in or used in the performance of the work.

Notwithstanding the above, the contractor shall obtain from the Colorado Department of Revenue a Certification of Exemption indicating, where applicable, that the contractor's purchase of construction or building materials is for use in the building, erection, alteration or repair of public works owned and used by the City of Rifle, in its governmental capacity. The contractor shall file with the engineer a certified copy of the Certification of Exemption, prior to commencing Work.

Where a project is exempt from such tax, the amount of such tax shall not be included in any bid proposal submitted to the City.

PWM Section 2.41. DESIGNING AND PERFORMING WORK WITHOUT A CONTRACT AGREEMENT

All property owners, individuals, partnerships or corporations which engage in the subdividing or improving of land, or in the design or construction of the Work, ultimately to be maintained, operated, occupied or owned by the City of Rifle, other than those directly contracting with the City, shall adhere to this Public Works Manual, Design and Construction of Public Improvements to which these General Conditions are a part.

No portion of the work shall be performed until the engineer has approved the drawings pertaining there to, and then only by a contractor that is licensed and bonded to the City of Rifle.

Those who are responsible for, or cause the work to be performed, and those who actually perform the work, will be considered, for purposes of these General Conditions and Standard Specifications, as having executed a contract agreement, as contractor, with the City of Rifle as owner, even though no agreement exists. As such, they shall comply with all the technical and performance provisions of these Specifications, be subject to inspection and the directives of the engineer.

PWM Section 2.42. CLOSEOUT

To close out a project or development, several items need to be taken into account by the Contractor, Engineer and by the Owner. Several of these items may have been initiated prior to or during the work.

The Contractor of the work shall notify the Engineer and the Owner in writing that he has reached "Substantial Completion" and include a list of work yet to be completed or corrected. If requested by the Engineer, closeout of areas or portions of work may be allowed by the Owner.

The Engineer, along with the Owner's representative, shall inspect the work to determine if it is substantially complete. If it is substantially complete, a "Certificate of Substantial Completion" will be issued by the Engineer along with a "Punch List" of items to be completed or corrected, to the Contractor and the Owner.

The Contractor shall complete and/or correct the items listed on the punch list, or any other item that becomes known, and again notifies the Engineer and Owner in writing that the work is ready for final inspection. At this time, the Contractor may submit his application for final payment to the Engineer.

The Engineer along with the Owner's representative will make a final inspection. If the work is found acceptable and complete to the satisfaction of the Owner, a meeting will be scheduled to finalize all other items due. Should the Contractor fail to complete and/or correct all punch list items required by the Owner, the Contractor shall pay for additional "Final Inspections" by the Engineer at the Engineer's current rates. If the Contractor has any question with regard to any items found on the punch list, he shall request clarification from the Engineer prior to final inspection.

Prior to release of final payment, a meeting (referred to in the previous paragraph) shall be held to collect from the Contractor and/or the Engineer, for the Owner, the following items:

1. Outside Inspection Certificates, as applicable,
2. Materials Certificates of Compliance,
3. Equipment and Material guarantees,
4. Contractors two-year (or longer, if required) guarantee or warranty using Owner forms,
5. Operation & Maintenance Manuals and Parts list, as applicable,
6. Receipts for Materials delivered to the Owner,
7. Miscellaneous Keys, Tools, etc.
8. Final Application for Payment,
9. Consent of Surety to Final Payment,
10. Contractor's Affidavit of Release of Liens,
11. Project Record Drawings (As-Builts),
12. Quitclaim deed from developer conveying any interest it has in the public improvements to the Owner using Owner format,
13. Bill of Sale conveying all public improvements to the Owner free and clear of liens and encumbrances using Owner format,
 1. Final Payment Amount,
 2. Contractor acknowledgement of Date of Warranty, and
 3. All other documentation.

And the Owner will provide to the Engineer:

1. Public Works Director Certification that the work has been constructed in conformance with the plans and specifications.
2. A letter informing the financier to release the Letter of Credit.

Inspection certificates shall be submitted (Number 1, in the list above) from any State or Other governing body having jurisdiction, such as State electrical certification that the work is in strict conformance with applicable codes.

The Contractor shall remedy any defects due to faulty materials or workmanship and pay for damage to other work resulting there from, for a period of one year (or longer, if required) in accordance with Section 2.39 herein. A written warranty based on the provisions of Section 2.39

shall be provided to the Owner, dated as agreed with the Owner, properly signed and notarized and addressed to the Owner.

All keys to doors, panels or switches, special tools required for equipment and spare parts or supplies, as applicable, shall be accounted for and turned over to the Owner.

The Owner, will initiate action to advertise in the local newspaper regarding final payment to the Contractor and determining the date for payment.

Project Record Drawings (As-Builts) shall consist of one blackline copy of the completed project work with changes clearly marked and clouded and a CD-ROM. The CD-ROM disk shall include the marked-up sheets in individual PDF format files and the electronic line work in the latest AutoCAD drawing format. The electronic line work should be supplied such that all improvements are located on the Rifle grid i.e. UTM Z13 in metric (meter) scale. All drawings (electronic and hardcopy) should be clearly and neatly marked "RECORD DRAWING" in ½" block letters in the lower right quadrant of the sheet.

Item 14, above, shall be broken down into 1) cost of water system per individual street (including pipe, fittings, valves, services, hydrants, etc.), 2) sewer system (including pipe, services, manholes, etc.) per individual street, 3) storm drain and culvert system per individual street (including pipe, inlets, boxes, flared ends, manholes, etc.) and 4) individual street costs (including signals, signs, striping, asphalt, road base, curb, gutter sidewalk, grading, etc.).

PWM Section 2.43. RIGHTS AND REMEDIES

The duties and obligations imposed by the Contract Documents and the rights and remedies available there under shall be in addition to and not as a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law, including but not limited to tort remedies.

The Contractor agrees that the economic loss rule as set forth in the Town of Alma v. Azco Construction, Inc., 10 p.3d 1256 (Colo. 2000) shall not serve as a limitation on the Owner's right to pursue tort remedies in addition to other remedies it may have against the Contractor. Such rights and remedies shall survive the acceptance of the Work or any termination of the Contract Documents. Contractor further specifically waives all provisions of Chapter 8 of Article 20 of Title 13, Colorado Revised Statutes, regarding defects in the Work under the Contract. In the event any portion of this provision is deemed un-enforceable by a court of competent jurisdiction, the remaining portions of this provision shall survive.

PWM Section 2.5. SURVEYS

1. GENERAL

1.1. Scope. Work to be performed under this section shall include all labor, equipment, materials, tools, and incidentals necessary to cover the following:

1.1.1. Layout of work.

1.1.2. Field measurements of work quantities.

1.1.3. Determination of as-built locations, lines, and grades at completion of the work for preparation of as-built drawings.

1.2. Description. The Engineer will provide horizontal and vertical survey control data for control points in the field necessary for the Contractor to proceed with construction staking for the work. The Contractor shall be responsible for protecting all field control set(s). Replacement by the Engineer of Engineer-established control points which have been damaged or destroyed by the Contractor will be charged at the Engineer's current rate.

1.2.1. The Contractor shall furnish all necessary detail surveys including all lines, grades, and appropriate surveys.

1.2.2. The Engineer reserves the right to perform any desired checking and/or correction of the Contractor's surveys but this shall not relieve the Contractor of responsibility for the adequate

performance of the work.

- 1.3. The work shall be done under the supervision of a Professional Engineer or Professional Land Surveyor who is experienced and competent in road and bridge construction surveying and is registered in the State of Colorado.

2. MATERIALS (Not Applicable)

3. METHOD AND PROCEDURES

- 3.1. Contractor Surveying. The Contractor shall perform all construction surveying and staking that is necessary for construction of the project. Construction surveying and staking shall be based on survey control established by the Engineer.
- 3.2. Staking. Acceptable staking placement intervals for the various construction survey control operations are described in the CDOT Survey Manual. Stationing shall be established in the field on centerline or an approved offset.
- 3.3. Accuracy and Tolerances. Accuracy of surveys and survey tolerances shall be as specified in the CDOT Survey Manual.
- 3.4. Responsibility and Inspection. Supervision and coordination of construction surveying is the Contractor's responsibility. The Contractor shall check the work to verify the accuracy and include documentation of this check in the Survey Records. All Contractor surveying inaccuracies, errors, or omissions shall be corrected at the Contractor's expense. Engineer's inspection or the Contractor's corrections shall not entitle the Contractor to additional payment or contract time extension.
- 3.5. Reset Controls and Stakes. Control points, bench marks, and other significant stakes that are damaged, destroyed, or made inaccessible by the progress of construction shall be replaced, transferred, or re-established at the Contractor's expense.
- 3.6. Changes. All changes in lines and grades required by field conditions and all discrepancies in grades, alignment, location, or dimensions detected by the Contractor shall be immediately submitted to the Engineer in writing. No changes in given data or plans will be allowed unless approved by the Engineer in writing. All changes shall be documented in the survey records.
- 3.7. Survey Records. Survey records shall be completed as the work is done. Field survey notes for construction surveying and checking by the Contractor shall be recorded in survey records in conformance with the format given in the CDOT Survey Manual. If an electronic format is used, it shall contain the same information and format as required in the Survey Manual for written documentation. All survey records generated shall be the property of the County and shall be available to the Engineer for inspection or reproduction at all times. All survey records shall be transmitted to the Engineer for inclusion into the project records before final project acceptance. All survey records shall be stamped with the seal of, and signed by, the responsible P.E. or P.L.S.

4. FIELD QUALITY CONTROL (Not Applicable)

5. MEASUREMENT AND PAYMENT

5.1. Measurement

- 5.1.1. Measurement for payment for layout of work and surveys will be by the lump sum basis.

5.2. Payment

- 5.2.1. Payment for layout of work and surveys will be made at the lump sum price quoted therefore in the Bid Schedule. The unit price quoted shall include full compensation for furnishing labor, materials, equipment, tools, accessories, and incidentals and for performing all work, including but not limited to, layout of work, field measurement of quantities, as-built drawings.

Supplementary General Conditions

1.00 GENERAL

These Supplementary General Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions, which are not so amended or supplemented, remain in full force and effect.

2.00 INSURANCE

The Contractor shall provide and maintain adequate Workmen's Compensation Insurance for all labor on the Work under this Contract. Protection under said policies shall extend to the Owner and Contractor. Certifications of such insurance shall be filed with the Owner prior to commencement of operations. Proof of carriage of insurance by subcontractors shall also be furnished.

2.01 Unless otherwise provided in these Supplementary General Conditions, Contractor shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in these Supplementary General Conditions or required by Law). This insurance shall include the interests of Owner, Contractor and Subcontractor in the Work, shall insure against the perils of fire and extended coverage, shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in these Supplementary General Conditions, and shall include damages, losses and expenses arising out of, or resulting from, insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance, or otherwise provided in these Supplementary General Conditions, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on or off the site or in transit when such portions of the Work are to be included in an *Application for Payment*. Such coverage shall be provided until the issuance of a certificate of substantial completion. The policies of insurance required to be purchased and maintained by Contractor in accordance with section 2.32 of the Rifle Public Works Manual shall contain a provision that the coverage afforded will not be canceled or materially changed until at least thirty (30) days prior written notice has been given to Owner.

2.02 All equipment shall be covered under the insurance requirements of the Contractor as stated under 2.01 above.

2.03 Coverage Required (minimum):

A. General Liability

1. Limits

- a. Bodily Injury - \$1,000,000 each person
\$2,000,000 each occurrence
- b. Property Damage - \$1,000,000 each occurrence
\$2,000,000 aggregate

2. Coverages

- Comprehensive Form
- Premises-Operations Explosion
- Collapse Hazard
- Underground Hazard
- Products/Completed Operations Hazard
- Contractual Insurance
- Broad Form Property Damage
- Independent Contractors
- Personal Injury

B. Automobile Liability

1. Limits

- a. Bodily Injury - \$250,000 each person

- b. Property Damage - \$500,000 each occurrence
- c. Combined - \$600,000 each occurrence

2. Coverages
- Comprehensive Form
 - Owned
 - Hired
 - Non-Owned

2.05 Certificates of Insurance from the contractor and subcontractor’s insurance carriers shall name both the City of Rifle and CDOT as additional insured parties. Submission of Certificates of Insurance shall be provided prior to commencing any work.

3.00 TAX EXEMPTION.

Owner's tax-exempt number, when applicable, to be used as part of this project, will be provided to the successful bidder. The successful bidder shall then apply for sales tax exemption before working on a City Project. See www.revenue.state.co.us/PDF/dr0172.pdf. Subcontractors shall be provided copies of the contractors sales tax exemption certificate to avoid paying taxes when purchasing materials to be incorporated in the City project. Therefore, these taxes should not be included in the cost for performing the work.

4.00 FINAL PAYMENT.

Lien waivers from all prime Contractors and Subcontractors to be provided prior to issuance of final payment.

5.00 COMPLETION TIME.

I-70 Gateway Landscape			July-20	Aug-20	Sep-20	Oct-20
Contract Execution/Bond Acquisition	23-July-21	4-Aug-21				
Submittals	4-Aug-21	16-Aug-21				
Construction	16-Aug-21	29-Sep-21				

6.00 OWNER'S REPRESENTATIVE.

Unless provided for otherwise in writing by the Owner, any on-site Inspector or Representative of the Owner shall not have the authority to render any binding decisions nor make any binding judgments to the Contractor pertaining to any work which may change the Contract price or time of completion, or to the quality of Work, or to the manner in which the Work is being performed. The Representative of the Owner shall serve as a means of communication between the Owner and the Contractor and shall monitor the Work for the Owner. Any communication given to the Representative of the Owner by the Contractor shall be considered as being given to the Owner.

7.00 SAFETY REQUIREMENTS.

Nothing in the Contract Documents shall be construed as relieving the Contractor from protecting all property and

persons or from strictly adhering to all applicable local, state and federal safety requirements. Where there is a conflict between the Contract Documents and any applicable safety requirement, the safety requirement shall take precedence.

8.00 LAWS AND ORDINANCES.

The Contractor shall at all times observe and comply with all federal, state and local laws, ordinances and regulations which in any manner affect the contract or Work, and shall indemnify and save harmless the Owner and the Owner's agent against any claim arising from the violations of any such laws, ordinances and regulations, whether by the Contractor or his employees.

If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules or regulations, and without notice to the Engineer, he shall bear all costs arising there from.

9.00 WAIVER.

It is expressly understood and agreed that any waiver granted by the Engineer or Owner of any term, provision or covenant of this Contract shall not constitute a precedent nor breach of the same or any other terms, provisions or covenants of this Contract. Neither the acceptance of the Work by the Owner nor the payment of all or part of the sum due the Contractor hereunder, shall constitute a waiver by the Owner of any claim which the Owner may have against the Contractor or otherwise.

10.00 PROTECTION OF PUBLIC UTILITIES AND OTHER ADJOINING PROPERTY.

The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to other property at the site or adjacent thereto, and he shall be liable for any and all claims for such damage on account of his failure to fully provide such protection.

The Contractor shall notify all public utility companies at least forty-eight (48) hours prior to commencement of any Work in the vicinity of the utilities. No Work shall commence until the utilities have been located and staked by the utility company or written consent to proceed has been given by the Owner. If utility service must be interrupted, the Contractor shall notify the head of local administrative services (i.e., City Manager, Mayor, and City Clerk), as applicable, and utility users affected by the interruption of service at least twenty-four (24) hours prior to interruption. Notice shall consist of publication in a local newspaper and/or announcement on local radio or television stations as determined by the Owner.

11.00 PROJECT PHOTOGRAPHS/VIDEOS

It is the Contractor's responsibility to take a sufficient number of pre-construction photographs/videos to resolve any disputes, which may arise regarding the conditions prior to and subsequent to construction. The Contractor shall provide copies of the pre-construction photographs/videos to the Owner prior to the start of work. Any potential problems should be identified at that time.

Progress and record photographs/videos shall be provided by the Contractor as appropriate to resolve any disputes and to completely document the work performed as a supplement to the Record Drawings. In general, the photographs/videos should be sufficient to show that all work was properly completed in accordance with the plans and specifications.

12.00 DAMAGE TO CONSTRUCTION.

The Contractor shall safeguard, until all work embraced by this Contract is formally accepted, all construction, both complete and incomplete, against damage and destruction, and should damage result, he will be required to reconstruct or repair it at his expense in a manner conforming to the Plans and Specifications, reconstruction shall be in a manner suitable to the Engineer.

13.00 PRE-CONSTRUCTION CONFERENCE.

A pre-construction conference shall be held within fifteen (15) days after the *Notice To Proceed*, at the Owner's place of business. The purpose of such meeting shall be to explain as required to the Contractor, the requirements of the Contract Documents, the procedures to be used in the administration of the Contract, the requirements of any funding Agencies, and to discuss any item of concern to the Work. The Contractor, Owner and Engineer, or authorized representative of each, shall be required to attend such meeting as a condition of the Contract.

14.00 BIDDER EXPERIENCE.

Upon request, bidder to provide documentation of relevant experience with reference to a minimum of three (3) projects of similar scope and size. Statement shall include equipment and manpower available for utilization on project. Supervisory personnel for project shall be provided. Qualification information shall be submitted as stated in section 3.0 of the "Instructions to Bidders".

16.00 PERFORMANCE AND PAYMENT BONDS.

Payment and Performance Bonds are required (section 2.26 of the general conditions and Agreement Documents section of the Project Manual).

17.00 WARRANTY INSPECTION.

At the Owner's discretion, a warranty inspection will be held during the sixty (60) calendar days prior to the expiration of the two-year warranty period. Contractor agrees to provide an authorized representative at such inspection to represent Contractor's interests. All defects identified during the inspection shall be corrected at Contractor's expense at direction of Owner in a timely manner. Corrective work shall be commenced within ten (10) calendar days after written notice to Contractor.

18.00 SOILS INVESTIGATION

Where available, applicable portions of subsurface soils investigations are included as an attachment to these Specifications). Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not made a part of the Contract Documents. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER'S Consultants with respect to: the completeness of such reports and drawings for CONTRACTOR'S purposes, including, but not limited to, any aspect of the means, methods, techniques, sequences and procedures of construction and programs incident thereto, or other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such

data, interpretations, opinions or information. Contractor shall perform such investigations as he may deem necessary to determine his bid.

19.00 JOB SITE RESTRICTIONS.

19.01 Salvage. All materials to be removed from the project site or demolished on site shall be disposed of by the Contractor off the project site within five days.

19.02 Staging Area. Staging may utilize right of way if the contractor provides adequate warning cones, reflectors, etc. Contractor takes sole responsibility for leaving any equipment or materials in the City right of way.

19.03. Disposal Area. Owner's property is not available for a Contractor disposal area.

19.04 Working Hours. Work will normally be permitted after 7:00 a.m. and before 5:00 p.m. Monday through Friday. Other work hours must be approved by Engineer in writing. Work may be permitted on Saturday with 48 hours prior notification given to the Owner's representative.

20.00 ARBITRATION.

Anything in the General Conditions of the Contract Documents notwithstanding the choice to submit any dispute to binding arbitration shall be solely that of the Owner and no other party to this Contract shall have the right to submit any controversy to binding arbitration.

21.00 PAYMENT RETAINAGE.

Retainage on Pay Estimates shall be five (5) percent.

22.00 REFERENCE TO OWNER.

The City of Rifle will be the Owner of this project and will be referred to as Owner in the Agreement.

23.00 NOTIFICATION TO ADJACENT PROPERTY OWNERS.

Contractor shall provide constant communication with adjacent property owners to schedule and discuss impacts the contractor's work will have on their access and utility service.

Access to property owners adjacent to the work site shall be open at all times unless other arrangements are made a minimum of twenty-four (24) hours in advance.

24.00 DRAWING ACCURACY AND EXISTING UTILITIES.

Contractor shall provide constant communication with adjacent property owners to schedule and discuss impacts the contractor's work will have on their access and utility service.

As such, information relating to locations, sizes, or elevation of existing facilities should be considered only approximate. It shall be the responsibility of the Contractor to contact the appropriate representatives of utility companies, or utility locate companies, a minimum of 48 hours prior to the commencement of Work which might affect utility installations and to secure from such representatives information as to accurate location, size and type

of such installations. The Contractor shall assume all responsibility for protection, repair and relocation of all such items encountered. Should repair or replacement be required, work shall be performed according to the requirements of the respective utility company.

25.00 ABBREVIATIONS.

Whenever the following abbreviations are used in these Specifications or on the Drawings, they shall be construed the same as the respective expressions represented:

AASHO or	
AASHTO	American Association of State Highway Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute, Inc.
AWWA	American Water Works Association
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health & Environment
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard, U.S. Department of Commerce
FED. SPEC.	Federal Specifications
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
OSHA	Occupations Safety and Health Act (Federal and/or State)
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.

25.01 Standard Specifications Reference. Where reference is made in these Specifications to other Standard Specifications, it is the intent that the latest available revisions of the CDOT Standard Specifications referenced be used. All portions of the CDOT Standard Specifications referenced shall be considered a part of these Specifications unless specifically superseded herein.

In case of conflict between the drawings and specifications, the specifications shall govern. Figured dimensions on drawings shall govern over scale dimensions, detailed drawings shall govern over General Drawings and Special Conditions shall govern over Standard Specifications.

Any discrepancies between the drawings and specifications and site conditions; or any inconsistencies, errors, omissions or ambiguities in the drawings or specifications; or any errors or omissions in the layout as given by survey points and instructions shall be immediately reported to the engineer, in writing, who shall promptly verify and correct such inconsistencies or ambiguities in writing. Work performed by the contractor after such discovery, until authorized or corrected by the engineer, shall be done at the contractor's risk.

26.00 PERMITS AND EASEMENTS.

The Contractor shall be responsible for securing any and all access rights he may require for construction convenience with private individuals and landowners. The Contractor shall provide the Engineer evidence of agreements for such access rights. All other permits required should be secured prior to commencement of Work at the Contractor's own expense.

The successful Contractor will be required to obtain a City of Rifle Contractor's license for construction operation. Proof of insurance shall be required.

27.00 SUBSTITUTION OF MATERIALS.

At no time shall materials be substituted for those shown on the Drawings or called for in the Specifications unless written approval is obtained from the Engineer in writing prior to construction. Any deviation from the Drawings and Specifications shall be accompanied by a written directive of the Engineer or his representatives. (See Article 6, General Conditions).

28.00 CONTROLLED AREA OF WORK.

The Contractor shall confine all the construction work and all related activities to the public roadways, utility easements, or construction areas designated by the Engineer. Access and egress to the work area shall be minimized to specific points.

29.00 INTERPRETATION OF ESTIMATED QUANTITIES.

Bidders are cautioned that the estimated quantities in the Bid Schedule are approximate only and are prepared for the comparison of bids. The basic of payment will be actual quantities of work performed and accepted or as stated in the Measurement and Payment section of each specification section. Prior to mobilization the contractor shall present their verification of quantities and final work plan for all aspects of work.

30.00 TEMPORARY FACILITIES.

The Contractor, at his expense, shall provide all necessary temporary facilities for his own convenience or to meet local, state, or federal requirements, including, but not limited to, potable water, sanitary waste facilities, power, telephone, etc. (See Article 6, General Conditions).

31.00 CLEAN-UP.

The Contractor will be responsible for immediately cleaning the job site during and after construction. A continuing effort shall be made through the duration of the contract to keep all areas clean and free of all rubbish, removed vegetation, construction waste, employee waste, debris and other objectionable materials generated from the project. All materials as part of this work shall be disposed off site in an acceptable manner. Final clean-up must be approved and accepted by the Owner before the contract may be considered complete.

32.00 MEASUREMENTS AND PAYMENT.

Payment for work done shall be as defined in *Bid Schedule*. Payment shall be complete compensation for the work unit completed and shall consist of furnishing and installing all materials, plant, equipment, labor and other items related to the work unless otherwise specified. All incidentals not specifically mentioned, but required to complete the Work, shall be paid for as part of the Work unit they are related to. All bid items shall be measured and paid in accordance with the appropriate section of the Colorado Department of Transportation Standard Specifications for Road and Bridge Construction unless revised by the Standard or Project Special Provisions.

33.00 SUBMITTALS.

The Contractor shall submit submittal data, as defined in the General Requirements. Submittals shall be required on all items of the submittal schedule contained in the Technical Specifications. At a minimum, the Engineer will retain Two (2) sets, and the Owner One (1) and the approved or rejected copy returned to the contractor.

34.00 COMMUNICATION.

Project will demand the need for communication with properties impacted by work performed. The Contractor shall notify, twenty-four (24) hours in advance of work, all property owners that may be affected by his work. This notification shall include times and duration of access or traffic interruptions. Anticipated interruptions shall be discussed with the City representatives daily.

The purpose of public notification is to reasonably inform the public of the work and to allow the public to schedule activities that may be impacted by the work. Owner, through its Representative, may stop work not consistent with the schedules prepared by the Contractor, which in the opinion of the Owner causes unreasonable hardship to the public.

Contractor shall designate an Information Coordinator who shall be on site during all work hours and shall be responsible for:

1. Preparing a weekly work schedule that includes planned type of work and areas of affected by work. Once schedule is confirmed, the City shall prepare door hangars for the Contractor to distribute the week prior.
2. Communication with adjacent properties of any change to traffic control that may affect their access via written notice for residents. The Contractor is responsible for any follow-up communications with residents after the initial door hangars are provided.
3. Communication with the media or by other means as appropriate, planned/scheduled changes in traffic control and other items that will affect the public traveling through the site. Also communicate with emergency services as to location of work and impacts.
4. Coordinate performed work to be consistent with weekly work schedule.

35.00 PROJECT SIGN.

A standard traffic sign (Orange Diamond, for example) with "Thank you CONTRACTOR, Phone number" shall be placed at a noticeable location in the neighborhood. The Contractor may, if they so choose, place a sign during active construction for their company contact pending approval by City Staff.

End of Section

Technical Specifications

These Technical Specifications supplement the specifications provided in the City Of Rifle Public Works Manual. All provisions, which are not so amended or supplemented, remain in full force and effect.

Submittal Schedule

Submittals on the items below (and any required by specifications) must be accepted by the City Of Rifle and the consultant prior to commencement of work.

- _____ Traffic Control Plans
- _____ Concrete Mix Design
- _____ Concrete Curing Agents/Admixtures Product Data
- _____ Asphalt Mix Design
- _____ ADA Landing Mats Product Data
- _____ Storm Drain Materials
- _____ Trench Drain Product Data
- _____ Waterline Product Data
- _____ Striping Product Data
- _____ Thermoplastic Product Data
- _____ Signage Product Data
- _____ Traffic Signal Product Data
- _____ Lighting & Electrical Data
- _____ Landscaping Product Data
- _____ Irrigation Product Data
- _____ Structural Product Data

Traffic Control

I General

Submittal Requirements

The Contractor shall prepare a Transportation Management Plan for each portion of the project.

The Contractor shall manage the work zone impacts of the Project in accordance with the Transportation Management Plan (TMP). The TMP shall consist of the Traffic Control Plan (TCP), and Public Information (PI) requirements. The TCP addresses traffic safety and control through the work zone and the PI component requirements shall address communication with the public and concerned stakeholders. The initial TMP shall be submitted at the Pre-construction Conference. The Contractor's superintendent shall implement the TMP.

(a) Traffic Control Plan. The Contractor shall control traffic in accordance with the Traffic Control Plan (TCP), as shown in the Contract. To implement the TCP, the Contractor shall develop and submit a Method for Handling Traffic (MHT) for each different phase of construction which shows the Contractor's proposed construction phasing and proposed traffic control devices consistent with the TCP. If at any time the Contractor desires to change the MHT, it shall be considered a different phase requiring a new MHT.

Any major revisions to the TCP as determined by the Engineer must be authorized by a contract modification order.

Each proposed MHT shall be approved in writing by the Engineer before the corresponding phase of construction will be allowed to begin. The initial MHT shall be submitted at the Pre-construction Conference.

The proposed MHT shall include as a minimum the following:

(1) A detailed diagram which shows the location of all traffic control devices, including advance construction signs and speed limit signs; method, length and time duration for lane closures; and location of flaggers and time duration of the flagging operation. Lane closures shall be kept to a minimum in both length and duration, and cause a minimum of interference to the traveling public, consistent with the work being performed.

(2) A tabulation of all traffic control devices shown in the detailed diagram including, but not limited to: construction signs; vertical panels; vertical panels with light; Type 1 and Type 2 barricades; Type 3 barricades; cones, drum channelizing devices; concrete barrier (temporary); advance warning flashing or sequencing arrow panels. Traffic control devices may be used for more than one operation or phase. However, all devices required for any particular phase must be detailed and tabulated for each phase.

Traffic cone spacing shall be determined as required by the standard plans calculations based on current speed limits. Cone spacing shall not exceed 120 feet. Cones shall be placed a distance of 2 miles on the centerline. The distance and spacing may be adjusted, depending on traffic conditions and terrain, as determined by the Engineer.

(3) A plan for maintaining and controlling pedestrian, bicycle, and other non-vehicular traffic.

(4) A plan for emergency vehicle access.

II Products

Traffic Control Devices shall conform with Section 630 of the CDOT 2019 Standard Specifications

III Execution

The Contractor shall designate an individual, other than the superintendent, to be the Traffic Control Supervisor. The Traffic Control Supervisor shall be certified as a worksite traffic supervisor by either the American Traffic Safety Services Association (ATSSA) or the Colorado Contractors Association (CCA) and shall have a current Department flaggers certificate. A copy of the Traffic Control Supervisor's certifications shall be provided to the Engineer at the Pre-construction Conference. The Contractor's Superintendent and all others serving in a similar supervisory capacity shall have completed a CDOT-approved two-day Traffic Control Supervisor training as offered by the CCA. The one-day ATSSA Traffic Control Technician (TCT) training along with the two-day ATSSA Traffic Control Supervisor training will serve as an alternate. If the alternate is chosen, the Contractor shall provide written evidence that at least an 80 percent score was achieved in both of the two training classes. The certifications of completion or certifications of achievement for all appropriate staff shall be submitted to the Engineer at the Preconstruction Conference.

The Traffic Control Supervisor's duties shall include:

(1) Preparing, revising, and implementing each required Method of Handling Traffic in accordance with the Traffic Control Plan.

(2) Directly supervising project flaggers.

(3) Coordinating all traffic control operations, including those of subcontractors and suppliers.

(4) Coordinating project activities with appropriate police and fire control agencies.

(6) Inspecting traffic control devices on every calendar day that traffic control devices are in use, masked, or turned away from traffic.

These inspections shall include at least one night inspection per week. The TCS or another representative who is certified as a worksite traffic supervisor shall perform these inspections.

(7) Insuring that traffic control devices are functioning as required.

(8) Overseeing all requirements covered by the Contract which contribute to the convenience, safety, and orderly movement of traffic. Have an up-to-date copy of the MUTCD and applicable standards and specifications available at all times on the

project.

(9) Attending all project scheduling meetings.

(10) Supervising the cleaning and maintenance of all traffic control devices.

A certified worksite traffic supervisor shall be responsible for Traffic Control Management (TCM) on a 24-hour-per-day basis. The TCS shall be on the work site at all times when Traffic Control Management (TCM) is performed and shall be on call at all times.

Concrete

I General

- PWM 0.0.1. Submittals- Deliver to City all the materials, mix designs and other materials contractor proposed to use on the project which require testing, with request for acceptance.
- PWM 0.0.2. Storage Facilities - Provide and maintain adequate facilities on the site for safe storage and proper curing of concrete test cylinder for the first 24 hours, as required by ASTM C-31.
- PWM 0.0.3. Defective Concrete - If concrete is found defective from testing, placing, curing or for other causes, and if the contractor is so directed, he must remove the concrete at no cost to the City.

II Products

Materials that are to be incorporated in the structure shall conform to the minimum standards hereinafter referred to, unless otherwise approved.

PWM 0.0.1. Cement

- A. Portland Cement, conforming to the requirements of ASTM C-150 Type I or II.
- B. Chemcomp, expansive shrinkage compensating cement, as manufactured by Texas Industries, Inc., or equal product licensed by and conforming to the requirements of the Chemical Prestressed Concrete Corp. (CPCC).

PWM0.0.2. Admixtures

- A. Air Entraining Agent conforming to the requirements of ASTM C-260, Protex R03300-3, or approved equal.
- B. Water Reducing Agent conforming to the requirements of ASTM C-494, Master Builders Pozzoloth, or approved equal. No accelerators or admixtures containing chlorides will be permitted.
- C. Retarding Agent conforming to the requirements of ASTM C-494, Type B, Master Builders MB-HC, or approved equal. If Type D is used, adjust mixture of water reducing agent.

Lignin type retarders will not be permitted.

- D. Fibrous Concrete Reinforcement: 1.5 lbs/cy of 100% virgin polypropylene fibrillated fibers, as manufactured by Fibermesh Co.,

Chattanooga, Tennessee, or approved equal, shall be plant batched into the mix when called for in the special conditions.

PWM0.0.3. Water - Potable, nonalkaline water devoid of salts and other injurious elements for concrete mixing shall be used.

PWM0.0.4. Aggregates

A. General: All fine and course aggregates shall conform to the following specifications:

Concrete Aggregates	ASTM C-33
Unit Weight of Aggregates	ASTM C-29
Organic Impurities Colormetric	ASTM C-40
Soundness of Aggregate by Sodium Sulfate	ASTM C-88
Sieve Analysis	ASTM C-29

B. Gradation: Fine and course aggregates are regarded as separate ingredients and each shall be well graded between the limits as shown in the following chart:

**Percentage Passing Designated Sieves
and Nominal Size Designation**

<u>Sieve Size</u>	<u>COURSE</u>			<u>FINE</u>
	#467	#57 <u>1 1/2" to #4</u>	#67 <u>1" to #4</u>	AASHO-M6 <u>3/4" to #4</u>
<u>#4 to #100</u>				
2"	100			
1 1/2"	95-100	100		
1"		95-100	100	
3/4"	35- 70		90-100	
1/2"		25- 60		
3/8"	10- 30		20- 55	100
# 4	0- 5	0- 10	0- 10	95-100
# 16		0- 5	0- 5	45- 80
# 50				10- 30
#100				2- 10

PWM0.0.5. Reinforcing Steel

- A. Bar steel shall be round bars conforming to ASTM A-615, Grade 60, except #5 or smaller bars may be Grade 40 or 60 as shown on drawings, and deformed in accordance with the requirements of ASTM A-305.
- B. Welded Wire Fabric shall be electrically welded wire fabric, cold-drawn wire, conforming to ASTM A-185.
- C. Epoxy-coated reinforcing bars and/or welded wire fabric shall be epoxy coated by electrostatic spray methods meeting the requirements of AASHTO M-284. The coating material shall be a light colored powdered epoxy resin which will highlight rusting of untreated bar area.
- D. Dowels for Slabs on Grade at joints where indicated shall be hot rolled merchant bars conforming to ASTM A-151, C-1020.
- E. Miscellaneous Reinforcement not covered above must conform with the requirements of ACI-315 and ACI-318.

PWM0.0.6. Joint Materials

- A. Non-extruding and resilient non-bituminous type conforming to ASTM D-1752 or resin-impregnated fiberboard having the Physical requirements of ASTM D-1752, in widths shown or 3/8" where not shown, shall be used where joint sealers are indicated. Materials shall be Darasel-U fiberboard filler as manufactured by W.R. Grace & Co. or equal. Filler material containing asphalt or tar will not be allowed.
- B. Non-extruding and resilient bituminous type conforming to ASTM D-1751 shall be used for concrete paving and structural construction where joint sealers are not called for.
- C. Portland cement concrete pavement joints shall be sealed in accordance with the Colorado Department of Transportation (CDOT) Specifications.

PWM0.0.7. Curing Compounds - Curing compounds where allowed shall conform to ASTM C-309.

PWM0.1. PROPORTIONING INGREDIENTS

Concrete ingredients shall be proportioned so as to provide concrete which is workable and homogeneous, yet when hardened it will provide the required

strength, durability, resistance to deterioration, abrasion, watertightness, appearance and other specified properties.

Concrete shall be CDOT class D with design strength of 4500 psi

0.1.8. Construction - Application for the various combination of aggregate size, in combination with allowable air content and slump range, for the different classes of concrete are as shown below.

Nominal Max. Size Coarse Ag.	Air Content Range	Vib. Slump Range	Min. Cement Content	Concrete	Typical Application
In.	% by. Vol.	In.	lb/CY	Class	
3/4" on Grade	5-8	3-7	615-660	CDOT Class D	Reinforced Slab

0.1.9. Mix Designs

A. Designs employing the same ingredients proposed for use and used successfully on a previous project under similar conditions to those anticipated on this project may be used, Provided the contractor requests and obtains City approval on the following, all of which must be certified to by the supplier:

1. Concrete mix designs conforming to these specifications.
2. ID sets of 7 and 28 day concrete strength tests made during the last 6 months on concrete conforming to the design in (1) above.
3. Curve showing relationship of 7 and 28 day strengths in (2) above.
4. Reports of compliance tests of fine and course aggregates made during the last six (6) months.

OR

B. The contractor shall employ, at his expense an acceptable independent laboratory to design, proportion and select ingredients from the supplier's sources that will produce a concrete

mix conforming to the requirements of these specifications, while providing proper place-ability, durability, strength and other required physical properties for the proposed application

III Supplemental Concrete Requirements

1. STAMPED & COLORED CONCRETE CROSSWALKS: 3 different sample sections of stamped and colored concrete will be required. 4'x 4' each for review and approval by City staff prior to crosswalk installation.
2. Trench Drain Expansion Joint Sealant – Deck-O-Seal gun grade 2 part polysulfide 2-component chemically cured polysulfide rubber, color as directed by owner's representative
 - A. Approved Equal:
 - a. BASF Sonolastic "SL2" 2-component chemically cured urethane sealant
 - b. Sika Corporation "Sikaflex 2C SL" 2-component chemically cured urethane sealant
3. Trench Drain Expansion Joint Backer Rod
 - B. Backer rod shall be closed cell, non-absorbent compressible material manufactured for the specific purpose of controlling the sealant depth. Manufactured by Sika, Quikrete or approved equal.
4. Concrete Surface Sealant (concrete parking areas, road fillets, and crosswalks)
 - A. "Glaze & Seal" Advanced Concrete & Masonry Impregnator
5. Concrete Color Coating at the Flexible Parking Plaza on East Third Street shall be BASF "MasterSeal NP1 and NP2. Colors shall be selected by the City of Rifle.

IV Execution

PWM0.2. FORM WORK

Provide all forms, shores, cores, molds and similar items in sufficient quantity and quality to properly execute the work.

Lumber or plywood contact surfaces must be free from knots, warps, breaks, or other defects likely to cause irregular surfaces. Metal forms must be free from

irregularities, dents and sags and suitable for concrete exposed to view in finished areas.

Do not reuse forms if there is any evidence of surface wear or tear which would impair the quality of the finish. Thoroughly clean and relubricate forms for reuse.

PWM0.2.1. Tolerances - Construct forms so as to insure that concrete surfaces will conform to tolerances of Section 203.1 ACI 347.

PWM 0.2.2. Preparation of Form Surfaces - Make forms sufficiently tight to prevent leakage of grout or cement paste. Seal wood surfaces against absorption of moisture from the concrete with an acceptable oil, sealer, or factory applied nonabsorptive liner.

Coat forms to prevent bond with concrete prior to placing of the reinforcing steel. Do not allow coating material to stand in puddles in forms nor to come in contact with concrete against which fresh concrete will be placed.

PWM 0.2.3. Removal of Forms

- A. Form work that supports weight of concrete must remain in place until concrete has reached its specified 28 day strength, unless otherwise specified or permitted.
- B. Form work not supporting weight of concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.
- C. Whenever the form work is removed during the curing period, the exposed concrete shall be immediately cured by one of the methods herein specified.

PWM 0.2.4. Reinforcement Placement - Support and wire together all reinforcing bars to prevent displacement from external loading prior to and during concrete placement. On ground where necessary supporting concrete blocks may be used, otherwise use concrete, metal, plastic or other satisfactory bar chairs and spacers. Templets will be required for all column dowels.

Epoxy coated reinforcing bars and welded wire fabric shall be tied with epoxy coated tie wire that will not damage or cut the coating. Bars shall be placed on plastic supports or steel supports fully coated with plastic or epoxy. Care shall be taken to prevent coated bars from coming into contact with other steel items. The contractor shall repair all damaged coating prior to concrete placement.

Provide adequate support for welded wire fabric during placing of concrete to insure proper position of the fabric in the slab.

At time of concrete placement all steel is to be free from loose, flaky rust, mud, oil or other coatings that may destroy or reduce bond.

Unless otherwise noted on the drawings, the steel shall be protected by concrete, after placement as follows:

- A. 3/4" for interior slabs.
- B. 1" for interior walls and formed exterior slabs.
- C. 1 1/2" for beams, columns and concrete exposed to the weather or in contact with the ground.
- D. 3" for concrete deposited against the ground.

Smooth dowels to join existing concrete to new concrete shall be epoxied into drilled holes and extend into the old concrete a distance of 24 diameters.

PWM 15.3.2. Curb, Gutters, Sidewalks and Crosspans

Where curbs and gutters are adjacent to and constructed in conjunction with sidewalks, the concrete shall be placed simultaneously on a compacted subgrade. Monolithic concrete so placed, as in all slabs on grade, shall be divided into ten (10) foot sections by dummy joints formed with a jointing tool. Dummy joints shall extend into the concrete for a depth of not less than ¼ of the slab concrete depth and shall be approximately 1/8" in width.

Premolded expansion joint filler 1/4" to 1/2" in thickness that extends for the full depth of the concrete shall be installed between all, concrete sidewalks, driveways, and any fixed structures or appurtenances such as manholes, utility poles, etc.

Back of curbs and edges of sidewalks shall be backfilled and shaped to drain after the forms have been removed. Areas between Property lines and back of sidewalk or curbs shall be shaped and uniformly graded in accordance to Landscaping Specifications

- PWM 0.2.1. Construction Joints - Continue all reinforcing steel and welded wire fabric across joints, unless otherwise indicated. Provide keys and inclined dowels as shown or as directed. Provide longitudinal keys at least 1 1/2" deep in all joints in walls and between walls and slabs.

Thoroughly clean surfaces and remove all laitance on the surface of joints before next placement.

When required or directed, obtain bond between hardened concrete and new concrete by:

- A. Use of an epoxy bond in accordance with the applicable provision of ACI Journal, Proceedings V59 #9, September, 1962, pp. 1121-1142.
- B. Use of an acceptable chemical retarder.
- C. By roughening surface of old concrete in an acceptable manner such as sandblasting.
- D. Provide a continuous water stop as specified.

PWM 0.2.2. Expansion Joints - Install filler in expansion joints 3/4" thick by 1/2" less than slab thickness. For floors place a 3/4" x 1/2" tapered wood strip over the joint filler, flush with the top of the slab and finish the edges with an edging tool. After the concrete has hardened remove the wood strip and seal the joint flush with the surface.

PWM 0.2.3. Control Joints - Joints shall be formed by use of acceptable sheet metal forms, or by insertion of hard-pressed fiberboard strips into the plastic concrete, or by sawing with carborundum or diamond-tipped blade after concrete has set. Joints shall be 1/4" wide and approximately 1/4 of the slab thickness in depth, unless otherwise indicated or directed.

When concrete is dry, clean out sawed or fiberboard joints and fill to wearing surface with joint sealer.

PWM 0.3. CONCRETE MIXING

Concrete shall be mixed and transported to the job site in accordance with the requirements of ASTM C-94.

Delivery tickets for each batch delivered shall show the date, mix by number or sack content with maximum size aggregate, admixtures and amounts used per cubic yard, air content, slump and time of loading.

PWM 0.3.1. Agitating, Mix and Discharge - Concrete shall be continuously agitated from the time water is added and then mixed for 2 1/2 minutes just prior to discharge. The mix shall be discharged from the truck within one (1) hour after cement is batched, unless longer time is specifically authorized.

PWM 0.3.2. Water - Indiscriminate addition of water to increase slump is prohibited.

PWM 0.3.3. Admixtures

- A. Liquid admixtures shall be charged into the mixer by means of an approved metering device.
- B. Powder admixtures shall be weighed or measured by volume in accordance with manufacturer's recommendation.
- C. When two or more admixtures are to be incorporated in the mix, they shall be added separately during batching sequence.

PWM 0.3.4. Retempering - Mix concrete only in quantities for immediate use. Concrete which has been in the mixer 80 minutes or longer shall be discarded. Retempering of concrete will not be allowed. Concrete arriving at the project with slump below that suitable for placing may have water added only if neither:

- A. The maximum permissible water-cement ratio has not been exceeded.
- B. Maximum slump has not been exceeded.

Any addition of water above that permitted by limitation on water-cement ratio must be accompanied by a quantity of cement sufficient to maintain proper cement ratio and a mixing time of 1 1/2 minutes. No such additions will be permitted unless specifically authorized in writing by a city representative.

PWM 0.3.1. Batch Temperature - As mixed temperature of concrete shall be maintained above 55 degrees F and below 80 degrees F, even though the mean temperature falls below 40 degrees F.

PWM 0.3.2. Protection - Provide adequate protection against rain, sleet, snow, cold and other weather conditions.

Protect exposed surfaces from rain water and from 40 degrees F and below temperatures with suitable covering, and equipment to maintain a minimum temperature of 50 degrees F for a period of 72 hours after the concrete has been placed.

PWM 0.3.1. Preparation of Surfaces - Preparation for placing shall include, but is not limited to, form construction, setting of reinforcing steel and embedded items, securing and alignment of forms, cleaning thoroughly all surfaces that will be in contact with concrete and keeping them free of debris, ice, rust, scale, grease or other coatings during placement of the concrete.

PWM 0.3.2. Equipment and Labor - Assemble and provide sufficient labor and equipment for proper mixing, transporting, placement and protection of concrete until accepted by the City.

- PWM 0.3.3. Conveying - Truck mixers, agitators, and non-agitating units, including their manner of operation, must conform to the applicable requirements of ASTM C-94. Aluminum tubing or pipe for conveying concrete will not be allowed.

Concrete shall be conveyed to place of final deposit by methods which will prevent segregation or loss of ingredients and insure the required quality of the concrete is obtained. A hopper or tremie will be required at the end of metal chutes having a slope greater than 1:2 or less than 1:3 vertical to horizontal; or chutes in excess of 20 feet in length.

Use of horizontal belt conveyors discharging into a hopper and pumping or pneumatic conveying equipment such that the loss in slump does not exceed 1 1/2" shall be subject to approval.

- PWM 0.3.4. Depositing - Deposit concrete continuously, or in layers of such thickness that no concrete is deposited on concrete which is hardened sufficiently to cause formation of seams or planes of weakness within the section. Deposit concrete as nearly as practicable in its final position to avoid segregation due to rehandling or flowing.

Depositing of concrete in general shall conform with the applicable detailed recommendation of ACI 304.

- PWM 0.3.5. Consolidation - Perform consolidation in conformance with applicable detailed recommendation of ACI 309.

Consolidate all concrete by internal and external vibrators, spading, rodding or forking so that concrete is thoroughly worked around reinforcement, embedded items and into form corners, eliminating all air or stone pockets which may cause honeycombing, pitting or planes of weakness. Thoroughly consolidate concrete in slabs and floors with vibrating bridge screeds, roller pipe screeds or other acceptable means. Only mechanical vibrators having a minimum frequency 7000 RPM and operated by competent workmen shall be employed.

Over vibration and transporting concrete within the form by vibration will not be allowed.

- PWM 0.4. FINISHING

- PWM0.4.6. Broom - Sidewalk slabs and other slabs so specified shall have a coarse traverse sawed texture obtained by drawing a broom across the surface immediately after floating. Broom direction shall be perpendicular to travel direction.

PWM 0.5. CURING

Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures and maintained with minimal moisture loss at a relatively constant temperature for the time required for hydration of cement and proper hardening of the concrete.

PWM 0.5.1. Initial Curing - Immediately following finishing the contractor shall provide methods to keep the concrete continuously moist at least overnight unless otherwise specified by:

A0 Ponding or continuous sprinkling

B0 Absorptive mat or fabric kept continuously wet

C0 Sand or other covering kept continuously wet

D0 Steam vapor mist bath at a temperature not to exceed 150 degrees F.

E0 Curing compounds conforming to ASTM C-309 applied according to manufacturer's recommendations, providing the surface to be cured is not to be bonded to other cementitious materials.

PWM 0.5.2. Duration of Curing - Continue curing until the cumulative number of days, or fraction thereof, not necessarily consecutive, during which the air temperature in contact with the concrete is above 50 degrees F has totaled seven (7) days.

PWM 0.5.3. Cold Weather Curing - Curing shall conform to all applicable detail recommendations in ACI-306. Temperature of concrete shall be maintained between 50 degrees-70 degrees F for the required curing period when the mean daily atmospheric temperature is less than 40 degrees F. Sufficient equipment and materials required to comply with this specification shall be at the site prior to placing concrete.

PWM 0.5.4. Hot Weather Curing - Curing shall conform to all applicable detail recommendations, in ACI-305. As quickly as concrete hardening and finishing will allow, the contractor shall install such protective measures, such as, but not limited to, windbreaks, shading, fog spraying, sprinkling, ponding or wet covering as may be required.

PWM 0.5.5. Protection from Damage - Especially during the curing period and until the work is accepted, the contractor shall protect the concrete from damage by vehicular or mechanical equipment, foreign materials and by rain or by running water.

PWM 0.6. TESTING

Technical services performing routine preliminary testing of materials of proposed mix designs and resulting concrete for compliance with the specifications will be provided by the City, at no expense to the contractor.

PWM 0.6.1. Tests for Changes and Non-Compliance - Testing required because of changes in materials or proportions of the mix requested by the contractor, as well as any extra testing of concrete, field cured cylinder, or materials occasioned by failure to meet specification requirements, shall be at the contractor's expense.

PWM 0.6.2. Testing Provided by the City

A0 Test contractor's proposed material for compliance.

B0 Review and check test contractor's proposed mix design.

C0 Prepare and cure complete set of concrete cylinders, test and report results of 7 and 28 day compressive strength, in accordance with ASTM C-39, for each placement up to 50 cubic yards.

D0 Determine slump range of concrete as delivered in accordance with ASTM C-143.

E0 Determine air content of standard weight concrete with either ASTM method.

F0 Check batching and mixing operations.

Asphalt

I General

The job mix formula developed by the Colorado Department of Transportation on the aggregates to be incorporated in the asphaltic concrete surface must be submitted to the City of Rifle Public Works Director for approval prior to commencing the work.

Hot plant mix surfacing material using aggregates from sources that have not been tested by the CDOT, for the purpose of developing a job mix formula, within nine (9) months prior to the date of intended delivery will be rejected.

The job mix formula with allowable tolerances shall be within the master range specified in the material section of these specifications.

II Products

Asphalt shall be HMA SX75 PG 64-22

III Execution

15.3.4. Aggregate Base Course

Base course shall be placed and compacted in four (4) inch to six (6) inch layers on a prepared subgrade surface in conformity with the lines, grades and typical cross sections shown on the plans.

Each layer shall be densified to ninety-five (95) percent of the Modified Proctor when tested in accordance with AASHTO T-180. Water shall be uniformly applied during compaction so as to achieve proper consolidation.

The prepared surface, ready to receive the surface course shall be uniformly graded to design elevation so when tested with a ten (10) foot straight edge the variation above or below the testing edge, between any two (2) contact points with the surface, shall not exceed 1/2" for Class 1 or 1/4" for Class 5 or Class 6 base course. Areas that do not conform with these tolerances shall be reworked.

15.3.9. Flexible Pavement

Along the lip lines of gutters and crossspans sufficient bituminous material shall be deposited so that, after compacting, the wearing surface will remain not less than 1/8" nor more than 1/4" above the concrete. For median curb wearing surface will be from 1/4" to 1/2" below concrete.

Longitudinal joints in the wearing surface layer shall be hand luted and provide a uniform transition, after compacting, between passes with the paving machine. They shall also be

positioned such that they will overlay any sublayer longitudinal joint by six (6) inches. Longitudinal joints in the wearing surface shall generally be located as follows:

- A. For two lane roadways - at the center line of the pavement and at the outside edge of the traveled lanes.
- B. For roadways of more than two lanes - at the lane lines and at the outside edge of the travel lanes.

The bituminous mixtures shall be placed within the air temperatures limitation designated herein below and only when the weather conditions otherwise permit the pavement to be properly placed and finished. Asphalt shall be placed at a minimum air and surface temperature of 50°F.

Asphaltic concrete shall be handled and placed on the prepared subgrade in such a manner as to minimize segregation. All segregated areas behind the pavers shall be removed immediately upon discovery and replaced at contractor's expense, with specification material before the initial rolling. If more than fifty (50) square feet of segregated material is ordered removed and replaced in any 500 linear feet of paver width laydown, paving operations shall be discontinued until the source of the segregation has been found and corrected.

After the asphaltic concrete has been spread, struck off and surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling. Rolling of the surface shall begin as soon after spreading as rolling will not cause undue displacement cracking or shoving of the mixture. Rolling shall start at the sides and proceed longitudinally parallel with the street centerline, each trip overlapping one-half (1/2) of the roller width, gradually progressing to the crown of the street. Rolling shall be continued until all roller marks are eliminated and a minimum density of ninety-five (95) percent of a laboratory specimen made in the proportions of the job mix formula has been obtained.

On lifts of asphaltic concrete three (3) inches or more in thickness breakdown rolling shall immediately follow the spreading sequence using rubber tired rollers, free of recapped tires, followed by steel wheel rolling. Field density determinations will be made in accordance with Colorado Procedure #44 and #81.

Variation between any two (2) contacts with the surface shall not exceed 3/16" in ten (10) feet. All lumps or depressions exceeding the specified tolerance shall be corrected by removing defective work and replacing it with new material as directed.

- 15.3.15. Cold Milling, Asphalt Surfaces - All valve boxes, manhole rings and covers within the area to be cold milled shall be lowered sufficiently to clear the milling operation, and then raised to within 1/4 inch of the resurfaced finished grade. Electric and phone vaults shall not be lowered, but shall be protected from damage during the performance of the work. Cold milling shall be performed using mechanical equipment capable of uniformly routing materials while providing a uniform milled level or tapered surface, varying between 6 1/2 to 8 feet wide and zero to 2 1/2 inches in depth, per pass. Milled edges shall be vertical and true with the alignment of each pass of the equipment. Electric and phone manholes and vaults are to be left with gradual asphalt tapered approaches in alignment with traffic flow, when resurfacing will not immediately follow the milling operation. Such approaches left to facilitate traffic adjacent to vaults, crosspans, utility manholes, structures, etc., shall be milled out or removed by other acceptable means,

immediately proceeding the resurfacing operation. Leaving of abrupt vertical edges that will impede traffic will not be allowed.

Where milling is required along and parallel with concrete gutters the router shall be set to provide a uniform tapered slope. The slope shall vary from two (2) inches below the gutter lip line to daylight with the existing asphalt surface, 6 1/2 to 8 feet from and perpendicular to the gutter flow line.

Material recovered during the milling operation shall be disposed of by the contractor at his expense, unless otherwise directed.

Unless otherwise approved, milling and resurfacing shall be performed simultaneously such that both operations are completed during the same day.

ADA Landing Mats

I General

Submittals- Deliver to City all Product Data

II Products

Materials that are to be incorporated in the structure shall conform to the minimum standards hereinafter referred to, unless otherwise approved.

Detectible Warning shall be cast iron with a truncated dome surface. They shall be 2' in length and over the complete width of the ramp area. Plates are to be cast iron

III Execution

All detectable warning areas shall start a minimum of 6" from the flow line of the curb and not be more than a maximum of 8" from any point on the flow line of the curb.

All detectable warning areas shall be 2' in length and cover the complete width for the ramp area only

Ramp slopes shall be 12:1 or flatter. The detectible warning slopes shall be 20:1 or flatter.

Detectible warning plates shall be placed while concrete is workable and vibrated such that concrete fills the vent holes. All vent holes exposed after placement must be grouted at contractor's expense.

Striping and Thermoplastics

I General

Submittals- Deliver to City all the product data

II Products

CDOT 713.17 Modified Epoxy Pavement Marking Material. Only modified epoxy pavement marking material that is on the Department's Approved Products List may be used. Batches or lots of approved products will be accepted on the project by Certificate of Compliance (COC) in accordance with subsection 106.12. The COC shall confirm that the material meets all CDOT requirements and is the same material that was preapproved in the product evaluation process.

(a) Formulation. Modified epoxy pavement marking material shall be a two component, 100 percent solids, material formulated to provide simple volumetric mixing ratio of two volumes of component A and one volume of component B unless otherwise recommended by the material manufacturer.

(b) Composition. The component A of both white and yellow shall be within the following limits: Resin / Pigment Components (% by Weight) Pigment WHITE: YELLOW: TiO₂, ASTM D476, Type II 18-25 10-17 Organic Yellow 6-10 Epoxy Resin 75-82 73-84 The pigment for yellow modified epoxy shall contain no lead or other material such that the cured epoxy could be considered a hazardous waste under EPA or CDPHE regulations. The Contractor shall submit to the Engineer a manufacturer's certification of compliance with this requirement.

(c) Epoxide Number. The epoxide number of the modified epoxy's resin shall be the manufacturer's target value \pm 50 as determined by ASTM D 1652 for white and yellow component A on pigment free basis.

(d) Amine Number. The amine number on the curing agent (component B) shall be the manufacturers target value \pm 50 per ASTM D 2071.

(e) Toxicity. Upon heating to application temperature, the material shall not produce fumes which are toxic or injurious to persons or property.

(f) Color. The modified epoxy material, without drop-on beads, shall correspond following requirements:

White – Federal Standard No. 595B-17925. The Yellowness Index (YI) of white shall not exceed 8.0 per ASTM E313-10 initially.

After 72 QUV exposure per ASTM G154 with a UVA-340 Lamp at an irradiance of 0.89 W/m²/nm with alternating cycles of 4 hours U.V @ 140° F, and 4 hours humidity @ 122° F the YI shall not exceed 15 when measured per ASTM E313.

The YI, after 500-hour QUV testing as above, shall not exceed 27.

Yellow – Materials for pavement markings shall meet the initial daytime chromaticity that fall within the box created by the following corner points:

	1	2	3	4
x	0.530	0.510	0.455	0.472
y	0.456	0.485	0.444	0.400

After 72-hour QUV exposure per ASTM G154 with a UVA-340 Lamp at an irradiance of 0.89 W/m²/nm with alternating cycles of 4 hours U.V @ 140 °F, and 4 hours humidity @ 122 °F the Yellow shall fall within the initial chromaticity coordinates stated above.

(g) **Drying Time.** The modified epoxy pavement marking material shall have a setting time to a no-tracking condition of not more than 25 minutes at a temperature of 73 °F and above.

(h) **Curing.** The modified epoxy material shall be capable of fully curing under the constant surface temperature condition of 35 °F and above.

(i) **Adhesion to Concrete.** The catalyzed modified epoxy pavement marking material, when tested according to ACI Method 503, shall have such a high degree of adhesion to the specified (4000 psi minimum) concrete surface that there shall be a 100 percent concrete failure in the performance of this test

(j) **Hardness.** The modified epoxy pavement marking materials, when tested according to ASTM D2240, shall have a minimum Shore D Hardness value of 80. Samples shall be allowed to cure at room temperature, 75 ± 2 °F, for a minimum of 72 hours and a maximum of 168 hours prior to performing the indicated test.

(k) **Abrasion Resistance.** The abrasion resistance shall be evaluated on a Taber Abrader with a 1000 gram load and CS-17 wheels. The duration of the test shall be 1000 cycles. The wear index shall be calculated based on ASTM test method C-501 and the wear index for the catalyzed material shall not be more than 60. The tests shall be run on cured samples of material which have been applied at film thickness of 15 ± ½ mils to code S-16 stainless steel plates. The samples shall be allowed to cure at 75 ± 2 °F for a minimum of 72 hours prior to performing the indicated tests.

(l) **Tensile Strength.** When tested according to ASTM D638, the modified epoxy pavement marking materials shall have a tensile strength of at least 6000 psi. The Type IV Specimens shall be cast in a suitable mold and pulled at the rate of ¼ inch per minute by a suitable dynamic testing machine. The samples shall be allowed to cure at room temperature, 75 ± 2 °F, for a minimum of 72 hours and a maximum of 168 hours prior to performing the indicated tests.

(m) Compressive Strength. When tested according to ASTM D695, the catalyzed modified epoxy pavement marking materials shall have a compressive strength of at least 12,000 psi. The cast sample shall be conditioned at room temperature, 75 ± 2 °F, for a minimum of 72 hours and a maximum of 168 hours prior to performing the tests. The rate of compression of these samples shall be no more than ¼ inch per minute.

CDOT 713.08 Glass Beads for Traffic Markings. Glass beads for pavement marking shall conform to AASHTO M 247, except for the following:

(1) Gradation:

U.S. Mesh	Microns	% Passing	
		Modified Epoxy and Methyl Methacrylate	Acrylic Waterborne: Low Temperature and High Build
16	1180	90-100	100
18	1000	65-80	97-100
20	850		85-100
30	600	30-50	50-70
40	425		10-35
50	300	0-5	0-10
80	180		0-5

- (2) Roundness: All beads shall meet a minimum of 80 percent true spheres in accordance with the Office of Federal Lands Highways FLH T520 or a computerized optical testing method.
- (3) Color / Clarity: Beads shall be colorless, clear, and free of carbon residues.
- (4) Refractive Index: Minimum 1.51 by oil immersion method.
- (5) Air Inclusions: Less than 5 percent by visual count.
- (6) Coatings: According to the manufacturer's recommendation for optimum adhesion and embedment.
- (7) Chemical Resistance: Beads shall be resistant to hydrochloric acid, water, calcium chloride, and sodium sulfide as tested using the methods outlined in sections 4.3.6 to 4.3.9 of the TT-B Federal Spec.1325D.
- (8) For modified epoxy pavement parking, a minimum of 50 percent of the total weight shall be manufactured using a molten kiln direct melt method. For acrylic waterborne paint, a minimum of 15 percent of the total weight shall be manufactured using a molten kiln direct melt method. All molten kiln direct melt glass beads shall be above the 600 µm (#30) sieve.

- (9) Glass beads used for any type of pavement marking shall not contain more than 75 parts per million (ppm) arsenic, 75 ppm antimony and 100 ppm lead, as tested in accordance with EPA methods 3052 and 6010C, or other approved testing method

Glass beads shall be furnished in fully identified containers and shall be free of extraneous material or clumps.

Glass beads for thermoplastic pavement marking shall conform to AASHTO M 247, Type 1.

15.2.13.3 Preformed Thermoplastic Material

Preformed Thermoplastic markings shall be composed of aggregates, pigments, binders and glass beads and shall conform to AASHTO designation M 249 with the exception of the relevant differences due to the material being supplied in a preformed state. The material shall be either alkyd or hydrocarbon based. Only preformed thermoplastic pavement marking material approved by the City may be used.

- 1) The material shall contain a minimum of 30% graded glass beads by weight. The beads shall be clear and transparent. Twenty percent or less shall consist of irregular, fused spheroids, or silica. The reflective index shall be at least 1.50.
- 2) White pigment shall be titanium dioxide to insure a color similar to Federal Highway White, Color Number 17886, conforming to Federal Standard 595. Yellow pigment shall be used to insure a color similar to Federal Highway Yellow, Color Number 13655, conforming to Federal Standard 595. Yellow pigment shall be organic and contain no lead chromate.
- 3) The surface of the preformed thermoplastic markings shall provide a skid resistance of 45 BPN when tested according to ASTM E 303.
- 4) The material shall be supplied with a minimum thickness of 125 mils.
- 5) The preformed thermoplastic material shall be resistant to deterioration due to exposure to sunlight, water, oil, gasoline, salt and adverse weather conditions.

III Execution

CDOT 627.05 Modified Epoxy Pavement Marking. The modified epoxy pavement marking compound shall be applied with equipment that will precisely meter the two components in the ratio given in subsection 713.17(a). The equipment shall automatically shut off or warn the operator if one component is not being mixed. The equipment shall produce the required amount of heat at the mixing head and gun tip to provide and maintain the temperatures specified.

Before mixing, the individual components A and B shall each be heated to a temperature of 80 to 140 °F. After mixing, the application temperature for the combined material at the gun tip shall be 80 to 140 °F. The 140 °F upper limit is the maximum temperature under any circumstances.

Both pavement and air temperatures shall be at least 35 °F at the time of modified epoxy pavement marking application.

The surface areas of new portland cement concrete pavement and decks that are to receive markings shall be waterblasted prior to placement of the modified epoxy pavement marking. The amount of waterblasting shall be sufficient to remove all dirt, laitance, and curing compound residue.

The surface areas of new asphalt pavement, existing asphalt pavement, and existing concrete pavement that are to receive markings shall be cleaned with a high-pressure air blast to remove loose material prior to placement of the modified epoxy pavement marking. Should any pavement become dirty, from tracked mud etc. as determined by the Engineer, it shall be cleaned prior to the placement of the modified epoxy pavement marking.

When recommended by the modified epoxy manufacturer, a high-pressure water blast integrated into the gun carriage shall be used to clean the pavement surface prior to modified epoxy pavement marking application. The water blast shall be allowed by a high-pressure air blast to remove all residual water, leaving only a damp surface.

Modified epoxy pavement marking shall be applied to the road surface according to the modified epoxy manufacturer's recommended methods at the application rate or coverage shown below. Glass beads shall be applied into the modified epoxy pavement marking by means of a low pressure, gravity drop bead applicator.

Modified epoxy pavement marking and beads shall be applied within the following limits:

Application Rate or Coverage Per Gallon of Modified Epoxy Pavement Marking		
	Minimum	Maximum
18 mil Marking:	85 sq. ft.	90 sq. ft.
Beads:	23 lbs.	

Traffic Signage & Signals

I General

Submittals- Deliver to City all Product Data

II Products

Signs shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). Stop or Yield Signs shall be 30-inch by 30-inch size. All signs shall be mounted 7-feet to the bottom of the sign from grade below the sign. Street name signs shall be 8-gauge aluminum with white double-faced 4-inch-high letters on green background without a border. Street name signs shall be 24" x 6" or similar. Where a stop or yield sign is installed, the street name signs shall be placed above the stop or yield sign a minimum of 1-inch above and between signs. Street name signs may be purchased from Newman Traffic at 1-800-437-9770 or approved equal. All signs shall have high intensity retro reflectivity (type III) in accordance with ASTM D4956. Sign posts shall be Octagonal and Chestnut Bronze in Color, splice system breakaway devices approved by FHWA. These shall be Safety-Splice Support System, or equal. Signs shall be fastened to the U-post with two ¼ inch galvanized stove bolts, with washer (next to sign) and nut.

Traffic Signals

1. STANDARD SPECIFICATIONS AND DETAILS - All work shall be done in accordance with the Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction", dated 2019 and the applicable CDOT S Standard Plan Sheets.

All contractors bidding on this project are responsible for acquainting themselves thoroughly with all applicable specifications prior to submitting their bid. The successful bidder is responsible for thoroughly acquainting all the personnel he intends to use on this project with all applicable specifications prior to the commencement of any construction.

2. SCOPE OF WORK – Work applicable to the CDOT Specifications

SECTION 32 84 10 – IRRIGATION SYSTEM

PART 1 GENERAL

1.1 Summary

- A. Provide irrigation system as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.
- B. Unless otherwise designated include everything necessary for a complete irrigation system installation. Coordinate with work of other trades.
- C. The irrigation layout and design provided in the drawing set is for reference and is provided to illustrate the intent and extent of the irrigation system. The contractor shall provide design for the complete system and all connections and tie-ins per section 2.01 Design Requirements in this specification section. The contractor shall provide suggestions regarding performance and cost savings options as applicable.

1.2 Submittals

- A. Shop Drawings: Submit shop drawings (to scale), product data, and design calculations for irrigation system.
- B. Permits and Approvals: Submit copies of permits and code approvals.
- C. O/M Manuals: Submit O/M manuals for all equipment. Include completed Certification of Tests and Adjustments (attached to this section).
- D. Record Drawings: Submit record drawings showing complete layout of sprinkler heads, valves, drains, and pipe lines. Record horizontal and vertical dimensions to all items from permanent reference points. Make and record measurements to nearest 0.5 ft.

1.3 Extra Materials

- A. Furnish 6 extra sprinkler heads and nozzles of each type used.
- B. Furnish 2 extra quick coupling valve keys.

1.4 Permits, Licenses, and Certificates

- A. Procure permits and licenses, pay all charges and fees, and give notices necessary for proper and lawful prosecution of work. Obtain certificates required to show that work has been performed in accordance with applicable codes, rules, and regulations.
- B. Arrange and pay for inspections required for work under this section.

1.5 Design Requirements

- A. Provide design for a complete system to irrigate areas as shown on the Drawings.

B. Provide head-to-head coverage.

C. Locate controller as indicated on the plans provided in the drawing set.

PART 2 - PRODUCTS

2.1 Materials, General

A. The same brand or manufacturer shall be used for each specific application of pumps, valves, fittings, controls, and other equipment.

B. All materials shall be new and of the quality specified.

C. All equipment shall be listed, approved, or rated by a nationally recognized testing and rating bureau of recognized manufacturers association responsible of setting industry standards. All electrical equipment and apparatus shall be U.L. listed.

D. Acceptable sprinkler system manufacturers are Hunter, Rainbird, Weather-Matic, or approved equal.

2.4 Underground Pipe

A. Underground sprinkler piping shall be PVC pipe, except polyethylene pipe may be used for sizes 1-1/2 in. and smaller.

B. PVC Pipe: PVC pipe, ASTM D1785, Sch. 40, or ASTM D2241, SDR-26, having minimum 160 psi working pressure rating. Joints shall be solvent weld.

C. Polyethylene Pipe: Flexible polyethylene pipe, ASTM D2239, PE-2306, having a minimum 100 psi working pressure rating. Joints shall be made with PVC or nylon insert fittings with 2 stainless steel clamps per joint.

2.5 Sprinkler Heads

A. Full and part circle sprinklers shall be gear drive rotary type, designed with an integral check valve for control of line drainage.

B. Retraction shall be achieved by a heavy-duty stainless-steel retraction spring. Sprinkler shall have a riser seal and a wiper. Rotation shall be accomplished by a sealed, oil packed gear assembly isolated from water supply. Sprinkler housing shall be of high impact molded plastic with a 3/4-in. NPI connection. Sprinkler shall have a large strainer so as to prevent nozzle clogging. Sprinkler shall be constructed such that it is serviceable from top in that drive assembly, screen, and all internal components are accessible through top of sprinkler without disturbing case installation. Radius reductions shall be adjustable by up to 25% by means of a radius adjustment screw accessible from top of cap when sprinkler is properly installed.

C. Heads shall be mounted on three-way swing joints.

D. Degree of arc shall be as required to meet configuration of area to be irrigated.

E. Provide fully adjustable sprinkler heads sized appropriately to the surface area to be watered. Do not undersize head or overdrive the nozzle with excessive pressure.

2.6 Remote Control Valves

A. Valves shall be of globe configuration with a female pipe thread inlet and outlet connections. Diaphragm shall be of rubber construction to retain flexibility and provide maximum sealing throughout its area. Valves shall have a hand-operated, rising-type flow control stem with control wheel/handle. All parts shall be serviceable without removing valve from line. Valves shall be installable at any angle without affecting valve operation. Valve friction loss shall not exceed 5 psi.

2.7 Manual Isolation Valves

A. Valves shall be plastic ball valve meeting the following requirements:

1. Standard: MSS SP-122.
2. Pressure Rating: 125 psig minimum.
3. Body Material: PVC.
4. Type: Union.
5. End Connections: Socket or threaded.
6. Port: Full.

2.8 Valve Boxes

A. Plastic valve box for each buried valve of appropriate size and type. Valve box shall provide adequate space for valve maintenance.

2.9 Quick Coupling Valves

A. Factory-fabricated, bronze or brass, one-piece assembly. Include coupler water-seal valve; spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.

2.10 Winterizing System

A. Blowout through quick coupling valve and key.

2.11 Automatic Controller

A. Low voltage, solid state controller manufactured expressly for control of automatic valves for lawn sprinkler systems.

1. Provide a Hunter ACC Controller with Hunter IMMS (Irrigation Management and Monitoring Software).
2. Please Note: The Hunter ACC controller at the site can control up to 42 zones. Currently, 20 zones are controlled at this controller. Provide added modules and wires for an additional 22 zones.
3. Include a remote-control system for the irrigation system utilizing a handheld radio controller.

B. Controller shall have capacity to assign from 5 minutes to 60 minutes of run time to any station and shall have a minimum of two programs. Timing shall be accomplished by solid state means.

C. Controller shall have choice of scheduling on basis of seven-day calendar, 1-to-7-day interval, and odd/even with 365-day calendar. Include a moisture sensor or other water conservation system to shut off water during rain.

D. A pump/master valve circuit shall be provided to activate a remote pump start relay to run pump during sprinkling cycle or to use with a master valve to pressurize system during sprinkling cycle.

2.12 Control Wire

A. Electric control lines from controller to automatic valves shall be 24-volt solid, direct burial wire, minimum 14 gage.

2.13 Backflow Preventer

A. Reduced pressure type backflow preventer complying with ASSE 1013 and meeting requirements of State Plumbing Code for the application.

PART 3 EXECUTION

3.1 Protection

A. Locate and protect existing improvements, utilities, trees and shrubs, and reference points in accordance with Section 31 05 10.

3.2 Excavating and Backfilling

A. Excavate as required for the proper installation of work.

B. Backfill trenches with material free from rock, large stone or other material which may damage pipe. Backfilling shall be in accordance with Section 31 20 00. Backfill material shall be compacted in 6-in. layers to finish grade.

C. Backfill of trenches containing plastic piping when pipe is cool.

3.3 Pipe Installation

- A. Underground pipe shall be installed with a minimum depth of cover of 24 in. for main lines under constant pressure and 18 in. for lateral lines.
- B. Install pipe in accordance with manufacturer's recommendation.
- C. Securely cap piping at the end of each day's work to prevent entrance of foreign material. Flush piping before installation of heads and valves.

3.4 Valve and Accessory Installation

- A. Install buried valves in valve boxes. Provide union on downstream side. Locate valves at least 12 in. from walks, buildings, walls, and other boundaries.
- B. Install winterizing system.

3.5 Head Installation

- A. Locate heads as necessary to avoid plantings and other obstructions. Direct water toward plants without excessive pressure against plant or plant stem.
- B. Install heads at manufacturer's recommended height and adjust for proper distribution.

3.6 Automatic Controller and Wiring Installation

- A. Locate controller in general location shown with exact placement to be determined at jobsite by Owner.
- B. Label control lines at controller with permanent non-fading labels indicating identification number of valve controlled.
- C. Run wiring along supply line piping wherever practical. Tie wires in bundles at 10 ft intervals. Place on bottom side of pipe (minimum depth of 12 in.).
- D. Run control wire to each valve without interruption. Common wires may be spliced at valves only.
- E. Make connections and splices by crimping base wires with brass connectors and sealing with epoxy resin sealer packs.
- F. Provide 24 in. minimum wiring loop at each control valve and splice location. Coil loops neatly in boxes.

3.7 Casing Pipes

- A. Pipe and wiring passing under existing or future paving and other construction shall be encased in PVC plastic casing pipe extending at least 12 in. beyond edges of paving or construction. Minimum cover on casing pipes shall be 12 in.

3.8 Tests and Adjustments

- A. Conduct tests of systems as required by codes, regulatory agencies, and this specification. Notify A/E and regulatory agencies prior to conducting tests. Complete attached certification form and submit to A/E when tests have been completed.
- B. Apply a hydrostatic test of 100 psi to main line (pump/master valve to control valves).
- C. Test complete system under full line pressure.
- D. All necessary testing equipment shall be furnished by Contractor.
- E. After completion of grading, sodding or seeding, and rolling of grass areas, carefully adjust lawn sprinkler heads so that they will be flush with or not more than 1/2 in. above finish grade.

3.9 Manufacturer Services

- A. Train Owner's personnel on operation and maintenance of system.
- B. Following installation and prior to first winter, drain system and, the following spring, put system into operation without additional cost to Owner.

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CERTIFICATION OF TESTS AND ADJUSTMENTS

Contractor:

Project Name:

Project Number:

The Contractor named above certifies that the tests and adjustments indicated below have been completed in accordance with the specifications on the date indicated.

TESTS DATE

1. Hydrostatic Test of Main Line
2. Complete System Test Under Full Pressure
3. Water Flow and Head at Farthest Fitting
4. Pattern of Water Coverage and Necessary Adjustments
5. Complete Cycle of Program Control
6. Test of Each Zone

Contractor

Signed By

Date

END OF SECTION 32 84 10

SECTION 32 92 00 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Soil Testing (Required).
 - 2. Soil Amendments.
 - 3. Seeding.
 - 4. Sodding.
 - 5. Hydromulching.
 - 6. Native grasses.
 - 7. Erosion-control materials.
 - 8. Fertilizing
 - 9. Maintenance
- B. Related Sections:
 - 1. Division 32 Section "Irrigation System".
 - 2. Division 32 Section "Plants".

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Lawn: A stretch of open, grass-covered land, closely mowed.
- C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- D. Native Grass(es): A ground cover of grasses used to create a natural un-manicured appearance.
- E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- G. Sod: A product used to create a manicured lawn.
- H. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

- I. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.
- J. Turf: A manicured lawn.
- K. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 SUBMITTALS

- A. Provide all items listed below in one comprehensive submittal.
- B. Product Data: For each type of product indicated.
- C. Product Certificates: For soil amendments as recommended by contractor based on site-specific soil tests.
- D. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging. Include name and contact information of supplier.
- E. Qualification Data: For qualified landscape Installer.
- F. Material Test Reports: For standardized ASTM D 5268 topsoil, existing native surface topsoil and imported or manufactured topsoil.
- G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf and native grass areas during a calendar year. Submit before expiration of required initial maintenance periods.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf and native seed establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 - 2. Experience: Five years' experience in turf and seed installation in addition to requirements in Division 01 Section "Quality Requirements."
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Personnel Certifications: Installer's field supervisor shall have certification in one of all of the following categories from the Professional Landcare Network:
 - a. Certified Landscape Technician - Exterior, with installation, maintenance, and irrigation specialty area(s), designated CLT-Exterior.
 - b. Certified Turfgrass Professional, designated CTP.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

- C. Soil Analysis: For each un-amended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.
1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
 2. The soil-testing laboratory shall oversee soil sampling, with depth, location, and number of samples to be taken. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
 3. Report suitability of tested soil for turf and plant growth.
 - a. Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per **1000 sq. ft.** or volume per **cu. yd.** for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 - b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.
- D. Pre-installation Conference: Conduct conference at Project site prior to soil prep or seed installation.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications and Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.
- C. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

1.7 PROJECT CONDITIONS

- A. Planting Restrictions: Unless otherwise indicated in the soils report plant during the following period. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion.
1. Irrigated Areas: March 1 to April 15th <or> September 1 to October 1
 2. Non-Irrigated Areas: March 1st – April 15

- B. Weather Limitations: Seeding and sodding shall occur only when weather and soil conditions permit in accordance with locally accepted practice. Do not seed during periods of prolonged cold or heat, when ground is frozen or too dry, during windy periods, immediately following rain, or during excessively wet or dry periods.

1.8 MAINTENANCE SERVICE

- A. Initial Native Seed Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable native grass stand is established, but for not less than 1 year from date of substantial completion.
- B. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape installer. Maintain as required in Part 3. Begin Maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than 1 year after date of Project's substantial completion.
- C. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.9 SCHEDULING

- A. Seeding shall occur only when weather and soil conditions permit as noted under 'weather limitations' section above.
- B. Only seed areas that can be hydromulched the same day.
- C. Maintenance requirements which are not able to be met due to planting late in the fall season shall be provided starting the following spring. Contractor is responsible for notifying owner in writing of maintenance periods.

1.10 SEED ESTABLISHMENT

- A. Maintain all seeded areas against any defects due to any cause until Substantial Completion.
- B. Re-establish all seeded areas when turf is no longer in a satisfactory growing condition as determined by the Architect prior to Substantial Completion
- C. Seeded areas must be minimally established to the following conditions prior to Substantial Completion
 - 1. Native grass areas: At least 80% of the seeded area covered with germinated seed and no bare spots greater than 6 inches square after 60 days.
 - 2. The entire area shall be free of weeds and foreign grasses.
 - 3. Until final acceptance, seeded areas that fail after having been replaced previously, shall be replaced until it meets establishment as required above. Replacement materials shall be identical to those originally specified. Provide seed tags to the Architect for verification.
 - 4. The seeded areas will not be accepted in parts. Each time any portion or section of the seeded area requires replacement or remedial action, the contractor shall continue

maintaining the entire seeded area until it fully meets the minimum establishment requirements stated above.

5. All expenses incurred, including repairs from vandalism, for the replacement and/or establishment of the seed areas are to be borne by the Contractor.

1.11 SEED MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continue until the entire seeded area meets the requirements for Seed Establishment (see item 1.10, above), and not sooner than Substantial Completion.
- B. Continue maintenance until Final Acceptance.
- C. Maintain and establish seeded areas by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, re-grade, and plant bare or eroded areas as necessary to comply with Seed Establishment.
 1. In areas where mulch has been disturbed by wind or maintenance operations, add new seed hydromulch, and tackifier as originally specified.
 2. Apply Round-Up® or appropriate species-selective herbicide to the entire stand in the following spring while the Native grass is still dormant to eradicate weeds. The contractor is to properly time this application to not harm the Native grass.
- D. Watering: Provide a permanent irrigation system to convey water from sources and to keep seeded area uniformly moist to a depth of 4 inches (100 mm) or as determined necessary to promote proper germination.
 1. Schedule irrigation system to prevent wilting, puddling, erosion, or displacement of seed.
 2. Monitor the watering of the seeded areas to not overwater or stress plant material. Replacement of stressed or dead plant material caused by the watering or establishing of the seeded areas shall be completed immediately, prior to the beginning of the warranty period at the Contractor's expense.
 3. Water seeded areas at a sufficient rate to promote proper germination.
- E. Mowing:
 1. Native grass: For first 12 months after seeding, mow area to 4-inch height when vegetation is 6-8 inches tall, mowing up to one time per month. Leave clippings on site.
- F. Post-Germination fertilization:
 1. Apply fertilizer when appropriate after mowing and when grass is dry.
 2. Do not fertilize if weed growth is excessive. Bring weed infestations under control prior to fertilizing.
 3. Use a slow-release fertilizer that will provide actual nitrogen of at least 1/2 pound per 1000-sq. ft. (0.45 kg/92.9 sq. m) at a frequency to quickly and properly promote seed establishment.

1.12 SPECIAL PROJECT WARRANTY

- A. Warranty lawns and grasses for a period of one year after date of substantial planting completion, against defects including death and unsatisfactory growth.
- B. Remove and replace lawns and grasses found to be dead or in unhealthy condition during warranty period. Make replacements during growth season following end of warranty period. Replace lawns and grasses which are in doubtful condition at end of warranty period; unless, in opinion of Architect, it is advisable to extend warranty period for a full growing season.
 - 1. Another warranty inspection will be conducted at end of extended warranty period, if any, to determine acceptance or rejection.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: Seed grass species as indicated below with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed. All grass species shall be state-certified. Supplier shall be Pawnee Buttes Seed, Inc., P.O. Box 100, 605 25th Street, Greeley, CO or approved equal. See Landscape Plans for locations of each grass mix (or approved equal) listed below:
 - 1. Foothills Seed Mix – Spray Irrigated
 - a. PBSI Foothills Native Mix
 - b. Application Rate: 25 pounds pure live seed (PLS) per acre
 - 2. Detention Basin Seed Mix – Spray Irrigated
 - a. PBSI Prairie Wetland Mix
 - b. Application Rate: 10 pounds pure live seed (PLS) per acre

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Certified Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted, not less than 2 years old.
- B. Turfgrass Species: Sod of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Submit for approval by City and Architect.
- C. Provide sod of uniform pad sizes with maximum 5 percent 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 percent of pad will be rejected.

2.3 SOIL AMENDMENTS (To be determined by contractor based on current, site-specific soils tests)

- A. Compost: Well-composted, stable, and weed-free organic compost to be supplied by A-1 Organics or approved alternate.
1. Apply at 4 cubic yards per 1000 square feet.
 2. Compost must have been heated by supplier to a minimum of 131 degrees for at least 72 hours.
 3. Compost must be certified that no supplemental nitrogen or other chemicals have been added to the compost to alter or enhance the laboratory analysis.
 4. Compost shall not contain material larger than 1” in any direction.
 5. pH range of 5.5 to 8.0.
 6. Moisture content of 35 to 55 percent by weight.
 7. Soluble salt content of 5 to 10 decisiemens/m.
 8. Not exceeding 0.5 percent inert contaminants and free of substances toxic to planting.
- B. Additional Amendment (To be determined by contractor based on current, site-specific soils tests): Max Chip Soil conditioner by Profit Max Chemical 866-750-5863 (or approved equal). Apply at rate recommended by manufacturer (300 pounds per acre).

2.4 FERTILIZERS

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.5 PLANTING SOILS (To be determined by contractor based on current, site-specific soils tests)

- A. Planting Soil: Existing, in-place surface soil if existing, in-place soils are not available, or are deemed inadequate by the testing agency, use imported soils per part 2.5 B, below. Verify suitability of existing surface soil to produce viable planting soil. Remove stones larger than 1” in any dimension, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Mix surface soil with the following soil amendments in the following quantities to produce planting soil:
1. Ratio of Loose Compost to Surface Soil by Volume: 4 cubic yards per 1000 square feet.
 2. Soil Conditioner: 300lbs/Acre
- B. Planting Soil: Imported topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.
1. Report Suitability of tested soil for turf growth.
 2. Additional Properties of Imported Topsoil or Manufactured Topsoil: Screened and free of stones 1 inch (25 mm) or larger in any dimension; free of roots, plants, sod, clods, clay lumps, pockets of coarse sand, paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials harmful to plant growth; free of noxious weeds and invasive plants including, but not limited to, quackgrass, Johnsongrass, poison ivy, nutsedge, nimblewill, Canada thistle, bindweed, bentgrass, wild

garlic, ground ivy, perennial sorrel, and brome grass; not infested with nematodes, grubs, other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens; friable and with sufficient structure to give good tilth and aeration. Continuous, air-filled, pore-space content on a volume/volume basis shall be at least 15 percent when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent on a dry weight basis.

3. Mix imported topsoil or manufactured topsoil with the following soil amendments in the following quantities to produce planting soil:
 - a. Ratio of Compost to Topsoil by Volume: 4 cubic yards per 1000 square yards.
 - b. Soil Conditioner: 300lbs/Acre

2.6 MULCHES

- A. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5. Paper product mulch is not acceptable.
- B. Non-asphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.7 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.
- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 4. Uniformly moisten excessively dry soil that is not workable, and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. Limit turf sub-grade preparation to areas to be planted.
- B. Newly Graded Sub-grades: Loosen sub-grade to a minimum depth of **8 inches (200 mm)**. Remove stones larger than **1 inch (25 mm)** in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Spread organics after light rolling and natural settlement. Do not spread if planting soil or sub-grade is frozen, muddy, or excessively wet.
 - a. Spread compost over loosened sub-grade. Mix thoroughly into top **4 inches (100 mm)** of sub-grade. Spread remainder of organics.
 - b. Reduce elevation of planting soil to elevation shown in detail on drawings.
 - c. Spread and integrate soil conditioner per specified quantities.
- C. Unchanged Sub-grades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least **8 inches (200 mm)**. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top **6 inches (150 mm)** of soil. Till soil to a homogeneous mixture of fine texture.
 - 3. Remove stones larger than **1 inch (25 mm)** in any dimension and sticks, roots, trash, and other extraneous matter. Finished surface shall have an appearance of soil, not stones smaller than 1".
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus **1/2 inch (13 mm)** of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 HERBICIDE TREATMENT

- A. Herbicide Treatment: To be performed over the entire area to be seeded. Allow sufficient time to successfully complete the entire Herbicide Treatment process before continuing with the seed installation.
1. Herbicide treatment must be completed during the growing season.
 2. Water surface 1/2" per week for two weeks prior to application if natural precipitation does not supply this amount to encourage weed seed germination.
 3. Treat site with "Roundup" herbicide in accordance with manufacturer's recommendations. Schedule the Round-up application when the probability of forecasted rainfall is minimal for the next 48 hours.
 4. Two days after application, water surface 1/2" per week if natural precipitation does not supply this amount to encourage weed seed germination.
 5. Ten (10) days after the first "Roundup" application, review surface for evidence of weed growth.
 6. Repeat steps 2, 3, 4, and 5, as many times as necessary until there is no evidence of weed growth after a 10-day period.
 7. Obtain Architect's approval of surface conditions fourteen (14) days after last herbicide application. Substantial acceptance for seed establishment requires that the entire seeded area is weed free.
 8. Remove plant debris from treated area.

3.5 SOIL PREPARATIONS

- A. Amendments: After successful results of the Herbicide Treatment has been reviewed and approved by the Architect, amend the finish grade as follow:
1. Loosen grade to a minimum depth of 8 inches (150 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 2. Apply soil amendments and fertilizer at the rate specified in soil analysis.
 - a. ORGANIC MATERIAL: Apply at 4 cubic yards per 1000 square feet (spread at 1-1/3" deep throughout). No soil should be visible when spread. Receive Architect's approval prior to rototilling into the soil.
 - b. Spread and integrate Soil Conditioner per specified quantities.
 3. Rototill amendments into soil at a minimum depth of 8". Make several passes in opposite directions so that the soil is thoroughly blended. Do not perform when soil is muddy, too dry, or frozen.
 4. Grade seed areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

3.6 NATIVE GRASS SEEDING

- A. Sow seed 1/2" deep by mechanical drill method only (before hydromulching). In tight areas or on steep slopes where a mechanical drill is not practical, broadcast seed with spreader and lightly rake into soil. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
1. Do not use wet seed or seed that is moldy or otherwise damaged.

2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
3. Restore grade if eroded or otherwise disturbed after finish grading and before planting.
4. Protect seeded areas on slopes of 3:1 and greater with erosion-control blankets installed and stapled according to manufacturer's written instructions.

B. Protect seeded areas by hydromulching.

3.7 HYDROMULCHING

A. Hydromulching: Mix fertilizer, and fiber mulch in water, using equipment specifically designed for hydromulch application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than **2000-lb/acre** dry weight, and seed component is deposited at not less than the specified seed-sowing rate. At this application rate the soil should be completely covered with no soil or shadows of soil visible.
 - a. Re-apply hydromulch that has been displaced for any reason.

3.8 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to sub-grade or sod during installation. Tamp and roll lightly to ensure contact with sub-grade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod. Reduce water gradually after roots have set. Monitor frequently during the first growing season.

3.9 NATIVE GRASS AREA RENOVATION

A. Renovate existing native grass damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish native grass where settlement or washouts occur or where minor re-grading is required.
2. Install new planting soil.

B. Remove grass and vegetation from diseased or unsatisfactory native grass areas; do not bury in soil.

C. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

- D. Remove weeds before seeding. Where weeds are extensive, apply herbicide treatment, do not use pre-emergence herbicides.
- E. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- F. Till stripped, bare, and compacted areas thoroughly to a soil depth of **6 inches (150 mm)**.
- G. Apply soil amendments for establishing new native seed and mix thoroughly into top **6 inches** of existing soil.
- H. Apply native seed as required for new native seeded areas.
- I. Overseed all existing native grass areas. Refer to Division 32 Section "Planting Irrigation" for repair of irrigation trenches
- J. Water newly planted areas and keep moist until new turf is established per requirements in this Section.

3.10 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer. Install on all disturbed slopes 3:1 and greater.
- B. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.11 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, re-grade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.
 - 2. Water turf as needed to establish a healthy stand of turf.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in

initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Remove all clippings. Schedule initial and subsequent mowings to maintain grass height recommended by supplier.

- D. Turf Post-fertilization: Apply fertilizer at appropriate time following installation, after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.
- E. Install and maintain barriers and signs where necessary to restrict traffic.

3.12 NATIVE GRASS MAINTENANCE

- A. Maintain and establish native grass by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable native grass stand. Roll, re-grade, and replant bare or eroded areas and re-hydromulch. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and seed or grass damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep native grass and soil free of weeds, pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and native grass-watering equipment to convey water from sources and to keep native grass uniformly moist.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water with fine spray at a minimum rate of **1/2 inch (13 mm)** per week for eight weeks after planting unless rainfall precipitation is adequate.
 - 3. Irrigate seeded areas more frequently and less thoroughly than sod areas.

3.13 SATISFACTORY TURF AND NATIVE GRASS

- A. Turf and Native Grass installations shall meet the following criteria as determined by Architect:
 - 1. Satisfactory Seeded Native Grass: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any **10 sq. ft. (0.92 sq. m)** and bare spots not exceeding **5 by 5 inches (125 by 125 mm)**.
 - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish native grass that does not comply with requirements and continue maintenance until turf is satisfactory.

3.14 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations.

Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.15 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
 - 1. Promptly repair or replant any areas damaged by others for any reason at no cost to the owner.
- C. Remove non-degradable erosion-control measures after grass establishment period.

END OF SECTION 32 9200

SECTION 32 93 00 - PLANTS

GENERAL

1.1 SUMMARY

- A. Provide plants as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.
- B. Work required includes, but is not limited to, the following:
 - 1. Furnishing trees, shrubs, and perennials.
 - 2. Preparing planting beds including excavation, backfilling, and disposal of surplus and unsuitable excavated material.
 - 3. Planting of trees, shrubs, and perennials, including mulching and trimming.
 - 4. Maintenance of plants until Substantial Completion.

1.2 RELATED SECTIONS

- A. 32 84 10 Irrigation System
- B. 32 92 00 Turf and Grasses

1.3 SUBMITTALS

- A. Provide all items listed below in one comprehensive submittal.
- B. Topsoil Analysis: Submit topsoil analysis as specified in "Testing" article below.
- C. Product Data: Submit product labels for soil amendments and fertilizer proposed for use on project.
- D. Maintenance Instructions: Prior to Substantial Completion, submit written recommended procedures for maintenance of plants during first year after completion of work.

1.4 TESTING

A. Contractor shall arrange and pay for sampling and analysis of topsoil by a qualified soil testing laboratory, acceptable to Owner and independent of Contractor. Analysis shall indicate percentages of organic matter; gradation of sand, silt, and clay content; deleterious material; pH; and mineral and plant-nutrient content of topsoil. Report suitability of topsoil for use in preparing planting soil. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil for this project.

Take a minimum of two representative test samples from topsoil source proposed for use.

1.5 INSPECTION

- A. Comply with local, state, and federal laws pertaining to inspection, sale, and shipment of plant materials.
- B. A/E may inspect plants either at place of growth or at site before planting for compliance with requirements of name, variety, size, and quality. A/E retains right to further inspect plants for size and condition of balls and root systems, insects, injuries, and latent defects, and to reject

damaged or defective material at any time during progress of work. Remove rejected plants immediately from project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Provide freshly dug trees and shrubs. Do not use trees or shrubs which have been in cold storage or heeled in. Do not prune prior to delivery, except as approved by A/E. Provide adequate protection of root systems and balls from drying winds and sun. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break branches, or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery.

B. Deliver plants after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set plants in shade, protect from weather and mechanical damage, and keep roots moist as follows:

C. Set balled stock on ground and cover ball with soil, peat moss, or other acceptable material.

D. Do not remove container grown stock from containers until planting time.

E. Plants with roots exposed to the sun, or otherwise unprotected during transit, unloading, or storage shall be rejected.

1.7 SITE CONDITIONS

A. Plant trees, shrubs, and perennials during normal seasons.

B. Plant frost-tender plants only after danger of frost is past or sufficiently before frost season to allow for establishment before first frost. Do not plant in frozen ground.

C. Plant after final grades are established. If planting occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

1.8 WARRANTY

A. Trees, shrubs, and perennials shall be warranted for one year from day of acceptance. All plants not in vigorous growing condition after one year shall be replaced in first succeeding planting season.

Part 2 -PRODUCTS

2.1 PLANT MATERIAL, GENERAL

A. Provide plants grown in a recognized nursery in accordance with good horticultural practice, with normal, well-developed branch system and healthy root systems developed by transplanting or root pruning. Provide only healthy, vigorous stock grown for at least 2 years under climatic conditions similar to conditions in locality and free of disease, insects, eggs, larvae, and defects such as knots, sunscald, injuries, abrasions, or disfigurement.

B. Provide plants true to name and variety established by American Joint Committee on Horticultural Nomenclature, "Standardized Plant Names." Comply with recommendations and requirements of ANSI Z60.1 "American Standard for Nursery Stock."

C. Provide plants of sizes and species designated and in accordance with dimensional relationship requirements of ANSI Z60.1 for kind and type. Plants of larger size than specified may be used if size of roots and balls are increased proportionately.

D. Measure trees and shrubs with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 in. above root flare for trees up to 4 in. caliper size, and 12 in. above root flare for larger sizes. Measure main body of tree or shrub for height and spread dimensions; do not measure from branch or root tip-to-tip.

E. Label each tree and shrub with a securely attached waterproof tag bearing legible designation of botanical and common name.

2.2 DECIDUOUS TREES

A. Provide trees of height and caliper designated.

B. Shade trees shall be single stem trees with straight trunk and intact leader, free of branches to a point about 60% of their height, as recommended by ANSI Z60.1 for size and kind of trees required.

C. Where small trees of upright or spreading type are required, provide trees with single stem, branched or pruned naturally according to species and type, and with relationship of caliper and branching recommended by ANSI Z60.1, unless otherwise shown. Where shown as "bush form," provide trees with branching starting close to ground in manner of a shrub. Where shown as "multi-stem", provide trees with 3 or more main stems starting from ground.

D. Container grown deciduous trees may be substituted for balled and burlapped trees, subject to specified limitations for container stock.

2.3 DECIDUOUS SHRUBS

A. Dimensions designated indicate required height or container size.

B. Provide deciduous shrubs with not less than the minimum number of canes required by ANSI Z60.1 for type shown and height of shrub required. Except as otherwise shown, provide bare root deciduous shrubs.

C. Where shown as "clump," provide deciduous shrubs with at least twice the number of canes required for standard shrubs.

D. Container grown deciduous shrubs may be substituted for balled and burlapped shrubs, subject to specified limitations for container grown stock.

2.4 CONIFEROUS AND BROADLEAF EVERGREENS

A. Provide evergreens of sizes designated. Dimensions indicate minimum spread for spreading and semi-spreading type evergreens and height for all other types, such as globe, dwarf, cone, pyramidal, broad up-right, and columnar. Provide evergreens with well-balanced form complying with requirements for other size relationships to the primary dimension indicated.

B. Provide balled and burlapped normal quality evergreens unless shown as "specimen." Container grown evergreens may be substituted, subject to specified limitations for container grown stock.

2.5 REQUIREMENTS FOR B & B STOCK

A. Where shown or specified to be balled and burlapped, provide trees and shrubs dug with firm, natural ball of earth in which they are grown.

B. Provide ball size of not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree or shrub required. Increase ball size or modify ratio of depth to diameter as required to encompass fibrous and feeding root system necessary for full recovery of trees or shrubs.

C. Wrap and tie earth ball as recommended by ANSI Z60.1 for size of balls required. Drum-lace balls with a diameter of 30 in. or greater.

2.6 REQUIREMENTS FOR CONTAINER GROWN STOCK

A. Where specified as acceptable, provide healthy, vigorous, well-rooted trees or shrubs established in container in which they are sold. Provide balled and burlapped stock, when required trees or shrubs exceed maximum size recommended by ANSI Z60.1 for container grown stock.

B. Established container stock is defined as a tree or shrub transplanted into a container and grown in container for a length of time sufficient to develop new fibrous roots so that root mass will retain its shape and hold together when removed from container.

C. Use rigid containers which will hold ball shape and protect root mass during shipping. Provide trees and shrubs established in containers of not less than minimum sizes recommended by ANSI Z60.1 for kind, type, and size of trees and shrubs required.

2.7 PERENNIALS

A. Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery.

2.8 TOPSOIL

A. Loam, sandy loam, silt loam, silty clay loam, or clay loam humus-bearing surface soil; 100% passing the 1 in. sieve and at least 90% passing the No. 10 sieve; pH range of 6.0 to 7.0; minimum organic material content of 3 percent; reasonably free of subsoil, clay lumps, brush, and weeds; and free of extraneous matter harmful to plant growth.

B. Obtain topsoil from naturally well-drained local sources; do not obtain from bogs or marshes. Topsoil salvaged from within work area may be reused if it meets the above requirements.

2.9 PLANTING SOIL

A. Planting soil shall be a prepared mixture of topsoil, compost, soil amendments, and fertilizers to achieve a minimum organic material content of 10 percent and fertilizer at levels for trees, shrubs, and perennial plants as recommended by topsoil analysis report.

2.10 COMPOST

A. Certified Class II Compost high in nutrients, well-aged and appropriate for commercial landscape application. Product to be dairy-manure based with stabilized organic matter and suitable for the establishment of a soil system to support the specified landscape.

2.11 PRE-EMERGENT HERBICIDE

A. Granular or liquid pre-emergent herbicide formulated with the active ingredient of Trifluralin or Oryzalin under the trade names of Preen, Treflan, Surflan, or approved equal.

2.12 WEED CONTROL FABRIC

A. Non-woven polypropylene or polyester weed control fabric, 3 oz per sq yd minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally encountered chemicals, alkalis, and acids.

2.13 EDGING

A. Steel Edging: Rolled top, commercial-steel edging, fabricated in sections of standard lengths, with loops stamped from or welded to face of sections to receive stakes.

1. Edging Size: 1/4 in. thick by 5 in. deep.
2. Stakes: Tapered steel, a minimum of 12 in. long.
3. Finish: Manufacturer's standard paint; black color.
4. Finish: Zinc-coated.

2.14 WOOD MULCH

A. Planting Beds – Angular rock mulch (to match rock mulch in existing landscape south of I-70)

2.15 ROCK MULCH

A. Dry Stream Bed - Rock Mulch, Smooth River Cobble 5-12 in. size. Color approved by Landscape Architect.

2.16 SLOW-RELEASE WATERING DEVICES

A. Standard product manufactured for drip irrigation of plants and emptying its contents over an extended time period; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.

2.17 WATER

A. Water for execution of all work, including maintenance under this contract, shall be obtained as specified in Section 01 01 00 / 01 50 00.

B. Water for execution of all work, including maintenance under this contract, shall be furnished by Contractor. Water shall be suitable for irrigation and free from ingredients harmful to plant life.

PART 3 -EXECUTION

3.1 INSTALLATION OF PLANT MATERIALS

A. Layout individual tree and shrub locations and areas for multiple plantings. Stake locations and outline areas and secure A/E acceptance before start of planting work. Make minor adjustments as may be requested by A/E.

3.2 PLANTING BED PREPARATION

A. Loosen subgrade of planting beds to a minimum depth of 6 in. Remove stones larger than 1 in. in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

B. Thoroughly blend planting soil before spreading or spread topsoil, apply specified soil amendments on surface, and thoroughly blend planting soil.

1. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
2. Mix lime with dry soil before mixing fertilizer.
3. Till in the specified compost at a rate of 4 yds / 1000 sf in all sod and planting bed areas.

C. Spread planting soil mix to depth shown on the Drawings but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

1. Spread approximately 4-in. of planting soil mix over loosened subgrade. Mix thoroughly into top 4 in. of subgrade.
2. Spread remainder of planting soil in lifts not exceeding 6 in. in loose depth for material compacted by compaction equipment, and not more than 6 in. in loose depth for material

compacted by hand-operated tampers. Compact each lift of planting soil to 65% of maximum Standard Proctor density (ASTM D698).

D. Finish grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

3.3 EXCAVATION

A. Excavate circular planting pits with sides sloping inward at a 45-deg. angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.

1. Excavate approximately three times as wide as ball diameter for balled and burlapped and container-grown stock.
2. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
3. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.

B. Dispose of subsoil removed from landscape excavations. Do not mix with planting soil nor use as backfill.

3.4 SETTING AND BACKFILLING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set balled and burlapped stock plumb and in center of planting pit or trench with root flare 1 in. above adjacent finish grades.

1. Use planting soil for backfill.
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Set container-grown stock plumb and in center of planting pit or trench with root flare 1 in. above adjacent finish grades.

1. Use planting soil for backfill.
2. Carefully remove root ball from container without damaging root ball or plant.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Continue backfilling process. Water again after placing and tamping final layer of soil.

E. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

F. Move and set large specimen trees with crane or other recognized tree moving equipment.

3.5 PERENNIAL PLANTING

A. Space plants as described in landscape plan. Install plants no closer than 12 in. to trunks of trees or shrubs within planting bed or within 6 in. of edge of bed.

B. Prior to planting, split biodegradable plant containers and remove non-biodegradable containers. Root system of plants shall be split or crumbled by hand.

C. Dig holes for individual plants large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.

E. Use planting soil for backfill. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

3.6 MULCH BEDS

A. Construct mulch beds where indicated on Drawings, minimum 3 in. thick unless otherwise shown. Dish top of backfill to allow for mulching. Top of mulch shall be level with adjacent finished grades.

1. Use Apply pre-emergent herbicide prior to placing bark mulch using method and rates specified by the product manufacturer. Apply uniformly and under favorable conditions to optimize effectiveness of product. Dispose of spent containers offsite as recommended by manufacturer.
2. Install weed control fabric under all rock mulch, unless otherwise shown.

3.7 EDGING INSTALLATION

A. Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 in. apart, driven below top elevation of edging.

3.8 SPRAYING

A. If moved in full-leaf, spray deciduous trees and shrubs with antidessicant at nursery before moving and again 2 weeks after planting. Provide an adequate film on trunks, branches, stems, twigs, and foliage.

3.9 PRUNING

A. If moved in full-leaf, spray deciduous trees and shrubs with antidessicant at nursery before moving and again 2 weeks after planting. Provide an adequate film on trunks, branches, stems, twigs, and foliage.

B. Remove and replace excessively pruned or deformed stock resulting from improper pruning.

3.10 INSTALLING SLOW-RELEASE WATERING DEVICES

A. Provide one device for each tree.

B. Place device on top of mulch at base of tree stem and fill with water according to manufacturer's written instructions.

C. Leave device in place when tree is accepted by Owner.

3.11 MAINTENANCE

A. Until work is accepted by Owner, make periodic checks to make certain that materials are properly watered, cultivated, and pruned, and that conditions are contributing to satisfactory progress of materials.

3.12 CLEAN UP

A. Promptly remove soil, manure, peat, or similar material from paved areas; keep area clean at all times. Upon completion of planting, remove excess soil, stones, and debris from site. Ground areas disturbed as a result of planting operations shall be restored to their original condition or to desired new appearance.

END OF SECTION 32 93 00 B