

PROJECT MANUAL

CITY OF CREEDE
SANITARY SEWER IMPROVEMENTS
PHASE 1

APRIL 2021

PREPARED BY:

SGM

118 W. 6TH STREET, SUITE 200
GLENWOOD SPRINGS, CO 81601

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SECTION 00010

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NOT USED

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NOT USED

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NOT USED

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NOT USED

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NOT USED

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NOT USED

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BID AND AGREEMENT DOCUMENTS



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SECTION 00100

CITY OF CREEDE INVITATION FOR BIDS FOR A SELECTIVE SEWER COLLECTION SYSTEM UPGRADE PROJECT

THE CITY OF CREEDE will be accepting bids for a selective sewer collection system upgrade project through May 3rd, 2021, 1:00 PM at **which time the proposals will be publicly opened and read**. Any proposal received after the above specified time will be immediately returned to the bidder unopened.

Bid Packets can be obtained at Town Hall located at 2223 North Main Street in Creede or by contacting the staff at 719-658-2276 x 4 publicworks@creedetownhall.com.

PROJECT SCOPE:

The City of Creede is currently planning for the phased upgrade of its sewer collection system as outlined in Attachment A. The City currently has funding in place for Phase 1A of the project as outlined in Attachment B. The City is in the process of securing funding for Phase 1B and Phase 1C as described in Attachment B with the intention of implementing all of Phase 1 in the Summer of 2021. At this time, the City is seeking bids which itemize all work necessary to complete Phases 1A and 1B separately with the expectation of completing all of this work in the Summer of 2021. However, the City may or may not have secured funding for Phases 1B and 1C in time to complete said work in 2021. Work will not commence on these phases unless funding has been secured.

The work to be completed within each Phase 1 sub-phase is shown on a drawing set created by SGM, Inc. dated 03/02/2021 (Attachment C). At this time, the City is requiring an itemized proposal corresponding to Phases 1A and 1B. As described above, Phase 1A will definitely commence in 2021. Phase 1B may commence in 2021.

The work shall include furnishing all materials, labor and tools necessary to perform all installation and testing of all appurtenances as specified herein and shown on the drawings. Project clean-up is included and shall be a continuous process from project start-up to final acceptance of the work. The contractor will also be responsible for the safe and efficient handling of vehicular and pedestrian traffic in and around the construction site.

PROJECT LOCATION: The project will be located within the City of Creede as outlined in the drawing set.

BID AWARDING: The successful bidder for this project will be awarded at the Regular Board of Trustees meeting on May 4th, 2020 at 5:30 PM. Once awarded, a Notice of Award, Construction Agreement and Notice to Proceed will be given to the successful bidder.

The City of Creede assumes no obligation of any kind for expenses incurred by any respondent to this solicitation. The right is also reserved by the City of Creede to reject any and all submittals, and to waive any irregularities and informalities in any submittal.

Please Contact Scott Johnson at 719-658-2276 x 4, or publicworks@creedetownhall.com, if you have any questions.

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SECTION 00200
INSTRUCTIONS TO BIDDERS

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ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below.

- A. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

ARTICLE 2 - BIDS RECEIVED

2.01 Refer to Advertisement for Bid for information on receipt of Bids.

ARTICLE 3 - COPIES OF BIDDING DOCUMENTS

3.01 Complete sets of the Bidding Documents shall be used in preparing Bids; neither Buyer nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

3.02 Buyer and Engineer have made copies of Bidding Documents available on the above terms only for the purpose of obtaining Bids for furnishing Goods and Special Services and do not authorize or confer a license for any other use.

ARTICLE 4 - QUALIFICATIONS OF BIDDERS

4.01 To demonstrate Bidder’s qualifications to furnish Goods and Special Services, within five days of Buyer’s request Bidder shall submit written evidence, such as financial data, previous experience, present commitments, and such other data as may be called for below.

- A. Minimum of 5 years of experience with demonstrable projects of similar size, scope and complexity.
 - B. Additional qualification requirements listed in Section 00210 Contractor Qualifications shall apply when included herein.
- 4.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 5 - EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND POINT OF DESTINATION

- 5.01 Upon request Buyer will provide Bidder access to the Point of Destination and the site where Goods are to be installed or Special Services are to be provided so that Bidder may conduct such investigations, examinations, tests, and studies as Bidder deems necessary for submission of a Bid.
- 5.02 It is the responsibility of each Bidder before submitting a Bid to:
- A. examine and carefully study the Bidding Documents, including any Addenda, and the related data identified in the Bidding Documents;
 - B. visit the Point of Destination and the site where the Goods are to be installed and Special Services are to be provided to become familiar with the local conditions if required by the Bidding Documents to do so, or if, in Bidder's judgment, any local condition may affect cost, progress, or the furnishing of Goods and Special Services;
 - C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, or the furnishing of the Goods and Special Services;
 - D. carefully study, consider, and correlate the information know to Bidder; information commonly known to sellers of similar goods doing business in the locality of the Point of Destination and the site where the Goods will be installed of where Special Services will be provided; information and observations obtained from Bidder's visits, if any, to the Point of Destination and the site where the Goods are to be installed of Special Services are to be provided; and any reports or drawings identified in the Bidding Documents regarding the Point of Destination and the site where the Goods will be installed or where Special Services will be provided; with respect to the effect of such information, observations, and documents on the cost, progress, and performance of Seller's obligations under the Contract Documents;
 - E. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that bidder discovers in the Bidding Documents and confirm that the written resolution (if any) thereof by Engineer is acceptable to Bidder; and
 - F. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing Goods and Special Services.

- 5.03 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 5, that without exception the Bid is premised upon furnishing Goods and Special Services required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions (if any) thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for furnishing Goods and Special Services.

ARTICLE 6 - PRE-BID CONFERENCE

A pre-bid conference will be held at 9:00 a.m. on April 28, 2021 at the City of Creede Town Hall. Representatives of Buyer and Engineer will be present to discuss the Goods and Special Services to be furnished. Bidders are required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. 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 ten days prior to the date for opening of Bids will not be answered. Only answers in the Addenda will be binding. Oral statements, interpretations, and clarifications may not be relied upon and will not be binding or legally effective.

Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Buyer or Engineer.

ARTICLE 8 - BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Buyer in an amount of (5%) five percent of Bidder's maximum total Bid price and in the form of a certified check, bank money order, or a Bid Bond (on form attached) issued by a surety meeting the requirements of Paragraph 5.01.B of the General Conditions.
- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Buyer may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders that Buyer believes to have a reasonable chance of receiving the award may be retained by Buyer until the earlier of 7 days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

- 8.03 Bid security of other Bidders that Buyer believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

- 9.01 See applicable provisions in the Agreement.

ARTICLE 10 - LIQUIDATED DAMAGES

- 10.01 Any provisions for liquidated damages, such as those for Seller's failure to attain a Milestone, or to deliver the Goods or furnish Special Services within the Contract Times, are set forth in the Agreement.

ARTICLE 11 - "OR-EQUAL" ITEMS

- 11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, including the Addenda. Bidders may propose "or equal" materials and equipment, which if approved by Engineer will be identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function, and quality to be met by any proposed "or-equal" item. No item of material or equipment will be considered by Engineer as an "or-equal" unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. Bidders shall not rely upon approvals unless set forth in an Addendum.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS AND OTHERS

- 12.01 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 6.06.

ARTICLE 13 - PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents. Additional copies of Bidding Documents may be obtained from the Issuing Office.
- 13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each item listed therein. In the case of optional alternates the words "No Bid," "No Change," or "Not Applicable" may be entered.
- 13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.06 A Bid by an individual shall show the Bidder's name and official address.
- 13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.08 All names must be typed or printed in ink below the signature.
- 13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.
- 13.10 Each Bidder shall list the postal address, e-mail address, and telephone number for communications regarding the Bid.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 Series of Lump Sums

- A. Bidder shall submit a Bid for each lump sum item as set forth on the Bid Form, and shall compute and enter the total of all lump sum items in the space provided on the Bid Form.
- B. For determination of the apparent low Bid, Bids will be compared on the basis of the total of all lump sum items.
- C. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the arithmetically correct sum.

14.01 Unit Prices

- A. For each unit price item on the Bid Form, Bidder shall enter the unit price Bid, and shall enter the computation of the respective quantity times the Bidder's unit price for that item. Bidder shall compute and enter in the space provided on the Bid Form, the total of the products of quantity and unit price Bid for each unit price item.
- B. For determination of the apparent low Bidder, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item.
- C. Discrepancies between the indicated result of the multiplication of the units of an item and the unit price for that item will be resolved in favor of the arithmetically correct result. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the arithmetically correct sum.

ARTICLE 15 - SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form and the Bid Bond form. The unbound copy of the Bid Form is to be completed and submitted with all the attachments outlined in Article 7 of the Bid Form.
- 15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid, and shall be enclosed in a plainly marked envelope with the Project title (**City of Creede Sewer Collection System Upgrades - Phase 1**) and the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED". A mailed Bid shall be addressed to Owner at the address below:

City of Creede
Attn: Scott Johnson
PO Box 457
2223 North Main St.
Creede, CO 81130

ARTICLE 16 - MODIFICATION OR WITHDRAWAL OF BID

- 16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

16.02 If, within 24 hours after Bids are opened, any Bidder files a duly signed written notice with Buyer and promptly thereafter demonstrates to the reasonable satisfaction of Buyer that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Goods and Special Services are rebid, that Bidder will be disqualified from further bidding on the Goods and Special Services.

ARTICLE 17 - OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the Base Bids and Alternate Bids, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Buyer may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 - EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Buyer reserves the right to reject any and all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Buyer further reserves the right to reject the Bid of any Bidder that Buyer finds, after reasonable inquiry and evaluation, to be non-responsible. Buyer may also reject the Bid of any Bidder if Buyer believes that it would not be in the best interest of the Project to make an award to that Bidder. Buyer also reserves the right to waive all informalities not involving price, time, or changes in the Goods and Special Services, and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Goods and Special Services from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Goods and Special Services shall be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Buyer will consider 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 as may be requested by Buyer prior to a Notice of Award. It is Owner's intent to accept alternates (if any are accepted) in the order in which they are listed in the Bid form but Owner may accept them in any order or combination.

19.04 Buyer may conduct such investigations as Buyer deems necessary to establish the responsibility, qualifications, and financial ability of Bidder.

- 19.05 Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.
- 19.06 Where indicated, operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.
- 19.07 If the Contract is to be awarded, Buyer will award the Contract to the Bidder whose Bid is in the best interest of the Project.

ARTICLE 20 - CONTRACT SECURITY AND INSURANCE

- 20.01 Article 4 of the General Conditions and Article 4 of the Supplementary Conditions set forth Buyer's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Buyer, it must be accompanied by such bonds.

ARTICLE 21 - SIGNING OF AGREEMENT

- 21.01 When Buyer issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents that are to be identified in the Agreement and attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Buyer. Within 10 days thereafter, Buyer shall deliver one fully signed counterpart to Successful Bidder with a complete set of Drawings with appropriate identification.

ARTICLE 22 - SALES AND USE TAXES

- 22.01 Buyer is exempt from Colorado state sales and use taxes on materials and equipment to be incorporated in the Project (Exemption No. to be provided to successful bidder). Said taxes shall not be included in the Bid. Refer to Paragraph 5.05 of the Supplementary Conditions for additional information.

ARTICLE 23 - RETAINAGE

- 23.01 Provisions concerning Seller's rights to deposit securities in lieu of retainage are set forth in the Agreement.

ARTICLE 24 - CONTRACTS TO BE ASSIGNED

- 24.01 Intentionally left blank.

ARTICLE 25 - PROJECT FUNDING REQUIREMENTS

This project is being funded with financing through the State Revolving Fund (SRF) loan through the State of Colorado. Notice to Proceed will be issued upon receipt of permanent financing. The terms of this loan mandate that following:

1. Equal Employment Opportunity - minority and female owned businesses must be solicited and retained where feasible on this project.
2. Davis-Bacon Prevailing Wages

3. American Iron and Steel
4. Williams-Steiger Occupational Safety and Health Act of 1970

Refer to the Appendix for additional information.

ARTICLE 26 - WAGE RATE DETERMINATION

- 26.01 The prevailing wage rates of the State of Colorado apply to this contract as do any requirements of the State of Colorado associated with the use of these State Prevailing wages.
- 26.02 The prevailing wage rates of the Department of Labor apply to this project. The Labor Standards Provisions found at 29 CFR 5.5(a) apply to this project if the prevailing wage rates of the Department of Labor apply. If the contract cost is in excess of \$100,000, provisions of the Contract Work Hours and Safety Standards Act at 29 CFR 5.5(b) also apply.
- 26.03 Rate Determination Basis and Categories

This project has been assigned the construction classification of Heavy (General Decision Number CO20210003 dated 01/01/2021). Refer to the Appendix for additional information.

ARTICLE 27 - PERMITS AND FEES

Refer to Section 01000 General Provisions for permit requirements. The Contractor will be responsible for obtaining and paying for all necessary permits.

ARTICLE 28 - . BASIS OF DESIGN

It is understood that the project documents were necessarily prepared using specific pieces of equipment and manufacturer. The major equipment used as the basis of design is stated in the technical specifications. In cases where the specifications allow for substitution with an "equal" product, such evaluation will not be considered until after Bid Award. On a case by case basis, and in his sole discretion, the Engineer may allow substitution of materials and/or equipment after bid award as part of a value engineering effort. If any product other than the basis of design is used, the Contractor shall be responsible for all modifications required for incorporation into the work.

ARTICLE 29 - BASIS OF BID

When Section 00450 Major Equipment and Manufacturer Listing – Basis of Bid is included in the project documents, the Contractor is required to complete and submit the form listing all identified major equipment and manufactures. This list shall be considered as the basis of bid.

END OF SECTION

SECTION 00210

GENERAL CONTRACTOR BIDDER QUALIFICATION FORM

PART 1 GENERAL INFORMATION

Note: For joint ventures the requested information shall be provided for each firm individually.

- A. In determining the firm's qualifications, the following factors will be considered. Similar work most recently completed and whether the firm:
1. Maintains permanent place of business;
 2. Owns adequate equipment to perform Work properly and expeditiously within Contract time;
 3. Has financial resources to meet obligations incidental to the Work;
 4. Has appropriate technical experience;
 5. Has good record of successful and timely project completion with minimal interference with existing plant operations as demonstrated through references;
- B. Minimum requirements that must be met in order to be considered for project participation and possible award as a General Contractor are:
1. Successful completion or substantial progress towards completion of projects with similar size, scope and complexity within the past 8 years. All flows and capacities herein discussed and represented shall be based on the hydraulic capacity permitted by the regulatory agency (i.e. CDPHE).
 - a. Three gravity sanitary sewer collection system improvements (complete new utility installations that included earthwork and shallow utilities coordination; complete existing utility replacement that included demolition and removal, as well as earthwork and shallow utilities coordination) with construction costs of \$1 million or greater;
 - b. Provide project name and brief description for each relevant project along with the name and phone number for Owner and project engineer.
 - c. Demonstration of self-performance on over 50% of the physical construction on each project listed as relevant experience.
 2. No "fail to complete" projects as documented in writing from Owner by a person in position of authority;
 3. No "not allowed to work for" status with previous clients as documented in writing from Owner by a person in position of authority;
 4. Sufficient qualified staff available to complete the work per project schedule.
- C. The Owner or Engineer reserves the right to require the submission of additional information.
- D. The Owner or Engineer reserves the right to contact any past or present project owner, whether submitted with this bid or not, to verify and establish the accuracy of information represented by Contractor.

- E. Determination of experience and financial qualification shall be based solely on the opinion of the Owner and Engineer.
- F. The qualification of a firm shall not deprive the Owner of the right to reject any bid, where other circumstances and developments have, in the opinion of the Owner, changed the qualification or responsibility of the firm.
- G. A firm will be qualified for award of the Contract on the basis of all factors judged to be in the best interest of the Owner. These factors will include those listed above as well as the firm's previous performance on work for the Owner or the Engineer.
- H. The complete qualification package shall be submitted concurrent with firm's bid in a separate, sealed enveloped that clearly states "QUALIFICATION STATEMENT FOR CITY OF CREEDE SANITARY SEWER IMPROVEMENTS, PHASE 1." The qualification package shall contain a cover sheet with same title (stated above) and shall clearly identify the submitting company name, address, phone number and contact person.

END OF SECTION

SECTION 00410

BID FORM

Project Identification: City of Creede Sanitary Sewer Improvements – Phase 1

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs.
- E. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

ARTICLE 4 – BIDDER’S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents and Section 01025 Measurement and Payment for the following price(s):

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	Phase 1A Sewer Replacement	LS	1		
2	Phase 1A Sewer Service Reconnections	EA	46		
3	Phase 1A Sanitary Cleanout Replacement	EA	4		
4	Phase 1A temporary Bypass Measures	LS	1		
Total of All Base Bid Items					\$

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
Alt 1	Phase 1B Sewer Replacement	LS	1		
Alt 2	Phase 1B Sewer Service Reconnections	EA	43		
Alt 3	Phase 1B Sanitary Cleanout Replacement	EA	5		
Alt 4	Phase 1B Temporary Bypass Measures	LS	1		
Total of All Alternate Bid Items					\$

Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions. All specified cash allowances are included in the price(s) set forth above and have been computed in accordance with Paragraph 11.02 of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security in the form of _____;

- B. List of Proposed Subcontractors;
- C. List of Project References;
- D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
- E. *[If applicable]* Contractor's License No.: _____ *[or]* Evidence of Bidder's ability to obtain a State Contractor's License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;
- F. Required Bidder Qualification Statement with Supporting Data; and
- G. All issued Addenda;
- H. 00430 Bid Bond;
- I. 00610 Performance Bond;
- J. 00615 Payment Bond;

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:
If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____
(SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in State of Colorado is ____ / ____ / ____.

A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

Phone No. _____ Fax No. _____

E-mail _____

SUBMITTED on _____, 20____.

State Contractor License No. _____ . *[If applicable]*

[This page was left blank intentionally.]

SECTION 00421

PROPOSED CONTRACTOR FIELD STAFF

The following information is submitted giving the names of the key personnel proposed by the Contractor for use on this project. Also provide qualifications and resume for each person along with the number of years with Contractor's organization.

<u>Name</u>	<u>Position</u>
_____	Principal-in-Charge
_____	Project Manager
_____	Project Superintendent
_____	Project Forman

By: _____

Name: _____

Title: _____

Date: _____

END OF SECTION

[This page was left blank intentionally.]

SECTION 00425

SUBCONTRACTOR LISTING

The following information is submitted for each Subcontractor that will be used in the Work if the Bidder is awarded the Agreement. Additional numbered pages shall be attached to this page as required. Each page shall be headed "SUBCONTRACTOR LISTING" and signed. All specialty contractors noted and all work to be subcontracted over \$10,000 shall be listed.

<u>Amount of Subcontract</u>	<u>Name and Address of Subcontractor</u>	<u>Portion of Work</u>
_____	_____	Earthwork _____
_____	_____	_____
_____	_____	_____
_____	_____	Paving _____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Signature

END OF SECTION

[This page was left blank intentionally.]

SECTION 00430

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

**City of Creede Public Works
2223 N. Main Street
Creede, CO 81130**

BID

Bid Due Date:
Description (*Project Name and Include Location*):

BOND

Bond Number:
Date (*Not earlier than Bid due date*):
Penal sum

_____ (Words)

\$

_____ (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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SECTION 00510
NOTICE OF AWARD

Date: _____

Project: **City of Creede Sanitary Sewer Improvements – Phase 1**

Owner: City of Creede

Owner's Contract No.:

Contract:

Engineer's Project No.:

Bidder:

Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for _____

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is _____ Dollars (\$_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

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

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner four (4) executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

Owner
By: _____
Authorized Signature

Title

Copy to Engineer

[This page was left blank intentionally.]

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$ 700 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$ 700 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraph 5.01.A below:

- A. For all Work other than Unit Price Work, a lump sum of: \$ _____

All specific cash allowances are included in the above price in accordance with Paragraph 11.02 of the General Conditions.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.
1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.

- a. 95 percent of Work completed (with the balance being retainage).
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.
- C. Per Colorado Revised Statute 24-91-103, the contractor may elect to substitute securities in lieu of retainage. Securities must be in a form acceptable to Owner.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.
- B. Lien waivers shall be submitted by prime Contractors and all second tier Subcontractors prior to issuance of final payment.
- C. Any Liquidated Damages payable by Contractor may, at Owner's election be deducted from any amounts owed to Contractor. In the event no funds are due Contractor at a time when Contractor becomes liable to Owner for Liquidated Damages, then Contractor agrees to pay all accrued Liquidated Damages to Owner on the first (1st) day and on the fifteenth (15th) day of each month when Contractor is liable to Owner for Liquidated Damages, Permitting Contractor to continue and finish the Work or any part thereof after the deadline for completion of the Work shall not act as a waiver of these Liquidated Damages provisions
- D. The aggregate liability of Contractor to pay Liquidated Damages pursuant to this section shall not exceed an amount equal to fifty percent (50%) of the Contract Price. This Section shall not be construed to limit Contractor's other obligations or liabilities arising under or in connection with this Contract
- E. In the event that this section conflicts with any other provisions regarding liquidated damages within the Contract Documents, this section shall control.

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 1 percent per annum.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 00520-1 to 00520-7, inclusive).
 - 2. Performance bond (pages 00610-1 to 00610-3, inclusive).

3. Payment bond (pages 00615-1 to 00615-4, inclusive).
 4. Other bonds (pages N/A to N/A, inclusive).
 5. General Conditions (pages 00700-1 to 00700-68, inclusive).
 6. Supplementary Conditions (pages 00800-1 to 00800-11, inclusive).
 7. Specifications as listed in the table of contents of the Project Manual.
 8. Drawings consisting of 27 sheets with each sheet bearing the following general title: City of Creede Sanitary Sewer Improvements – Phase 1.
 9. Addenda (numbers _____ to _____, inclusive).
 10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages __ to __, inclusive).
 - b. Documentation submitted by Contractor prior to Notice of Award (pages _____ to _____, inclusive).
 - c. List of other required documents:
 - 1) SRF requirements provide as Appendix A of project manual.
 11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages __ to __, inclusive).
 - b. Work Change Directives.
 - c. Change Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 Terms

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

- A. Intentionally left blank.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

NOTES TO USER

See IB-21, *Signing of Agreement*

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR

By: _____

By: _____

Title: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

License No.: _____

(Where applicable)

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Agent for service of process:

[This page was left blank intentionally.]

**SECTION 00550
NOTICE TO PROCEED**

Date: _____

Project: City of Creede Sanitary Sewer Improvements – Phase 1

Owner: City of Creede

Owner's Contract No.:

Contract:

Engineer's Project No.:

Contractor:

Contractor's Address: *[send Certified Mail, Return Receipt Requested]*

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____.

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Owner

Given by:

Authorized Signature

Title

Date

Copy to Engineer

End of Section

[This page was left blank intentionally.]

SECTION 00610
PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*): SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):
City of Creede Public Works
2223 N. Main Street
Creede, CO 81130

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.
2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 3.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 3.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
 - 3.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
4. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 4.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 4.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
5. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.
6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be

greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

- 6.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
- 6.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
- 6.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located, and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

- 12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
- 12.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 12.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 12.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*)

Surety Agency or Broker:

Owner's Representative (*Engineer or other party*):

END OF SECTION

**SECTION 00615
PAYMENT BOND**

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

**City of Creede Public Works
2223 N. Main Street
Creede, CO 81130**

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

(Seal)
Contractor's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to Owner, this obligation shall be null and void if Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2 Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:
 - 6.1 Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.
7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.
8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

15.1 Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – *(Name, Address, and Telephone)*

Surety Agency or Broker:

Owner's Representative *(Engineer or other)*:

[This page was left blank intentionally.]

Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

**Application For Payment
Change Order Summary**

Approved Change Orders				
Number	Additions	Deductions		
TOTALS				
NET CHANGE BY CHANGE ORDERS				

1. ORIGINAL CONTRACT PRICE	\$ _____
2. Net change by Change Orders	\$ _____
3. Current Contract Price (Line 1 ± 2)	\$ _____
4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate).....	\$ _____
5. RETAINAGE:	
a. X _____ Work Completed	\$ _____
b. X _____ Stored Material	\$ _____
c. Total Retainage (Line 5a + Line 5b)	\$ _____
6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)	\$ _____
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)	\$ _____
8. AMOUNT DUE THIS APPLICATION	\$ _____
9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above).....	\$ _____

Contractor's Certification	
<p>The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.</p>	
By:	Date:

Payment of:	\$ _____	(Line 8 or other - attach explanation of the other amount)
is recommended by:	_____	_____ (Date)
	(Engineer)	
Payment of:	\$ _____	(Line 8 or other - attach explanation of the other amount)
is approved by:	_____	_____ (Date)
	(Owner)	
Approved by:	_____	_____ (Date)
	Funding Agency (if applicable)	

Progress Estimate - Lump Sum Work

Contractor's Application

For (Contract):					Application Number:			
Application Period:					Application Date:			
A		B	Work Completed		E	F		G
Specification Section No.	Description	Scheduled Value (\$)	From Previous Application (C+D)	This Period	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)
Totals								

Progress Estimate - Unit Price Work

Contractor's Application

For (Contract):							Application Number:			
Application Period:							Application Date:			
A					B	C	D	E	F	
Item		Bid Item Quantity	Unit Price	Bid Item Value (\$)	Estimated Quantity Installed	Value of Work Installed to Date	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (F / B)	Balance to Finish (B - F)
Bid Item No.	Description									
Totals										

Stored Material Summary

Contractor's Application

For (Contract):							Application Number:						
Application Period:							Application Date:						
Bid Item No.	A		B		C	D		E	Subtotal Amount Completed and Stored to Date (D + E)	F		G	
	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Storage Location	Description of Materials or Equipment Stored		Stored Previously		Amount Stored this Month (\$)		Incorporated in Work			Materials Remaining in Storage (\$) (D + E - F)
						Date Placed into Storage (Month/Year)	Amount (\$)			Date (Month/Year)	Amount (\$)		
					Totals								

SECTION 00625

CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: **City of Creede Sanitary Sewer Improvements – Phase 1**

Owner: City of Creede | Owner's Contract No.:

Contract: | Engineer's Project No.:

This [tentative] [definitive] Certificate of Substantial Completion applies to:

All Work under the Contract Documents: The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

Amended Responsibilities Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer _____ Date _____

Accepted by Contractor _____ Date _____

Accepted by Owner _____ Date _____

SECTION 00691

CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS

Project: City of Creede Sanitary Sewer Improvements – Phase 1

To Owner:

Agreement Date:

State of County of

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases of Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances of the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

Exceptions:

Supporting Documents Attached Hereto:

- 1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment
2. Separate Release or Waiver of Liens for Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by the list thereof.

END OF SECTION

Contractor: (Name and address)

By: (Signature of authorized representative)

Subscribed and sworn to before me this date:

(Printed name and title)

Notary Public:

My Commission Expires:

[This page was left blank intentionally.]

SECTION 00692

CONSENT OF SURETY TO FINAL PAYMENT

Project: City of Creede Sanitary Sewer Improvements – Phase 1

To Owner: _____

Agreement Date: _____

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the

(Insert name and address of Surety)

_____, SURETY,

on Bond of

(Insert name and address of Contractor)

_____, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to

(Insert name and address of Owner)

_____, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set it hand on this date:

(Insert in writing the month followed by the numeric date and year)

(Surety)

(Signature of authorized representative)

(Printed name and title)

Attest:
(Seal):

END OF SECTION

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



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NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

- c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the

Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete

and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefore.
2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of

the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
 3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefore as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

- c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefore as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefore as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefore as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefore as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

- a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other

party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. *"Or Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a

proposed item of material or equipment will be considered functionally equal to an item so named if:

- a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
- b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefore. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
- 3) will identify:
- a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
 3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;
 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
 - b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.
- B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each

such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents,

Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefore, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefore as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and

other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefore as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability

of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefore as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
 - 1. deny the Claim in whole or in part;
 - 2. approve the Claim; or
 - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor

invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

- b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 2. there is no corresponding adjustment with respect to any other item of Work; and
 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the

Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefore as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 Tests and Inspections

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefore as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefore as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims,

costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefore as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefore as

provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 Progress Payments

A. Applications for Payments:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in

Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefore.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefore. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefore. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 Final Completion Delayed

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment

(for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefore as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
 1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
 - C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
 - D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
 - E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
 - F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION 00800

SUPPLEMENTAL GENERAL CONDITIONS

MODIFICATIONS TO GENERAL CONDITIONS

These Supplementary General Conditions amend or supplement Section 00700, 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.

The terms used in these Supplementary General Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary General Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-2.02 – COPIES OF DOCUMENTS

SC-2.02 - Add the following language at the end of the last sentence of Paragraph 2.02.A. Reproduction costs are as follows:

<u>Complete Set</u>	<u>Cost</u>
Project Drawings with Project Manual (Full Size – 22" x 34")	\$350
Project Drawings with Project Manual (Half Size – 11" x 17")	\$300

SC-4.02 – SUBSURFACE AND PHYSICAL CONDITIONS

SC-4.02 – Add the following new paragraphs immediately after Paragraph 4.02.B:

- C. The following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:
 - 1. N/A
- D. The reports and drawings identified above are not part of the Contract Documents, but the "technical data" contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference. Contractor is not entitled to rely upon any other information and data known to or identified by Owner and Engineer.

SC-4.06 – HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-4.06 – Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the

following:

1. No reports of drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
2. Not Used.

SC-5.04 – CONTRACTOR’S LIABILITY INSURANCE

SC-5.04 – Add the following new paragraph immediately after Paragraph 5.04.B:

- C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
1. Workers’ Compensation, and related coverages under Paragraphs 5.04.A.1 and A.2 of the General Conditions
 - a. State: Statutory
 - b. Applicable Federal (e.g., Longshoreman’s): Statutory
 - c. Employer’s Liability \$1,000,000 each person
 2. Contractor’s General Liability under Paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of Contractor
 - a. General Aggregate: \$2,000,000
 - b. Products – Completed Operations Aggregate: \$2,000,000
 - c. Personal and Advertising Injury \$1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage: \$1,000,000
 - e. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages where applicable.
 - f. Excess or Umbrella Liability
 - General Aggregate \$5,000,000
 - Each Occurrence \$5,000,000
 3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:
 - a. Bodily Injury:
 - Each Person \$1,000,000
 - Each Accident \$2,000,000
 - b. Property Damage:
 - Each Accident \$1,000,000

- c. Combined Single Limit of: \$1,000,000
4. The Contractual Liability coverage required by Paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:
- a. Bodily Injury:
 - Each Person \$2,000,000
 - Each Accident \$2,000,000
 - b. Property Damage:
 - Each Accident \$2,000,000
 - Annual Aggregate \$2,000,000

SC-5.05 – OWNER’S LIABILITY INSURANCE

SC-5.05 – Delete Paragraph 5.05.A in its entirety and insert the following in its place:

- A. In addition to the insurance required to be provided by the Contractor under Paragraph 5.04, Contractor shall purchase and maintain Owner’s liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents. The policy shall not be less than \$1,000,000. Contractor may purchase Owner’s liability insurance as a separate policy or include under Contractor’s own liability insurance policy.

SC-5.06 – PROPERTY INSURANCE

SC-5.06 – Delete Paragraph 5.06.A in its entirety and insert the following in its place:

- A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any deductible or self-insured retention. The insurance shall:
 - 1. include the interests of Owner, Contractor, Subcontractors, Engineer and the officers, directors, partners, employees, agents, and other consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or loss payee;
 - 2. be written on a Builder’s Risk “all risk” policy from that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism, and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and

Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by these Supplementary Conditions.

SC-6.06 – CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS

SC-6.06 Add new paragraph immediately after Paragraph 6.06.B:

1. When required in the Contract Documents the Contractor shall identify with bid all Subcontractors, Suppliers, or other individual or entities listed in specification sections 00425 Subcontractor Listing and 00450 Product Manufacturer List, for review and acceptance by Owner. Owner reserves the right to request additional information for any Subcontractors, Suppliers, or other individual or entities listed after submission of bid and prior to bid award that Owner deems necessary, such as an experience statement with pertinent information regarding similar projects and other evidence of qualification.
2. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the Bid.
 - i. If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest responsible Bidder that proposes to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner and Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in paragraph 6.06 of the General Conditions.
 - ii. Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

SC-6.06H and SC-6.06I - Add the following new paragraphs immediately after Paragraph 6.06.G:

- B. The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.
- C. Owner may furnish to any Subcontractor or Supplier, to the extent

practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

SC-6.10 – TAXES

SC-6.10 – Add a new paragraph immediately after Paragraph 6.10.A:

- B. Owner is exempt from payment of sales and compensating use taxes of the State of Colorado and of cities and counties thereof on all materials to be incorporated into the Work.
 - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 - 2. Owner 's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

SC-6.17 – SHOP DRAWINGS AND SAMPLES

SC-6.17 – Add the following new paragraphs immediately after Paragraph 6.17.E:

- F. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
- G. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer's charges for its review time unless the need for such change is beyond the control of Contractor.

SC-9.03 – PROJECT REPRESENTATIVE

SC-9.03 – Add the following new paragraphs immediately after Paragraph 9.03.A:

- B. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:
 - 1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared

by Contractor and consult with Engineer concerning acceptability

2. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meeting, job conferences and other project related meetings, and prepare and circulate copies of minutes thereof.
3. *Liaison:*
 - a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, assist in providing information regarding the intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
4. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed to transmit to Contractor clarifications and interpretations as issued by Engineer.
5. *Shop Drawing and Samples:*
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
6. *Modifications:* Consider and evaluate Contractor's suggestions for modifications on Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.
7. *Review of Work and Rejection of Defective Work:*
 - a. Conduct on-Site observations of Contractor's work in progress and assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does

not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

8. *Inspections, Tests, and System Startups:*

- a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
- b. Observe, record, and report to Engineer appropriate details relative to the test procedures and system start-ups.

9. *Records:*

- a. Record names, addresses, fax numbers, email addresses, website locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of material and equipment.
- b. Maintain records for use in preparing Project documentation.

10. *Reports:*

- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

11. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data

required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. *Completion:*

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
- b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied.
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.

C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
2. Exceed limitations of Engineer's authority as set forth on the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing of Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

SC-12.03 – DELAYS

SC-12.03.C—Add the following new paragraphs immediately after paragraph 12.03.C:

1. The Owner and Contractor are both aware that a substantial portion of the construction may be conducted during winter weather conditions, and that extremely variable and severe weather conditions are typical for the site of the Work:

2. The Contractor expressly agrees that the Contract Price is based on completion of the Work within the times specified in the Agreement and under weather conditions typically encountered during the contemplated construction period at the site of the Work.
3. For purposes of evaluating requests for extensions of time due to abnormal or unusually severe weather conditions, the following conditions, and no others, will be considered abnormal:
 - a. Precipitation exceeding the historical mean for the months of the construction period by more than two standard deviations
 - b. For winter construction, average temperature less than the historical mean for the months of the construction period by more than two standard deviations
 - c. For winter construction, number of days below freezing exceeding the historical mean for the months of the construction period by more than two standard deviations
 - d. Exceeding the historical mean by more than two standard deviations is: the occurrence of a precipitation event; or period of average temperature or days below freezing for winter construction that is calculated to be above, below or greater than the historical mean by more than plus or minus 47.5 percent of a normal frequency distribution curve or conditions outside a total range of 95.0 percent of the historical mean
 - e. Isolated abnormal weather occurrences of a severely destructive nature, which in fact, cause such destruction at the site of the Work
4. For the purpose of determining mean conditions, all available data contained in the records of the National Weather Service for reporting from Boulder, Colorado, as well as data available from the State Climatologist for the same areas.
5. The Contractor further agrees that should a request for time extension due to abnormal weather conditions, the Contractor shall submit all necessary historical and detailed daily data during the construction period to support the claim.”

SC-14.04 – SUBSTANTIAL COMPLETION

SC-14.04.F – Add the following new paragraph immediately after paragraph 14.04.E:

- A. Substantial completion for this Project shall include completion and acceptance of all Contract Work with the following exceptions:
 1. Contract Closeout per Section 01700
 2. Finish Grading and Restoration per Section 02700

SC-ARTICLE 17 - MISCELLANEOUS

SC-17.05.A – Delete paragraph 17.05.A in its entirety and insert the following in its place:

- A. This Contract is to be governed by the law of the state and county in which the Project is located.

SC-17 – Add the following sections after paragraph 17.06:

17.07 Arbitration

- A. 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.

17.08 Waiver

- A. 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 or 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.

17.09 Severability

- A. Any provision or part of the Contract Documents held to void or unenforceable under and Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

SC-ARTICLE 18 PROJECT CONSIDERATIONS

SC-18 – Add the following ARTICLE 18

ARTICLE 18 – PROJECT CONSIDERATIONS

18.01 WORK BY ILLEGAL ALIENS PROHIBITED – STATE REQUIREMENT

Work By Illegal Aliens Prohibited. Pursuant to Section 8-17.5-101, C.R.S., et. seq., as amended, Contractor warrants, represents, acknowledges, agrees and certifies that:

- A. Contractor does not knowingly employ or contract with an illegal alien who will perform work under this agreement. Contractor shall not knowingly 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 who will perform work under this Agreement.
- B. Contractor will participate in the electronic employment verification program created in Public Law 208, 104th Congress, as amended, and expanded in Public Law 156, 108th Congress, as amended, and jointly administered by the Department of Homeland Security and the Social Security Administration, or its successor program (hereinafter, "E-Verify Program") or will participate in the "Department Program" as established in §8-17.5-102(5)(c), C.R.S., as amended, in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under this Agreement.
- C. Contractor has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this agreement through participation in the E-Verify Program or the Department Program.
- D. Contractor shall not use either the E-Verify Program or the Department Program procedures to undertake pre-employment screening of job applicants while this Agreement is being performed.
- E. 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:
 - 1. notify the subcontractor and the Owner within three (3) days that Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and
 - 2. 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.
- F. If Contractor participates in the Department Program, Contractor shall provide a notarized written affirmation to Owner that Contractor has, as required by the Department Program, examined the legal work status of employees hired to perform

work under this Agreement and shall comply with all other requirements of the Department Program. (A sample contract affirmation may be obtained at:
<http://www.coworkforce.com/lab/pcs/default.asp>)

- G. Contractor shall comply with any reasonable request by the Colorado Department of Labor and Employment ("Department") made in the course of an investigation that the Department is undertaking pursuant to its legal authority.
- H. Nothing in this Addendum shall be construed as requiring Contractor to violate any terms of participation in the E-Verify Program.
- I. If Contractor violates this clause, the Owner 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 Owner arising out of said violation.

18.02 WARRANTY AND WARRANTY INSPECTION

All materials and workmanship shall be warranted for a minimum of two (2) years from Substantial Completion, except as extended by standard manufacturer warranty and/or by required extension stated in the technical specifications. At the Owner's discretion, a warranty inspection will be held during the sixty (60) calendar days prior to the expiration of the 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.

END OF SECTION

**SECTION 00940
WORK CHANGE DIRECTIVE**

No. _____

Date of Issuance: _____ Effective Date: _____

Project: City of Creede Sanitary Sewer Improvements – Phase 1	Owner: City of Creede	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

Contractor is directed to proceed promptly with the following change(s):

Item No.	Description

Attachments (list documents supporting change):

Purpose for Work Change Directive:

Authorization for Work described herein to proceed on the basis of Cost of the Work due to:

- Non-agreement on pricing of proposed change.
- Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

Estimated change in Contract Price and Contract Times:

Contract Price \$ _____ (increase/decrease) Contract Time _____ (increase/decrease)
days

Recommended for Approval by Engineer:	Date
Authorized for Owner by:	Date
Received for Contractor by:	Date
Received by Funding Agency (if applicable):	Date:

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**SECTION 00941
CHANGE ORDER**

No. _____

Date of Issuance: _____ Effective Date: _____

Project: City of Creede Sanitary Sewer Improvements – Phase 1	Owner: City of Creede	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.:

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:

CHANGE IN CONTRACT TIMES:

Original Contract Price:

\$ _____

Original Contract Times: Working days Calendar days
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved
Change Orders No. ____ to No. ____:

\$ _____

[Increase] [Decrease] from previously approved Change Orders
No. ____ to No. ____:

Substantial completion (days): _____
Ready for final payment (days): _____

Contract Price prior to this Change Order:

\$ _____

Contract Times prior to this Change Order:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

Contract Price incorporating this Change Order:

\$ _____

Contract Times with all approved Change Orders:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

RECOMMENDED:
By: _____
Engineer (Authorized Signature)

ACCEPTED:
By: _____
Owner (Authorized Signature)

ACCEPTED:
By: _____
Contractor (Authorized Signature)

Date: _____

Date: _____

Date: _____

Approved by Funding Agency (if applicable):

Date: _____

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

DIVISION 1



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SECTION 01000

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. The Contractor shall be responsible for compliance with all items specified herein. This Section is in addition to items in the General Conditions.
- B. Work to be done under this Contract consists of furnishing all labor, materials, equipment and incidental items and performing all operations necessary to complete the Work in accordance with the Drawings and Specifications.
- C. The Bidder is required to examine carefully the site of the proposed Work, the Drawings and Specifications. He shall satisfy himself as to the character, quality and quantities of work to be performed, materials to be furnished and the requirements of these Specifications. The submission of a Bid Proposal shall be evidence that the Bidder has made such an examination.

1.02 PARTNERING

- A. The Contractor, Engineer and Owner shall agree to a partnering process during the construction of the project to:
 - 1. Improve the working environment;
 - 2. Reduce and rapidly resolve disputes;
 - 3. Produce a high quality product; and
 - 4. Eliminate or reduce delays.
- B. These goals can be obtained by mutually agreeing to a cooperative strategy of commitment and honest communication. By creating trust and working as a team, all parties will benefit in producing high quality which will result in successful completion of the work.
- C. Problem solving will be created by a working relationship where understanding, trust and mutual cooperation are prime concerns.
- D. However, partnering does not include relaxing or waving the requirements of the contract documents.
- E. If there is an error or oversight, or a change is suggested by the contractor that will produce a product equal to or better than that specified or shown, the parties will work together to determine the best approach while maintaining quality in the construction.
- F. Any changes to the project affecting project time or contract price require Agency concurrence and will be implemented by Change Order so approved.

- G. All parties shall be committed to maintaining a positive attitude towards partnering and timely decision making.

1.03 VALUE ENGINEERING

- A. Prior to issuing Notice to Proceed, a one-day value engineering and value construction Workshop will be conducted by Engineer with Owner and Contractor prior to start of construction. The intent of the Workshop will be to evaluate alternative equipment or designs identified and proposed by Contractor from those provided in the Contract Documents that may reduce the cost of the Project and still maintain the as-bid design intent. The number of value engineering items to be evaluated and reviewed by Engineer will be limited to a maximum of 5.
- B. Contractor must submit in writing to Engineer, and for review by Owner, value engineering proposals for modifying plans, specifications, or other requirements of this Contract for the sole purpose of reducing total cost of construction. The cost reduction proposals shall not impair in any manner the essential functions or characteristics of the project, including, but not limited to, service life, economy of operation, ease of maintenance, desired appearance or design and safety standards. The attached Exhibit (at the end of this specification section) is to be utilized for documentation and submission of the proposed modifications and is to be completed by the contractor prior to the workshop.
- C. Owner has the authority to accept or reject cost reductions proposed by Contractor.
- D. Value Engineering Cost Reduction Proposals (VECP) shall contain the following information:
 - 1. A description of both existing Contract requirements for performing Work and proposed changes.
 - 2. An itemization of Contract requirements that must be changed if proposal is adopted.
 - 3. A detailed estimate of the cost of performing the Work under the existing Contract and under the proposed change.
 - 4. A statement of time within which Owner must make a decision thereon, if applicable.
 - 5. Contract items of Work affected by proposed changes, including any quantity variation attributable thereto.
- E. Four (4) copies of the VECP shall be submitted to Engineer who will retain three copies and send one for approval to Owner. If approved, two copies will be stamped and approved by both Owner and Engineer. Engineer will return one approved copy to Contractor. If not approved, Engineer and Owner will retain one copy for their files and return a rejected copy to Contractor.
- F. Contractor shall continue to perform Work in accordance with requirements of the Contract until an executed field directive or change order, incorporating a cost reduction proposal has been issued.

1.04 DRAWING ACCURACY AND EXISTING UTILITIES

- A. Every effort has been made to identify and verify all existing facilities and utilities. However, some of this information may have been taken from old drawings and utility company maps pertinent to the site.
- B. 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.

1.05 ABBREVIATIONS

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

B.

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.
ASTM	American Society for Testing & Materials
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 Specification
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
OSHA	Occupational Safety and Health Act (Federal and/or State)
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.

1.06 STANDARD SPECIFICATION REFERENCE

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

1.07 CONSTRUCTION STAKING

- A. The Engineer on behalf of the Owner will provide one time control survey at the project site. Control survey will consist of three (3) control points for horizontal and vertical control as shown on Contract Drawings.
- B. The contact for the control survey is Tim Barnett of SGM (970) 403-0253.
- C. Any re-staking of control points will be done at request of Contractor on a time and materials basis.
- D. The contractor may self-perform or subcontract construction layout work, provided that contractor satisfactorily proves to the Engineer that their designated layout person has the proper training and experience.
- E. The Contractor shall be responsible for paying their surveyor directly.
- F. The Contractor shall be responsible for coordinating all survey efforts.

1.08 PERMITS AND EASEMENTS

- A. The Contractor shall obtain an Electrical Permit from the State of Colorado. The Contractor will be responsible for coordinating inspections and meeting permit.
- B. Contractor shall obtain a Colorado Department of Public Health and Environment (CDPHE) Stormwater Discharge permit and a Construction Dewatering permit.
- C. Contractor will be fully responsible for implementing, maintaining, and meeting all requirements of all permits related to the project
- D. The Owner shall provide permanent construction and maintenance easements, where required. Maps of these easements will be included on the Construction Drawings.
- E. 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, in writing, for such access rights. All other permits required should be secured prior to commencement of Work at the Contractor's own expense.
- F. The successful Contractor will be required to obtain a local Contractor's license for construction operations. Proof of insurance shall be required.
- G. The successful Contractor will be required to obtain any and all permits necessary for this project.

1.09 SUBSTITUTION OF MATERIALS

- A. 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 (see Article 6, General Conditions). Any deviation from the Drawings and Specifications shall be accompanied by a written directive of the Engineer or his representative.

1.10 CONTROLLED AREA OF WORK

- A. The Contractor shall confine all the construction work, storage of materials 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.

1.11 TEMPORARY FACILITIES

- A. 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, internet, etc. Contractor shall provide a field office for the Owner, Engineer and Representatives of Engineer as outlined in Section 01500.

1.12 CLEAN-UP

- A. The Contractor will be responsible for 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, 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.

1.13 SUBMITTALS

- A. The Contractor shall submit a minimum of five (5) sets of submittal data, as defined in Section 01340 Shop Drawings. Submittals shall be required on all materials having quality or dimension requirements as well as on all mechanical equipment or as called for in the Specifications. At a minimum, the Engineer will retain two (2) sets plus an additional one (1) set for the Owner.

1.14 JOB SITE RESTRICTIONS

- A. Salvage. The contractor shall remove and provide the materials listed below to the Owner. All other materials to be removed or demolished at the project site shall be disposed of by the Contractor at an approved off premises disposal site.
 - 1. N/A.
- B. Staging Area. There is limited space on the Owner's property available for Contractor staging or storage area. The Contractor will be responsible for locating, securing and paying for any additional offsite area needed.
- C. Disposal Area. Some spoils will be used for re-grading Owner's property. All other materials shall be disposed of off-site at approved disposal sites.
- D. Working Hours. Work will normally be permitted after 7:00am until 5:00pm, Monday thru Friday. Other work hours must be approved by Engineer in writing. Work may be permitted on Saturday and Sunday with Owner approval. If approved by Owner, written notice must be provided a minimum of 48 hours prior to this work that outlines all work items that will be performed. The Contractor will be responsible for paying overtime

rates (1.5 x the standard hourly rate) for Owner, Owner's Representative and Engineer for work necessitated by construction activities outside the permitted work hours.

1.15 SAFETY REQUIREMENTS

- A. 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.

1.16 LAWS AND ORDINANCES

- A. 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 agents against any claim arising from the violations of any such laws, ordinances and regulations, whether by the Contractor or his employees.
- B. 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 therefrom.

1.17 PROTECTION OF PUBLIC UTILITIES AND OTHER ADJOINING PROPERTY

- A. 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 Engineer. If utility service must be interrupted, the Contractor shall notify the head of local administrative services (i.e., City Manager, Mayor, 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 Engineer.

1.18 PROJECT PHOTOGRAPHS/VIDEOS

- A. 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 Engineer prior to the start of work. Any potential problems should be identified at that time.
- B. 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.

1.19 DAMAGE TO CONSTRUCTION

- A. 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.

EXHIBIT
VALUE ENGINEERING AND VALUE CONSTRUCTION FORM

[Project Name]	AREA			
[Project Code]	IDEA NO.			
	ITEM			
<u>Original Concept:</u> 				
<u>Proposed Concept:</u> 				
<u>Advantages:</u> Reduced capital costs. 				
<u>Risks/Disadvantages:</u> 				
<u>Notes:</u> 				
	Cost Summary			
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; padding: 5px;">Alternative 1</td> <td style="width: 25%; padding: 5px;">Alternative 2</td> <td style="width: 25%; padding: 5px;">Alternative 3</td> </tr> </table>	Alternative 1	Alternative 2	Alternative 3
Alternative 1	Alternative 2	Alternative 3		
Initial Costs – Original				
Initial Costs – Proposed				
Initial Savings				
Net Annual Costs – Original				
Net Annual Costs – Proposed				
Annual O & M Savings				
Total Annual Savings				
Present Worth - Savings (P/A, 7%, 20 yr)				

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

- A. This project consists of improvements to selected pipe runs in the existing City of Creede sanitary sewer collection system. It is important to note that the existing collection system and sanitary sewer connections must remain online throughout construction. Temporary shutdowns are possible but must be coordinated through the public works department and individual homeowners. This project more specifically involves the following:
1. Demolition and replacement of the identified sanitary sewer main runs, including replacement of bedding material.
 2. Connection of proposed sewer piping to existing manholes.
 3. Reconnection of sanitary sewer services to proposed sewer pipe main lines.
 4. Capping of sewer mains with no terminal manhole.
 5. Provision of bypass pumping for sewer services during construction period to maintain service in the work vicinity, as needed.

1.02 CONTRACTOR'S RESPONSIBILITIES

In addition to all the requirements of the Standard General Conditions and other Contract Documents:

- A. Supervision:
1. The Contractor will supervise and direct the Work. He will be solely responsible for the means and methods, techniques, and procedures of construction.
 2. The Contractor will employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor and the Contractor's representative at the site.
 3. 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.
 4. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the Work.
 5. The supervisor shall not be changed except with the consent of the Engineer, unless the supervisor has proven to be unsatisfactory to the Contractor and ceases to be in his employ.
- B. Subcontracting
1. The Contractor may utilize the services of specialty Subcontractors on those parts of the Work, which under normal contracting practices are performed by specialty Subcontractors.
 2. The Contractor shall not award work to Subcontractor(s) in excess of the amount specified in the Supplemental General Conditions without prior written approval of the Owner.

3. The Contractor shall be fully responsible to the Owner for the acts and omissions of his Subcontractors, and or persons either directly or indirectly employed by them, as he is for the acts of persons directly employed by him.
4. The Contractor shall cause appropriate provisions to be inserted in all Subcontracts relative to the Work to bind Subcontractors to the Contractor 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.
5. Nothing contained in this Contract shall create any contractual relations between any Subcontractor and the Owner.

C. Safety and Protection

1. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - a. All employees on the Work and other persons who may be affected thereby;
 - b. All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and
 - c. Other property at the site or adjacent thereto, including, but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.
2. Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

D. Contractor's Use of Premises

1. Owner controls all lands upon which the Work is to take place. The Contractor shall not enter upon private property for any purpose without first obtaining written permission. A copy of the document giving Contractor permission to enter private property along with all terms of this agreement shall be transmitted to the Owner prior to entering property. Contractor shall be responsible for the preservation of all public and private property, trees, fences, monuments, underground structures, etc., on and adjacent to the site and shall use every precaution necessary to prevent damage or injury thereto. He shall protect carefully from disturbance or damage, all land monuments and property corners until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed. He shall be responsible for all damage or injury to property of any character resulting from any act, omission, neglect or misconduct in his or any Subcontractor's manner, or method or executing said Work, due to this or any Subcontractor's non-execution of said Work, or at any time due to defective work or materials, and said responsibility shall not be released until the Work shall have been completed and warranty period expired.
2. The Contractor shall be responsible for all utilities required for construction at no cost to the Owner.
3. Necessary sanitary conveniences for the use of project personnel shall be properly secluded from public observation and shall be erected and maintained by the Contractor at such points acceptable to the Engineer.

1.03 OWNER COORDINATION AND NOTIFICATION

- A. The Contractor shall coordinate his efforts with the Owner so as to minimize disruption of existing service and inconvenience to other adjacent contractors and adjacent property owners.
 - 1. Set forth proposed work sequence and schedule in accordance with Section 01310 - Construction Schedules.
- B. Contractor shall notify Owner a minimum of 48 hours in advance of any efforts needing coordination and/or special inspection by Owner or their representative. Such efforts include but are not limited to:
 - 1. Utility tie-ins.
 - 2. Utility relocations
 - 3. Service/access interruptions
 - 4. Process interruptions.

1.04 SEQUENCE OF WORK

- A. Construction Sequencing: Work efforts, commissioning and decommission of the Work herein described will include a critical sequence of work. Contractor shall take into account this sequence when preparing bid and the successful Bidder shall include this sequence in the construction schedule. Coordination of Work necessary to meet the construction sequence as discussed below is the responsibility of the Contractor. The Engineer and Owner shall be updated prior to start and completion of each phase.
- B. This project is a replacement of existing sanitary sewer main pipelines and, as such, the current sanitary sewer connections must be continuously maintained throughout construction. Temporary short-term shutdowns of individual segments are possible. All shutdowns shall be coordinated with the Public Works Department with a minimum 48-hour notice.
- C. The Contractor shall develop his own sequence of Work to minimize construction time, site disturbances and interruptions of existing sanitary sewer collection operations. Testing and startup schedule and sequence shall be thoroughly discussed and coordinated with Engineer and Owner. A suggested general sequence of Work is outlined below.
 - 1. General Considerations
 - a. This project is the replacement of existing sanitary sewer mainlines throughout the City of Creede collection system.
 - b. Sanitary services must be continuously connected and collected.
 - c. All tie-ins shall be thoroughly coordinated with Public Works Department operations staff.
 - d. Sanitary sewer line replacement occurs throughout the City collection system and is not all contiguous. Contractor should be aware that construction will need to consider the typical tourist season in the City. Contractor shall present the proposed sequencing plan for Engineer and Owner review prior to construction.
- D. Procedures and methods other than those specified will be considered by Engineer and Owner, provided they afford equivalent continuity of operations.

- E. Submit and update Progress Schedules and sub-schedules in accordance with Section 01310 - Construction Schedules.
- F. Discuss Sequence of Work and Notice Required at Progress Meetings.
 - 1. Review with and obtain Engineer's and Owner's input to Contractor's initial scheduling of Work sequence during preconstruction conference.
 - 2. Review any changes in scheduling at regularly scheduled progress meetings.
 - 3. Schedule additional construction meetings required to discuss Work sequence.
 - 4. Refer to Section 01310 Construction Schedules for additional requirements on Progress Schedules.
- G. Inspection by public agencies.
 - Provide proper facilities for such access and inspection.
- H. It will be the Contractor's responsibility to schedule and sequence his activities so as to best meet environmental conditions imposed by winter weather.
- I. The Contractor shall coordinate his efforts with each Subcontractor so as to avoid conflicts and Work slowdowns.

PART 2 PRODUCTS

2.01 OWNER FURNISHED MATERIAL

- 1. Intentionally left blank.

2.02 MAINTENANCE OF ACCESS

- A. Conduct Work to interfere as little as possible with public or private travel, whether vehicular or pedestrian and with City personnel duties.
 - 1. Whenever it is necessary to cross, close, or obstruct roads, driveways and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
 - 2. Give owners of private drives reasonable notice (minimum 48 hours) before interfering with accesses.

PART 3 EXECUTION

3.01 FENCES

- A. Maintain all fences affected by the Work until completion of the Work.
- B. Do not relocate or dismantle fences that interfere with construction operations before obtaining written permission from the fence owner with an agreement as to the length of time the fence may be left relocated or dismantled.
- C. At the completion of Work, replace fences to their pre-construction condition or better and to their pre-construction location unless otherwise indicated on drawings or in specifications.
- D. Refer to construction drawings for additional requirements.

3.02 UNDERGROUND OBSTRUCTIONS

- A. Protect from damage any underground pipes, utilities, or structures encountered during construction.
- B. Restore any damaged underground obstructions to their original condition at no cost to the Owner unless evidence of other arrangements satisfactory to all parties is presented to the Owner.
- C. Before commencing Work, obtain information concerning location, type, and extent of concealed existing utilities on the site and adjacent properties.
 - 1. Consult records and personnel of local utility companies, municipal utility departments, telephone companies, and cable television company.
 - 2. File "Notice of Excavation" with these agencies prior to commencing Work.
- D. Underground obstructions known to the Engineer are shown on the Drawings or otherwise referred to in the Specifications.
 - 1. Locations shown may prove to be inaccurate and other obstructions not shown may be encountered.
 - 2. Contractor is responsible to verify actual locations and to protect or restore all underground obstructions encountered.

END OF SECTION

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SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

This section describes the procedure for Application for Payment by the Contractor. This section establishes the basis of payment, application format, application content and application review process required by the Owner before they will process the application for actual payment.

1.02 RELATED SECTIONS

- A. Section 00520 – Agreement
- B. Section 00620 – Contractor's Application for Payment
- C. Section 00700 - General Conditions: Progress Payments, Retainage and Final Payment
- D. Section 00800 - Supplemental General Conditions
- E. Section 01700 - Contract Closeout

1.03 FORMAT AND DATA REQUIRED

- A. Submit Applications for Payment and all other required forms and information to the Engineer.
- B. Provide itemized data on continuation sheets.
- C. Format, schedules, line items, and values: Those of the approved Schedule of Values.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Prepare Application for Payment and all other required information to Engineer in accordance with terms and schedule established in the General Conditions, Supplemental General Conditions and the Agreement Between Owner and Contractor, or as otherwise negotiated between Owner and Contractor.
- B. Application Form
 - 1. Required information completed, including that for Change Orders executed prior to the date of submittal of application.
 - 2. Summary of dollar values to agree with the respective totals indicated on the continuation sheets.
- C. Continuation Sheets
 - 1. Total list of all scheduled component items of Work, with item number and the scheduled dollar value for each item.

2. Dollar value in each column for each scheduled line item when work has been performed.
 3. Each Change Order executed prior to the date of submission shall be listed at the end of the continuation sheets.
 4. List by Change Order number and description as for an original component item of work.
- D. Contractor shall execute certification with the signature of a responsible officer of the Contractor's firm.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

- A. When Owner or Engineer requires substantiating data, Contractor shall submit suitable information with a cover letter identifying:
1. Project name and number.
 2. Application number and date.
 3. Detailed list of enclosures.
- B. Submit one (1) copy of data and cover letter for each copy of application.

1.06 SCHEDULE OF VALUES

- A. Refer to General Conditions for requirements.
- B. Where payment is to be based on unit bid prices, correlate Schedule of Values with bid items.
- C. Where payment is to be based on fixed price, correlate Schedule of Values with divisions and sections of specifications, unless otherwise approved by the Engineer.
- D. 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 Work on that item. Adequate detail shall be given to allow a value to be placed on Work completed during any given pay estimate. Where payment is to be based on unit Bid prices, correlate schedule of values with divisions and sections of Specifications, unless otherwise approved by the Engineer.
- E. If separate payment is requested for materials suitably stored but not installed, paid invoices for the item shall be submitted.
- F. The Schedule of Values line item for mobilization shall be paid for as a lump sum and shall include all fixed costs for the Work; by way of example, mobilization and demobilization, bond and insurance costs, etc. The first partial pay request shall include not more than 75% of this Bid amount; 25% of this Bid amount shall be paid on the final pay request.

1.07 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Contractor shall complete Application form as specified for progress payments.

- B. Continuation sheets used for presenting the final statement of accounting as specified in Section 01700-Contract Closeout.

1.08 SUBMITTAL PROCEDURE

- A. Submit Application for Payment and all required information to Engineer for review in accordance with the established schedule. Application and all related forms shall be properly executed by signature of a responsible officer of the Contractor's firm.
- B. Engineer to review and verify Application for Payment within established schedule. Contractor shall make corrections noted by Engineer and re-submit three copies of Application to Engineer.
- C. When Engineer finds the Application complete and correct, Engineer will transmit two copies of the complete Application packet to Owner for processing.

1.09 BASIS OF PAYMENT

Progress payments will be made on the basis of Engineer's opinion of completed work of individual project components, plus suitably stored materials on-hand, per the approved Schedule of Values and in accordance with the terms of the General Conditions and Agreement

A. LUMP SUM PRICES

- 1. Where lump sum prices are given for a described portion of the work, that price shall cover all materials, equipment and labor necessary to acquire, deliver, store and install that portion of the work, complete and in place, as shown and indicated in the drawings and as described in the Project Manual.
- 2. Quantities given in the bid form are estimates for the purpose of evaluating bids. Consequently, some differences may arise in actual and bid quantities.
- 3. Quantities given for lump sum items, including earthwork, are estimates only. The Contractor should satisfy himself as to the actual quantities required to complete the work described in the plans and these specifications. Unit costs for earthwork will not be employed to determine payment.

B. UNIT PRICE BID ITEMS

- 1. Payment for work included in unit price bid items shall be based on the completed value of each unit in such quantity actually installed as measured and determined by the Engineer unless the approved Schedule of Values provides sufficient detail for measurement and payment of partial progress of work.
- 2. Unit pricing shall include all materials, equipment and labor necessary to complete the bid item as shown and indicated in the project documents.
- 3. Quantities given in the bid form are estimates for the purpose of evaluating bids. Consequently, some differences may arise in actual and bid quantities.
- 4. Contractor or Owner may request re-negotiation of Unit Price for an item if the actual field measured work done for that item differs from the estimated quantity by more than 50% under the following terms:
 - a. Contractor shall not make any claim for damages for any work item for which the actual field measurement does not differ from the estimated quantity by more than 50%, higher or lower.

- b. Re-negotiated Unit Prices shall be based on actual costs to Contractor for the specific work item plus a reasonable allowance for overhead and profit.
 - c. Re-negotiating the Unit Price shall not increase or decrease the Unit Price by more than 10 percent.
 - d. Contractor shall submit to Owner satisfactory data substantiating the actual costs and overhead rate to perform the Work covered by the Unit Price being re-negotiated.
5. No payment will be made if the entire bid item is unused.

C. MINOR CONTRACT REVISIONS

- 1. If provided on the Bid Schedule, the Minor Contract Revisions line item is for the sole use of Owner at Owner's discretion for changes to the project.
- 2. The Contractor's shall include the dollar amount provided by the Owner for Minor Contract Revisions in his base bid total.
- 3. The intent of this line item is to provide the Owner's designated project manager a mechanism to approve minor changes to the work, either from Contractor requested changes or from Owner modification, without unnecessary project delay and without further approval by the Owner.
- 4. The Owner shall retain all unused monies in this line item.
- 5. The Owner shall direct Contractor in writing when this line item is to be used along with the amount to be included in the Application for Payment.

D. ALLOWANCES

- 1. If provided on the Bid Schedule, an Allowance line item is for the sole use of Owner at Owner's discretion for changes to the project.
- 2. Allowance line items shall be administered per conditions of GC-11.02.
- 3. The Owner shall direct Contractor in writing when this line item is to be used along with the all pertinent specifying information for purchase by contractor.
- 4. Contractor shall submit purchase receipts documenting the cost of owner requested materials with pay application for reimbursement.

E. STORED MATERIALS

- 1. If separate payment is requested for materials suitably stored but not installed, paid invoices for the materials shall be submitted.
- 2. Stored materials will be paid at invoice cost plus a maximum of ten percent markup to cover submittals, delivery and handling.
- 3. Requests for materials stored offsite must be approved by Engineer. Request must contain name and address of storage location, property owner, insurance summary covering equipment, description of measures to protect equipment from physical and environmental damage, photo documentation of protection in place and identification of material (Owner, project and equipment), and letter granting Owner legal right to entry and retrieval of materials.

1.10 BID ITEMS

A. Bid Item #1 – Phase 1A Sewer Replacements

- 1. Description
 - a. This line item is for the complete installation of proposed 6" and 8" diameter sanitary sewer mains under Phase 1A as described in the project documents.

2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials and equipment involved with the supply, construction and installation of the proposed 6" and 8" diameter sanitary sewer mains as required and specified in the project documents, complete and in place.
 - b. This item includes required removal of existing 6" and 8" diameter sanitary sewer main lines.
 - c. This line item includes restoration of all surface improvements.
 3. Payment Basis
 - a. Lump Sum
- B. Bid Item # 2 – Phase 1A Sewer service reconnection
1. Description
 - a. This line item is for the reconnection of existing sanitary sewer services on main lines which are being replaced under this project under Phase 1A as described in the project documents.
 2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials and equipment involved with the removal, supply, and installation of sanitary service connections, complete and in place.
 3. Payment Basis
 - a. Each
 4. Estimated Quantity
 - a. Approximately 46 existing sanitary sewer service connections require reconnection.
- C. Bid Item # 3 – Phase 1A Sanitary cleanout replacements and installation
1. Description
 - a. This line item is for the removal, supply and installation of sanitary cleanout replacements in Phase 1A as described in the project documents.
 2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials, and equipment involved with the removal, supply, and installation of sanitary sewer cleanouts, complete and in place.
 - b. This includes new cleanout ACA-1 to be installed near manhole AC-1.
 3. Payment Basis
 - a. Each
 4. Estimated Quantity
 - a. Approximately 4 sanitary cleanouts require removal and replacement in Phase 1A.
- D. Bid Item # 4 – Phase 1A Temporary Bypass Measures
1. Description
 - a. This line item is for the supply and installation of temporary bypass measures required to keep all sanitary services active throughout construction of Phase 1A.
 2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials and equipment involved with the supply, installation, maintenance and operation of temporary

bypass measures for maintaining sanitary services active during construction, complete and in place.

3. Payment Basis
 - a. Lump Sum
- E. Bid Alternate #1 – Phase 1B Sewer Replacements
1. Description
 - a. This line item is for the complete installation of proposed 6” diameter and 8” diameter sanitary sewer mains under Phase 1B as described in the project documents.
 2. Specific inclusions, exclusions, or special considerations.
 - a. This line item shall include all labor, materials and equipment involved with the supply, construction and installation of the proposed 6” and 8” diameter sanitary sewer mains as required and specified in the project documents, complete and in place.
 - b. This item includes required removal of existing 6” diameter and 8” diameter sanitary sewer main lines.
 - c. This line item includes restoration of all surface improvements.
 3. Payment Basis
 - a. Lump Sum
- F. Bid Alternate # 2 – Phase 1B Sewer service reconnections
1. Description
 - a. This line item is for the reconnection of existing sanitary sewer services on main lines which are being replaced under this project under Phase 1B as described in the project documents.
 2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials and equipment involved with the removal, supply, and installation of sanitary service connections, complete and in place.
 3. Payment Basis
 - a. Each
 4. Estimated Quantity
 - a. Approximately 43 existing sanitary sewer service connections require removal and replacement
- G. Bid Alternate # 3 – Phase 1B Sanitary cleanout replacements
1. Description
 - a. This line item is for the removal, supply and installation of sanitary cleanout replacements in Phase 1B as described in the project documents.
 2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials, and equipment involved with the removal, supply, and installation of sanitary sewer cleanouts, complete and in place.
 3. Payment Basis
 - a. Each
 4. Estimated Quantity
 - a. Approximately 5 sanitary cleanouts require removal and replacement in Phase 1B.

- H. Bid Alternate # 4 – Phase 1B Temporary Bypass Measures
 - 1. Description
 - a. This line item is for the supply and installation of temporary bypass measures required to keep all sanitary services active throughout construction of Phase 1B.
 - 2. Specific inclusions, exclusions or special considerations
 - a. This line item shall include all labor, materials and equipment involved with the supply, installation, maintenance and operation of temporary bypass measures for maintaining sanitary services active during construction, complete and in place.
 - 3. Payment Basis
 - a. Lump Sum

END OF SECTION

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SECTION 01090

SPECIFICATION STANDARDS

PART 1 GENERAL

1.01 SUMMARY

- A. The following abbreviations, which may be used in the construction specifications, refer to the organizations and specifications of the organizations listed below:

AA	Aluminum Association 900 19th Street, NW, Suite 300 Washington, D.C. 20006-2168
AABC	Associated Air Balance Council 1518 K Street, NW, Suite 503 Washington, D.C. 20005
AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 104 Schaumburg, Illinois 60173-4268
AAN	see ANLA
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, NW, Suite 249 Washington, D.C. 20001
AATSA	American Traffic Safety Services Association 15 Riverside Parkway Suite 100 Fredericksburg, VA 22406-1717
ABMA	American Boiler Manufacturers Association 950 N. Glebe Road, Suite 160 Arlington, Virginia 22203-1824
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, Michigan 48333-9094
ACA	American Coatings Association 1500 Rhode Island Ave., NW Washington, DC 20005
ACPA	American Concrete Pipe Association 222 West Las Colinas Boulevard, Suite 641 Irving, Texas 75039-5423
ADC	Air Diffusion Council 11 South LaSalle Street, Suite 1400 Chicago, Illinois 60603

AFPA American Forest and Paper Association
1111 19th Street, NW, Suite 800
Washington, D.C. 20036

AGA American Gas Association
1515 Wilson Boulevard
Arlington, Virginia 22209

AHA American Hardboard Association
1210 W. Northwest Highway
Palatine, Illinois 60067-1897

AHAM Association of Home Appliance Manufacturers
20 N. Wacker Drive, Suite 1500
Chicago, Illinois 60606

AI Asphalt Institute
Research Park Drive
P.O. Box 14052
Lexington, Kentucky 40512-4052

AIA American Institute of Architects
1735 New York Avenue, N.W.
Washington, DC 20006-5292

AISC American Institute of Steel Construction
1 East Wacker Drive, Suite 3100
Chicago, Illinois 60601-2001

AISI American Iron and Steel Institute
1101 17th Street, NW
Washington, D.C. 20036-4700

AITC American Institute of Timber Construction
7012 S. Revere Parkway, Suite 140
Englewood, Colorado 80112

ALSC American Lumber Standards Committee
P.O. Box 210
Germantown, Maryland 20875

AMCA Air Movement and Control Association International, Inc.
30 W. University Drive
Arlington Heights, Illinois 60004-1893

ANLA American Nursery and Landscape Association
1250 I Street, NW, Suite 500
Washington, D.C. 20005

ANSI American National Standards Institute
11 West 42nd Street, 13th Floor
New York, New York 10036

APA American Plywood Association (See EWA)

APWA American Public Works Association
106 West 11th Street, Suite 1800
Kansas City, Missouri 64105-1806

ARI Air-Conditioning and Refrigeration Institute
4301 Fairfax Drive, Suite 425
Arlington, Virginia 22203

ARMA Asphalt Roofing Manufacturers Association
Center Park, 4041 Powder Mill Road, Suite 404
Calverton, Maryland 20705

ASC Adhesive and Sealant Council
1627 K Street, NW, Suite 1000
Washington, D.C. 20006-1707

ASCE American Society of Civil Engineers
1801 Alexander Bell Drive
Reston, Virginia 20191-4400

ASHRAE American Society of Heating, Refrigerating, and Air-Conditioning Engineers
1791 Tullie Circle, NE
Atlanta, Georgia 30329-2305

ASLA American Society of Landscape Architects
4401 Connecticut Avenue, NW
Fifth Floor
Washington, D.C. 20008-2369

ASME American Society of Mechanical Engineers
345 East 47th Street
New York, New York 10017

ASPE American Society of Plumbing Engineers
3617 Thousand Oaks Boulevard, Suite 210
Westlake, California 91362-3649

ASSE American Society of Sanitary Engineering
28901 Clemens Road, Suite 100
Westlake, Ohio 44145

ASTM American Society for Testing and Materials
100 Barr Harbor Drive
West Conshohocken, Pennsylvania 19428-2959

AWI Architectural Woodwork Institute
1952 Isaac Newton Square
Reston, Virginia 20190

AWPA American Wood-Preservers' Association
3246 Fall Creek Highway, Suite 1900
Granbury, Texas 76049-7979

AWPI American Wood Preservers Institute
1945 Old Gallows Road, Suite 550
Vienna, Virginia 22182

AWS American Welding Society, Inc.
550 NW LeJeune Road
Miami, Florida 33126

AWWA American Water Works Association
6666 W. Quincy Avenue
Denver, Colorado 80235

BHMA Builders Hardware Manufacturers Association, Inc.
355 Lexington Avenue, 17th Floor
New York, New York 10017-6603

BIA Brick Institute of America
11490 Commerce Park Drive
Reston, Virginia 22091-1525

BOCA Building Officials Code Administrators
4051 W. Flossmoor Road
Country Club Hills, Illinois 60478-5795

CBM Certified Ballast Manufacturers
1422 Euclid Avenue, Suite 402
Cleveland, Ohio 44115-2851

CDA Copper Development Association, Inc.
260 Madison Avenue, 16th Floor
New York, New York 10016-2401

CDOT Colorado Department of Transportation
4201 Arkansas Avenue
Denver, CO 80222

CDPHE Colorado Department of Public Health and Environment
Water Quality Control Division
4300 Cherry Creek Drive South
Denver, CO 80246

CE Corps of Engineers
20 Massachusetts Avenue, NW
Washington, D.C. 20314

CID Commercial Item Description
See contract clauses

CISPI Cast Iron Soil Pipe Institute
5959 Shallowford Road, Suite 419
Chattanooga, Tennessee 37421

CLFMI Chain Link Fence Manufacturers Institute
9891 Broken Land Parkway, Suite 300
Columbia, Maryland 21046

CRA California Redwood Association
405 Enfrente Drive, Suite 200
Novato, California 94949

CRI Carpet and Rug Institute
310 S. Holiday Avenue
Dalton, Georgia 30722-2048

CRSI Concrete Reinforcing Steel Institute
933 N. Plum Grove Road
Schaumburg, Illinois 60173-4758

CS Commercial Standard of NBS
(U.S. Department of Commerce)
Government Printing Office
Washington, D.C. 20402

CSSB Cedar Shingle and Shake Bureau
515 116th Avenue, NE, Suite 275
Bellevue, Washington 98004-5294

DHI Door and Hardware Institute
14170 Newbrook Drive
Chantilly, Virginia 22021-2223

EPA Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460

EWA APA- The Engineered Wood Association
P.O. Box 11700
Tacoma, Washington 98411-0700

FHA Federal Housing Administration
(U.S. Department of Housing and Urban Development)
451 7th Street, SW
Washington, D.C. 20410

FHVA Fine Hardwood Veneer Association
260 S. First Street, Suite 2
Zionsville, Indiana 46077

FHWA Federal Highway Administration
555 Zang Street
Lakewood, CO 80228

FM Factory Mutual System
1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, Massachusetts 02062-9102

FS Federal Specifications
See contract clauses

GA Gypsum Association
810 First Street, NE, Suite 510
Washington, D.C. 20002

GANA Glass Association of North America
3310 SW Harrison Street
Topeka, Kansas 66611-2279

HI Hydronics Institute
35 Russo Place
P.O. Box 218
Berkeley Heights, New Jersey 07922

HMA Hardwood Manufacturers Association
400 Penn Center Boulevard, Suite 530
Pittsburgh, Pennsylvania 15235-5605

HPMA Hardwood Plywood Manufacturers Association
P.O. Box 2789
Reston, Virginia 22090-2789

IA Irrigation Association
1911 N. Fort Myer Drive, Suite 1009
Arlington, Virginia 22209-1630

ICBO International Conference of Building Officials
5360 S. Workman Mill Road
Whittier, California 90601

ICEA Insulated Cable Engineers Association, Inc.
P.O. Box 440
South Yarmouth, Massachusetts 02664

ICRI International Concrete Repair Institute
10600 West Higgins Road, Suite 607
Rosemont, IL 60018

IEEE The Institute of Electrical and Electronics Engineers
345 E. 47th Street
New York, New York 10017-2394

IES Illuminating Engineering Society of North America
120 Wall Street, 17th Floor
New York, New York 10005-4001

IGCC See ITS

ILIA Indiana Limestone Institute of America, Inc.
Stone City Bank Building, Suite 400
Bedford, Indiana 47421

ITS Internek Testing Services
3393 Route 11
P.O. Box 2040
Cortland, New York 13045-7902

KCMA Kitchen Cabinet Manufacturers Association
1899 Preston White Drive
Reston, Virginia 22091-4326

LIA Lead Industries Association, Inc.
295 Madison Avenue
New York, New York 10017

MBMA Metal Building Manufacturer's Association
c/o Thomas Associates, Inc.
1300 Sumner Avenue
Cleveland, Ohio 44115-2851

MFMA Maple Flooring Manufacturers Association
60 Revere Drive, Suite 500
Northbrook, Illinois 60062

MIA Marble Institute of America
30 Eden Alley, Suite 201
Columbus, Ohio 43215

MIMA Mineral Insulation Manufacturers Association
1420 King Street
Alexandria, Virginia 22314

MLSFA	Metal Lath/Steel Framing Association - A Division of NAAMM 8 South Michigan Avenue, Suite 1000 Chicago, Illinois 60603
MS	Military Standardization Documents See contract clauses
MSHA	Mine Safety and Health Administration 4015 Wilson Boulevard, Room 601 Arlington, Virginia 22203
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park Street, NE Vienna, Virginia 22180-4602
NAAMM	The National Association of Architectural Metal Manufacturers 8 South Michigan Avenue, Suite 1000 Chicago, Illinois 60603
NACE	National Association of Corrosion Engineers 1440 South Creek Drive P.O. Box 218340 Houston, Texas 77218-8340
NAIMA	North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, Virginia 22314
NAPA	National Asphalt Pavement Association NAPA Building 5100 Forbes Boulevard Lanham, Maryland 20706-4413
NAPCA	National Association of Pipe Coating Applicators 8th Floor, Commercial National Bank Building 333 Texas Street, Suite 800 Shreveport, Louisiana 71101-3673
NBS	National Bureau of Standards (U.S. Department of Commerce)(See NIST)
NCMA	National Concrete Masonry Association 2302 Horse Pen Road Herndon, Virginia 20171-3499
NEC	National Electrical Code (by NFPA)
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, Maryland 20814
NELM	Northeastern Lumber Manufacturers' Association 272 Tuttle Road P.O. Box 87A Cumberland Center, Maine 04021-0687
NEII	National Elevator Industry, Inc. 185 Bridge Plaza North, Suite 310 Fort Lee, New Jersey 07024

- NEMA National Electrical Manufacturers Association
1300 N. 17th Street, Suite 1847
Rosslyn, Virginia 22209
- NFPA National Fire Protection Association
1 Batterymarch Park
P.O. Box 9101
Quincy, Massachusetts 02269-9101
- NHLA National Hardwood Lumber Association
P.O. Box 34518
Memphis, Tennessee 38184-0518
- NHPMA Northern Hardwood and Pine Manufacturers Association, Inc.,
c/o Northern Softwood Lumber Bureau
Box 217
Dear River, Minnesota 56636
- NIOSH National Institute for Occupational Safety and Health
NIOSH Building 1, Room 3007
1600 Clifton Road, NE
Atlanta, Georgia 30333
- NIST National Institute of Standards and Technology
(US Department of Commerce)
Building 101, #A1134
Route I-270 and Quince Orchard Road
Gaithersburg, Maryland 20899
- Send requests for publications to:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402
- NOFMA National Oak Flooring Manufacturers Association
P.O. Box 3009
Memphis, Tennessee 38173-0009
- NPA National Particleboard Association
18928 Premiere Court
Gaithersburg, Maryland 20879-1569
- NRCA National Roofing Contractors Association
O'Hare International Center
10255 W. Higgins Road, Suite 600
Rosemont, Illinois 60018-5607
- NSF NSF International
(Formerly National Sanitation Foundation)
3475 Plymouth Road
P.O. Box 130140
Ann Arbor, Michigan 48113-0140
- NTMA The National Terrazzo and Mosaic Association
3166 Des Plaines Avenue, Suite 121
Des Plaines, Illinois 60018

NWWDA National Wood Window and Door Association
1400 East Touhy Avenue, Suite G-54
Des Plaines, Illinois 60018

OSHA Occupational Safety and Health Administration
U.S. Department of Labor
200 Constitution Avenue, NW
Washington, D.C. 20210

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, Illinois 60077-1083

PCI Precast/Prestressed Concrete Institute
175 W. Jackson Boulevard
Chicago, Illinois 60604

PDI Plumbing and Drainage Institute
45 Briston Drive, Suite 101
South Euston, Massachusetts 02375

PDCA Painting and Decorating Contractors of America
1801 Park 270 Drive, Ste 220
St. Louis, MO 63146

PEI Porcelain Enamel Institute, Inc.
4004 Hillsboro Pike, Suite 224-B
Nashville, Tennessee 37215

PI Perlite Institute, Inc.
88 New Dorp Plaza
Staten Island, New York 10306

PS Product Standard of NBS (U.S. Department of Commerce)
Government Printing Office
Washington, D.C. 20402

RFCI Resilient Floor Covering Institute
966 Hungerford Drive, Suite 12-B
Rockville, Maryland 20850-1714

RIS Redwood Inspection Service (Grading Rules)
405 Enfrente Drive, Suite 200
Novato, California 94949

RMMI Rocky Mountain Masonry Institute
1780 South Bellaire Street, No. 602
Denver, Colorado 80222

SCMA Southern Cypress Manufacturers Association
400 Penn Center Blvd., Suite 530
Pittsburgh, Pennsylvania 15235

SDI Steel Deck Institute
P.O. Box 25
Fox River Grove, Illinois 60021

SDI Steel Door Institute
30200 Detroit Road
Cleveland, Ohio 44145-1967

SFPA Southern Forest Products Association
P.O. Box 52468
New Orleans, Louisiana 70152

SGCC See ITS

SIGMA Sealed Insulating Glass Manufacturers Association
401 N. Michigan Avenue
Chicago, Illinois 60611-4267

SJI Steel Joist Institute
3127 10th Avenue, North Ext.
Myrtle Beach, South Carolina 29577-6760

SMACNA Sheet Metal and Air-Conditioning Contractors' National Association, Inc.
4201 Lafayette Center Drive
P.O. Box 221230
Chantilly, Virginia 20151-1209

SPIB Southern Pine Inspection Bureau (Grading Rules)
4709 Scenic Highway
Pensacola, Florida 32504-9094

SSPC Steel Structures Painting Council
40 24th Street, 6th Floor
Pittsburgh, Pennsylvania 15222-4643

SWI Steel Window Institute
c/o Thomas Associates, Inc.
1300 Sumner Avenue
Cleveland, Ohio 44115-2851

TCA Tile Council of America
100 Clemson Research Boulevard
Anderson, South Carolina 29625

TIMA Thermal Insulation Manufacturers Association (See NAIMA)

TPI Truss Plate Institute
583 D'Onofrio Drive, Suite 200
Madison, Wisconsin 53719

UBC Uniform Building Code (by ICBO)

UDFCD Urban Drainage and Flood Control District
2480 West 26th Avenue, Suite 156-B
Denver, CO 80211

UL Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, Illinois 60062

USDA U.S. Department of Agriculture
14th Street and Independence Avenue, SW
Washington, D.C. 20250

- WCLB West Coast Lumber Inspection Bureau (Grading Rules)
P.O. Box 23145
Portland, Oregon 97281-3145
- WIC Woodwork Institute of California
P.O. Box 980247
West Sacramento, California 95798-0247
- WMMPA Wood Moulding and Millwork Producers Association
507 First Street
Woodland, California 95695
- WRI Wire Reinforcement Institute, Inc.
203 Loudoun Street, SW
Leesburg, Virginia 20175-2718
- WSFI Wood and Synthetic Flooring Institute (See MFMA)
- WWPA Western Wood Products Association (Grading Rules)
Yeon Building
522 SW 5th Avenue
Portland, Oregon 97204-2122
- WWPA Woven Wire Products Association
2515 Nordica Avenue
Chicago, Illinois 60635
- WWPI Western Wood Preservers Institute
7017 NE Highway 99 #108
Vancouver, Washington 98665

END OF SECTION

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SECTION 01200

MEETINGS

PART 1 GENERAL

1.01 SUMMARY

- A. These requirements for meetings are hereby made a part of each and all of the respective sections of the project manual. This Section includes but is not limited to the following meetings:
1. Pre-construction Conference
 2. Progress Meetings
 3. Pre-Survey Conference
 4. Pre-pour Structural Concrete Conference
 5. Pre-installation Conference
 6. Pre-paint Conference
 7. Pre-startup Conference
 8. Pre-training Conference
 9. Pre-Final Inspection
 10. Post-construction Conference
 11. Final Inspection
 12. Warranty Inspection

1.02 ATTENDEES

- A. Unless otherwise specified or required by the Owner, the meetings shall be attended by the Owner, Engineer, Engineer's Representative, Surveyor (for item 3 above), Contractor, Contractor's Representative, Geotechnical and Testing Consultant (for items 1 and 4 above) and Suppliers (for item 4 and as necessary for Items 5, 6, 7 and 8). Subcontractors may attend when invited by the Owner or Contractor.

1.03 MEETING RECORDS

- A. The Engineer's Representative will record minutes of each meeting and furnish copies to the attendees within 5 working days thereafter. If the contractor does not submit written objection to the contents of such minutes within 7 days after presentation to him, it shall be understood and agreed that the contractor accepts the minutes as a true record of the meeting.

1.04 MEETING SCHEDULE

- A. In so far as possible, the dates, times and locations for the various meetings will be agreed upon and recorded at the preconstruction conference. Thereafter, changes to the schedule shall be by agreement between the Owner and the contractor, with appropriate written notice to all parties.
- B. Preconstruction Conference. A preconstruction conference shall be held prior to start of construction at the location, date and time designated by the Owner in accordance with

GC-2.06. Attendees shall include Owner, Engineer, Contractor, Subcontractors, pertinent material and/or equipment suppliers, QA/QC testing consultants, representatives of regulatory agencies having jurisdiction of the project (e.g. DOE, CDPHE, USACOE, etc.), owners of affected utilities (e.g. CDOT, RR, gas, phone, electric, etc.) and any other persons the Owner may designate.

1.05 SUBMITTALS

- A. Prior to the meeting, the contractor shall have already submitted the Contract Agreement, Bonds and Certificates of Insurance. The Owner will return signed copies of the agreement to the contractor at the meeting. At the meeting, the contractor shall submit the progress schedule, submittal schedule, schedule of values and all other preconstruction documents required of him by the Contract Documents.
- B. Agenda. In general, the topics to be discussed or resolved and the instructions and information to or given by the contractor include, but are not limited to:
1. Project meeting schedule.
 2. Construction schedule including the sequence of critical work. Contractor shall supply 10 copies of the schedule at the meeting.
 3. Communication channels and procedures.
 4. Requirements of funding agencies.
 5. CDPHE Requirements.
 6. Other permit requirements.
 7. Contract documents distribution. Owner will supply copies at meeting.
 8. Submittal processing procedure.
 9. Contractor's financial estimate of the amount of work to be performed each month (Schedule of Values).
 10. Payment procedures, application forms, dates and progress schedules to accompany the application.
 11. Field Order and Change Order processing.
 12. Project sign board.
 13. Notice to Proceed date. Owner will supply copy to contractor.
 14. Access and Rights-of-Way provided by Owner.
 15. Site security and contractor's use of the site.
 16. Safety and First Aid. Contractor to supply resume of his Safety Officer.
 17. Engineer, Inspector and their duties.
 18. Contractor's surveyor, schedule for pre-survey conference, initiation of surveying activities and control provided by the Owner.
 19. Testing agency and procedures.
 20. Construction equipment and methods proposed by contractor.
 21. Dewatering methods proposed by the contractor.
 22. Maintaining existing treatment.
 23. Contractor quality control.
 24. Construction utilities, permanent utilities and existing utility and railroad requirements.
 25. Items requiring early procurement.
 26. Other administrative and general matters as needed.
- C. Contractor's organization for the project, including names and titles of all those who are authorized by the contractor to represent and execute documents for him, with samples

of authorized signatures, and names, addresses and telephone numbers of those authorized to act for him in emergencies.

1.06 PROGRESS MEETINGS

- A. Weekly Construction meetings shall be held onsite. At minimum, Engineer's Representative and Contractor's superintendent shall attend to discuss jobsite concerns, work schedule, coordination and any other construction issues.

- B. Monthly Progress Meetings, to be chaired by the Engineer's Representative with attendance of Engineer, Owner, Contractor's project manager and project superintendent, shall be held to review work progress and performance as well as the contractor's 90 day, look-ahead schedule. Progress and schedule reviews shall verify:
 - 1. Actual start and finish dates for activities completed during the previous months.
 - 2. Remaining duration and percentage of construction for all incomplete activities.
 - 3. Logic, activity duration and cost data for change order work to be incorporated into the construction schedule.
 - 4. Contractor's proposed methods to recover any lost time and place the project back on schedule, such as increasing manpower, materials, and equipment resources and working extended or additional shifts.
 - 5. Subcontractor activity.
 - 6. Other items not listed above including without limitation, any unresolved matters, deficiencies in the work or methods employed for the work and problems, difficulties or delays which have been or may be encountered and possible solutions.

- C. Submittals Prior to Meeting. At least three days prior to each progress meeting, the contractor shall submit the information itemized below to the Engineer.
 - 1. A list of completed activities.
 - 2. A list of current activities with an estimate of time required for completion.
 - 3. A list of changes to planned starting dates and durations for all outstanding activities.
 - 4. Percentage of completion for each current activity.
 - 5. A list of activities planned to start in the next month.
 - 6. Other information as required by the Engineer's representative.
 - 7. A request for additional meetings, if required by the contractor shall be submitted in writing with a proposed agenda and the names of personnel who would attend. The Engineer's Representative shall chair these meetings.

1.07 CONSTRUCTION COORDINATION MEETINGS

- A. Pre-survey Conference. A conference prior to initiating construction survey work will be held at the site at a time and date established by the Engineer's Representative in coordination with the contractor. Attendees shall include the Engineer's Representative, Surveyor, Contractor's surveyor and contractor. Items to be covered include location, coordinates and elevations of survey control used during design; installation of a permanent survey monument at the site; quality control and quality assurance; submittal of a copy of contractor's survey license; personnel, equipment and materials to be furnished by the contractor/surveyor; certification of calibration; checking by the Owner;

staking and offset line placement and placement intervals; accuracy and tolerances; changes; records and other topics as needed or stated in Section 01580.

- B. Pre-pour Structural Concrete Conference. Prior to any concrete work, a pre-pour structural concrete conference shall be held at a date and time set by the Engineer's Representative in coordination with the contractor. Attendees shall be the contractor, contractor's concrete foreman, Engineer, Engineer's Representative, Testing Consultant, Owner, and contractor's concrete supplier. Topics to be covered shall include scheduling of concrete placement, length of pour and location, finishes, curing time, curing agent, protection, mix designs, plan and specification requirements, rebar placement, forms, construction and expansion joints, concrete testing, aggregate stockpile testing, concrete rejection, batch tickets, weather, pre-wetting, vibration, tolerances, thickness and rebar coverage, water addition, safety and other items as needed or stated in Division 3 of the Technical Specifications.
- C. Pre-Installation Conference. When required by the technical specifications, the contractor shall meet with subcontractors, mechanical and electrical foreman, equipment manufacturers and or suppliers, Owner's plant staff and the Engineer to review equipment and electrical and controls installation. Site conditions, preparation requirements, logistics, utilities, and installation procedures shall be reviewed.
- D. Pre-Paint Conference. Prior to any painting, coating or marking the Pre-paint conference shall be held to address the following:
1. Items requiring painting, coatings, marking or staining;
 2. Items not to be painted;
 3. Storage, painting and mixing areas;
 4. Safety requirements;
 5. Colors and textures.
 6. Discuss painting submittal as required by section 09900.
- E. Pre-Startup Conference. A pre-startup conference will be required prior to startup of any equipment component, sub-system or system in accordance with Section 01450. The contractor and his mechanical foreman, mechanical coordinator, startup engineers and foreman; Engineer and his representative, Owner's plant operation staff and equipment manufacturers (if necessary in the opinion of the Engineer) shall attend. The agenda shall be provided Engineer's
1. Startup and validation prerequisites.
 2. Startup plan and schedule.
 3. Temporary connections.
 4. Spare parts, chemicals and operating fuels.
 5. Coordination with Owner's plant staff.
- F. Pre-training Conference. A meeting shall be held prior to beginning training and shall comply with the requirements of Section 01670. The contractor, training instructor, Engineer, Engineer's Representative, and Owner's plant staff shall attend. Agenda shall be provided by the Engineer's Representative a minimum of three (3) working days prior to the conference. Topics of discussion will include but not limited to the following:
1. Classroom and support requirements.
 2. Training schedule.
 3. Training plans.
 4. Manuals and other documents.

5. Other items deemed necessary by the Engineer.

- G. Other Meetings. Upon appropriate notice to the other parties, other meetings may be called by the Owner or the contractor. These meetings will be held where and when designated by the Owner for separate contracts nearby, regulatory agencies having jurisdiction or related to the work of this project regarding requirements, coordination and cooperation between parties involved.

1.08 COMPLETION MEETINGS

- A. Pre-Final Inspection Meeting. (a.k.a. Substantial Completion meeting) shall be held in accordance with GC-14.04. At minimum, attendance by Engineer, Owner, Contractor and USDA-RD staff is required.
- B. Post Construction Conference. A post-construction conference shall be held prior to final inspection, testing and startup to discuss and resolve any unsettled matters. The test procedure plan shall be discussed at this meeting. All other documents and spare parts required to be submitted by the contractor will be reviewed and discrepancies determined. Schedules for final inspection and procedures for the process of final correction of deficiencies shall be discussed and agreed.
- C. Final Inspection Meeting. A final inspection meeting shall be held in accordance with GC-14.06. At minimum, attendance by Engineer, Owner, and Contractor is required.
- D. Warranty Inspection. A warranty inspection shall be conducted between 60 and 90 days prior to expiration of Warranty period. At minimum, attendance by Engineer, Owner, and Contractor is required.

END OF SECTION

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SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

- A. Requirements. The Contractor shall submit to the Engineer for approval all submittals required by the Contract Documents. Submittal shall be submitted on form 01300-A.
- B. Form 01300-A includes an area for the Contractor to check that he has verified that the material or equipment meets the Specification requirements or deviates from the Specification for the reasons listed. A line also exists for the Contractor to sign the submittal. If the areas are not checked or the submittal is unsigned, it will be returned disapproved.
- C. The Contractor shall review and approve all shop and layout Drawings, product data, samples, materials, manuals and plans required to be submitted by the Contract Documents. Approval by the Contractor dictates that he has verified all materials, field measurements with those shown on the Drawings, and similar items. Approval also indicates that the Contractor has coordinated Information contained in the submittal with work requirements of all trades and with the Contract Documents. The Contractor's submissions to the Engineer shall be timely so as to not delay the Work.
- D. The Contractor is required to submit five hard copies of each submittal or re-submittal for approval. The Engineer will return two copies to the Contractor. The Engineer may request up to an additional five copies of manuals by notifying the Contractor in writing and such copies will be at no extra cost.

1.02 SUBMITTAL CONTENT

- A. The submittal number shall be arranged as follows:
 - 1. The first character shall be a letter identifying "D" as a shop or layout drawing, "S" as a sample, "M" as a manual or miscellaneous, or "P" as a plan or schedule.
 - 2. The next 5 digits of the submittal number shall be the Specification section number.
 - 3. The next 3 digits shall be the numbers 001 through 999 to sequentially number each separate package submitted under each specific Specification section number.
 - 4. The last character shall be a letter A through Z indicating whether the submittal is the first submission (A) or a resubmission (B through Z). The letter "B" indicates a second submission, "C" a third submission, etc. An example of a submittal number would be D-03300-008-B, which indicates a shop drawing submittal pertaining to the concrete section that is the eighth submittal under this section and is the second submission of this particular shop drawing.
- B. Submittals will be returned to the Contractor marked either "NET" which means that No Exceptions Taken, or the submission is approved, "MCN" which indicates Make

Corrections Noted, and that the submittal is approved subject to incorporation of the comments shown on the submittal, "A&R" which is Amend and Resubmit, and "R" which is Rejected, or the submittal is disapproved for the reasons shown or listed and shall be resubmitted. One other notation may be shown as "N" which is Noted, for a submittal that does not require Engineer approval but will be placed in the project files.

- C. Reviewed submittals will be returned to the Contractor with the Engineer's comments, if any. The Engineer's review is for general conformance with the Contract Documents only and all Work is still subject to the detailed requirements of the Contract Documents. The Engineer's review is to help the Contractor find or discover errors and omissions. The Engineer's review does not relieve the Contractor of the obligation and responsibility to coordinate and plan the details of the Work and fulfill the intent and purpose of the Contract. The Engineer's review shall not relieve the Contractor of the responsibility for accuracy, proper fit or proper functioning and performance of the Work. The Engineer reserves the right to require written confirmation from the Contractor that the comments placed on submittals stamped "MCN" were actually or will be implemented. The Engineer will make every reasonable effort to process and return each submittal within 15 days after receipt in the Engineer's office, but with the following qualifications:
1. Large or multiple submittals may require additional time.
 2. Contractor may prioritize submittals and Engineer will review and return them in the order of highest priority.
 3. If requested by the Contractor, individual drawings from large submittals with numerous drawings may be returned as they are reviewed rather than waiting for the entire review to be completed.
 4. The need for re-submissions or delays in obtaining the Engineer's review or approval shall not entitle the Contractor to a time extension for Contract completion.
- D. The Contractor shall make all corrections and changes to submittals as required by the Engineer and resubmit until approved. The Contractor shall review submittals returned by the Engineer and shall determine if changes requested by the Engineer result in extra cost. He shall notify the Engineer in writing within 5 days of receiving a returned submittal if the Contractor believes extra costs will be incurred along with the reasons for such belief. Failure of the Contractor to notify the Engineer of the extra costs, or if the Contractor proceeds with the Work, ordering materials, products or equipment or delivery to the site, waives the Contractor claim for compensation.
- E. Only the Contractor shall make submissions to the Engineer. All data and correspondence prepared by Subcontractor and suppliers shall be submitted through the Contractor. The Contractor shall prepare submittals with sufficient information, and in such a manner, that no more than two submittals are necessary to obtain the Engineer's approval. If more than two submittals are required, the Owner reserves the right to deduct the cost of the Engineer's time to review all additional re-submittals (after re-submittal number two) from moneys due the Contractor.
- F. The Contract Drawings are diagrammatic and show the general arrangement of the complete construction Work. The Contractor shall review the Drawings and Specifications and shall include any and all Work required to provide a complete and operable facility. The Contractor shall be responsible for preparing and submitting to the Engineer for review, all general arrangement drawings showing the interrelationships between civil construction and all mechanical, electrical and instrumentation equipment

to be installed. Should there be a need to deviate from the Contract Drawings and Specifications, the Contractor shall submit written details, comparisons with the contract requirements, reasons for all changes, an explanations as to why the proposed change is equal or better than the Contract requirement and any reduction or increase in cost for the change to the Engineer for approval before making such changes. All extra costs to make the changes to structures, electrical, mechanical, piping and other items associated with a change shall be borne by the Contractor. In the event of varying interpretations of the Contract Documents, the Engineer's interpretation shall govern.

1.03 REQUIRED SUBMITTALS

- A. Submittal Schedule. The Contractor shall submit to the Owner for approval a detailed schedule listing all submittals to the Owner. This schedule shall include, but is not limited to, shop drawings and related data; layout drawings; materials, equipment, and fixture lists; certificates of compliance; spare parts data; sample materials and equipment manuals; test procedure plan and test results. The schedule shall indicate the type of item, Contract requirement reference; the Contractor's scheduled dates for submitting the above items and projected procurement dates. The Contractor shall revise and resubmit schedules as necessary to the Owner for monitoring.
- B. Shop Drawings. See Section 01340 – Shop Drawings.
- C. Post installation test procedure plan. See Section 01400 - Quality Control.
- D. Startup and Training plan. See Section 01650 – Starting of Systems.
- E. Layouts of Temporary Construction Facilities. See Section 01500 - Construction and Temporary Facilities.
- F. Project Record Documents. See Section 01700 - Contract Closeout and Section 01730 O&M Information.
- G. Schedule of Values. Refer to General Conditions for requirements.
- H. Construction Schedule. See Section 01310 – Construction Schedule.
- I. Progress Reports. During the performance of the Work, the Contractor shall submit to the Owner a written monthly progress report on or before the fifth of each month covering the previous month. Such progress reports shall include:
 - 1. A copy of the construction schedule outlining progress to date for the previous major items of Work.
 - 2. A narrative summary indicating the status of Work performed and other pertinent activities indicating the actual percentage of Work completed and an estimate of the percentage of Work to be completed in the succeeding month; problem areas and recommended solutions, and manpower hours used by trade. If the Work has fallen behind schedule, the Contractor shall state how the time is to be made up to remain on schedule. Include construction photographs.
 - 3. The progress report shall include a procurement and delivery schedule, listing items approved, ordered, delivered and installed, for equipment, products and materials.

4. If a progress report is not submitted, the Owner reserves the right to withhold payment until delivered.
- J. Traffic Control Plan. See Section 01570 - Traffic Control.
- K. Stormwater Management Plan. See Section 01590 - Erosion Control.
- L. Groundwater and Earthwork Management Plan. See Section 01500 - Construction and Temporary Facilities.
- M. Materials and Equipment Manual. See Section 01725 - Materials and Equipment Manuals.
- N. Certificates of Compliance. Certificates required for demonstrating proof of compliance with Specification requirements, including mill certificates, shall be provided by the Contractor. It shall be the Contractor's responsibility to review and approve all certificates before submissions are made to ensure compliance with the Contract requirements. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, the material is later found not to meet the specific requirements.
- O. Manufacturer's Certified Reports. Where the Contract Documents require an equipment manufacturer or his authorized representative to be present at installation and startup, such manufacturer shall submit a notarized written report with respect to his equipment certifying that 1) the equipment has been properly installed and lubricated under his supervision, 2) the equipment is in accurate alignment, 3) he was present when the equipment was placed in operation, 4) he has checked, inspected and adjusted the equipment as necessary, 5) the equipment is free from any undue stress imposed by connecting piping or anchor bolts, 6) has been operated under full load conditions and operated satisfactorily, 7) he has inspected the equipment during the operational demonstrations and system validation testing to the extent specified and 8) is fully covered under the terms of the guarantee.
- P. Spare Parts Data. The Contractor shall furnish spare parts data for each different item of equipment furnished. The data shall include a complete list of parts and supplies that are either normally furnished at no extra cost with the purchase of the equipment, or specified herein to be furnished as part of the contract; and a list of additional items recommended by the manufacturer to assure efficient operation for a period of 180 days or as otherwise stated in the individual Specification section, at the particular installation. The foregoing shall not relieve the Contractor of any responsibilities under the guarantee specified.
- Q. Samples. After award of the Contract, the Contractor furnish for approval samples required by the Specifications. The Contractor shall prepay all shipping charges of samples. Materials, products or equipment for which samples are required shall not be

used in the Work until approved in writing. Each sample shall have a label or tag indicating:

- a. Name of project building or facility, project title and address.
 - b. Name of Contractor and, if appropriate, name of Subcontractor.
 - c. Identification of material, product or equipment with Specification section.
 - d. Place of origin.
 - e. Name of producer and brand.
 - f. Samples of finish materials shall have additional markings that will identify them in regard to installed location.
1. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirement. Substitutions will not be permitted unless they are approved in writing.
 2. Approved samples in good condition will be marked for identification and may be used in the Work. Materials, products and equipment incorporated in the Work shall match the approved samples. Other samples not destroyed or damaged in testing or not approved, will be returned to the Contractor at his expense if so requested at time of submission.
 3. Failure of any material to pass the specified tests will be sufficient cause for refusal to consider, under this Contract agreement, any further samples of the same brand or make of that material. The Owner reserves the right to disapprove any material, product or equipment which has previously has proven unsatisfactory in service.
 4. Samples of various materials, products or equipment delivered on the site or in place may be taken by the Owner for testing. Samples failing to meet Contract requirements will automatically void previous approvals of the items tested. The Contractor shall replace such materials, products or equipment found to have not met Contract requirements, or there shall be proper adjustment of the Contract price as determined by the Owner.

R. Miscellaneous Submissions

1. Accident reports shall be submitted in 3 copies as soon after the accident as possible.
2. The Contractor shall submit an organization chart of his construction team for approval not later than 14 days after the beginning of mobilization or prior to any construction activity on the site. It shall show executive, administrative, and construction supervision broken into trades and crews shall include Subcontractors and shall:
 - a. Include all personnel from ownership through project manager to foreman level and designate the extent of authority and responsibility and those who can receive field orders, sign documents, etc.
 - b. Describe personnel duties.
 - c. Provide qualifications and experience of those not included in prequalification documents.
 - d. Contractor shall update the organization chart whenever key people are changed. The Engineer may interview any of the Contractor's proposed staff prior to approval.
3. Insurance Certificates. Refer to General Conditions and Supplemental General Conditions for submittal requirements. Submit updated certificates as necessary to verify current coverage.

01300-A SUBMITTAL TRANSMITTAL FORM
(This form to be enclosed with ALL Submittals)

		Seq. #	
Submittal Description:		Submittal #	
Specification Section:	Routing	Date Sent	Date Rec'd
OWNER:	Contractor/Engineer		
PROJECT:			
CONTRACTOR:			

We are sending you: Attached
 Under separate cover via _____
 Submittals for review and comment
 Product data for information only

Remarks:

Item	Copies	Date	Section No.	Description	Review Action (1)	Reviewer Initials	Review Comments Attached

(1) **Note:** **NET**=No exceptions taken; **MCN**=Make corrections noted; **A&R**=Amend & resubmit; **R**=Rejected, Develop Replacement
 Attach additional sheets if necessary.

Contractor

Certify either A or B:

- A** We have verified that the material or equipment contained in this submittal meets all the requirements, including coordination with all related Work, specified (no exceptions).
- B** We have verified that the material or equipment contained in this submittal meets all the requirements specified, except for the attached revisions.

#	Deviation

Certified by: _____
 Contractor's Signature

Date: _____

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.01 SUMMARY

- A. Within ten (10) days after effective date of agreement or by the pre-construction conference, the Contractor shall submit a critical path project schedule covering the duration of the project, beginning with the Notice to Proceed and indicating Substantial Completion and "Contract Completion". The purpose of the Project Schedule shall be to:
1. Assure adequate planning, scheduling and reporting during the execution of the Work by the Contractor.
 2. Assure coordination of the Work of the Contractor and various Subcontractors at all tiers.
 3. Establish a critical path for the completion of the Work to assist the Contractor, Owner, and Engineer in monitoring the progress of the Work and evaluating proposed changes to the Contract Duration and the Project Schedules resulting from changes in the Work and/or potential weather delays.
 4. Assist in the coordination of construction activities so as to complete the Work within the Contract Time.
- B. The Project Schedule shall be based upon the Critical Path Method (CPM) for planning, scheduling and progress reporting of the Work.
- C. The Project Schedule shall include a graphic network prepared by the Contractor. The Contractor shall transmit all schedule submissions to the Owner or his representative as both a printed or plotted pure logic diagram and a bar chart with an accompanying computer disk of the schedule. The computer disk shall be in a file format published by Primavera Project Planner (Windows versions), Primavera Sure Trak, or Microsoft Projects.
- D. The Contractor shall provide a Network, which shall be a reasonable representation of how the Work is planned to be performed and shall be used to monitor the progress of the work of the Contract. All costs associated with the development and maintenance of the schedule shall be borne by the Contractor Description.

1.02 SCHEDULING

- A. The Contractor shall submit a preliminary Project Schedule as stated above. The Owner or his representative shall review the preliminary Project Schedule and return comments to the Contractor within ten (10) working days after receipt. The Contractor then shall have five (5) working days to review the schedule and return it to the Owner or his representative for review. The five (5) working day review and review cycles shall continue until an acceptable schedule is received by the Owner. The owner's review of the project schedule is for compliance with this article and other contractor requirements. Acceptance by the owner of the contractor's project schedules does not relieve the contractor of any of his responsibility whatsoever for the accuracy or feasibility of the project schedule, or of the contractor's ability to meet the contract completion date, nor

does such acceptance expressly or impliedly warrant, acknowledge or admit the reasonableness of the activities, logic, duration or, when included, cost loading of the contractor's project schedule. An approved schedule shall be required prior to submission of the first progress payment in accordance with the Contract Documents. The following guidelines must be met:

1. The Project Schedule shall contain a sufficient number of activities to allow effective monitoring of the progress of the work.
2. Each activity shall contain only the work of a single trade or subcontractor.
3. Each activity shall be less than fifteen (15) working days in duration. Procurement and material delivery, surveying and shop drawing approvals may exceed fifteen (15) working days in duration. Activities exceeding fifteen (15) working days in duration shall be separated into two or more individual activities of less than sixteen (16) working days by area, type of work, etc. to allow for effective monitoring of the Work.
4. Each activity shall include a description of the work, original duration, contractor or subcontractor performing the work, the equipment and manpower required to do the work, all specific area, phasing or milestone classifications and the activity's relationship to other activities (contained in the Methods Statement).
5. The Project Schedule shall begin with the Notice to Proceed and end with Contract completion activities. A critical path (zero float path) through Contract completion must be generated.
6. Normally anticipated weather conditions shall be included in the Project Schedule.
7. Anticipated utility relocation activities must be shown in the schedule as they affect the contractor's activities.
8. Failure by the Contractor to include any element of work required for performance of the Contract shall not excuse the Contractor from completing all work within the Contract Time.
9. Work times shall be included showing number of days per week, shifts per day and hours per shift.
10. The Project Schedule shall contain activities for the anticipated submittal cycle of equipment or materials that could affect timely completion of the project.
11. The schedule shall include activities for anticipated procurement and delivery of material or equipment with lead times greater than three (3) weeks.
12. The progress schedule shall include all activities for all work on the project, including subcontracted work, delivery dates for critical material, submittal and review periods, milestone requirements and no work periods. Where the project has specific phases, each phase shall be described separately for each salient feature.

1.03 METHODS STATEMENT

- A. A Methods Statement shall be included for all work items that fall on the critical path of the construction schedule. This Methods Statement shall be a detailed narrative describing each feature and all work necessary to complete the feature. The Methods Statement shall be submitted with the Construction Schedule. The following format is required.
 1. Feature: name of the feature.
 2. Responsibility: Contractor, subcontractor, supplier, utility, etc. responsible of the feature.

3. Procedures: procedures to be used to complete the work. The procedure to be used shall include general information regarding methods such as forming, excavation, placing, heating, curing, backfill and embankment, trenching, protecting the work, etc. When separate or different procedures are to be employed by the Contractor due to seasonal or project phasing requirements, such differing procedures shall be described in the procedure statement.
4. Production Rates: the planned quantity of work per day for each feature
5. Labor Force: the labor force planned to do the work.
6. Equipment: the number, types, and capacities of equipment planned to do the work.
7. Work Times: the planned time for the work to include:
 - a. Number of work days per week.
 - b. Number of shifts per day.
 - c. Number of hours per shift.

- B. At the Owner's request, the Contractor shall update the Methods Statement, or any part thereof, and submit it with the next monthly schedule update.

1.04 PROJECT SCHEDULE UPDATES

- A. The Project Schedule updating shall be done on a monthly basis. The revision shall indicate actual progress to date, changes resulting from change orders, and planned changes necessary to complete the Work in accordance with the Contract Documents.
- B. Should the Project Schedule update indicate that the project is more than ten (10) days behind schedule it shall be revised to indicate the means which the Contractor shall use to regain the Contract Completion Date.
- C. Updating the Project Schedule to reflect actual progress made up to the date of a schedule update shall not be considered revisions to the Project Schedule.
- D. Failure by the Contractor to update the schedule shall result in a material breach of contract and will also result in the withholding of progress payments until an acceptable update is submitted by the Contractor and accepted by the Owner.

1.05 TIME IMPACT ANALYSIS FOR CHANGE ORDERS, DELAYS & CONTRACTOR REQUESTS

- A. When Change Orders are initiated or delays are experienced a Time Impact Analysis shall be completed to determine the effect on the Contract Completion Date. The durations of effected activities shall be altered as mutually agreed upon and the schedule recalculated. The Contract Completion Date will not be extended unless the schedule recalculation indicates a completion date beyond the current Contract Completion Date. A delay must impact the critical path of the Project Schedule as a condition to extending the Contract Completion Date.
- B. Delays caused by weather shall be reviewed at the monthly update meetings. Seasonal weather conditions shall be considered and included in the planning and scheduling of all work influenced by high or low ambient temperatures, wind, and/or precipitation to ensure completion of all work within the Contract Time. Seasonable weather conditions shall be determined by an assessment of average historical climatic conditions.

- C. Float is not for the exclusive use or benefit of either the Owner or the Contractor. Extension of the Contract Time will be granted only to the extent the equitable time adjustments to the activity or activities affected by the Change Order or delay exceeds the total (positive or zero) float of a critical activity (or path) and extends the Contract Time as set forth in the Contract.

1.06 SUBMITTALS

- A. The number of opaque reproductions required by the CONTRACTOR plus four (4) copies which will be retained or distributed by the OWNER/ENGINEER.
 - 1. Do not submit fewer than five (5) copies.
- B. Distribution
 - 1. After review, ENGINEER will distribute copies of schedules to:
 - a. Two (2) copies to OWNER.
 - b. One (1) copy to Resident Project Representative.
 - c. One (1) copy to be retained in ENGINEER's file.
 - d. One (1) copy to CONTRACTOR to be kept on file at CONTRACTOR's field office.
 - e. Remainder to CONTRACTOR for his distribution following modifications if required.
- C. Schedule recipients will report promptly to ENGINEER and CONTRACTOR, in writing, any problems anticipated by the projections shown on the schedules.

END OF SECTION

SECTION 01320

PRODUCT DELIVERY, HANDLING, STORAGE, & INSPECTION

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. General and Supplementary Conditions

1.02 PRODUCTS

- A. Products include material, equipment and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.

1.03 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.04 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- E. Contractor shall perform and document manufacturer required maintenance during storage, after installation and until commissioning of facilities. This shall include any lubricants, filters or other maintenance materials needed; any materials used shall not come from spare parts stock.
- F. Contractor shall store spare parts, whenever required by technical specifications, in accordance with the provisions of this paragraph.

1. Tag all spare parts with permanent, labeled packings by equipment designation number and identified as to part number, equipment manufacturer, and subassembly component.
2. Properly protect spare subject to deterioration such as ferrous metal items and electrical components with lubricants or desiccants and encapsulate in hermitically sealed plastic wrapping.
3. Store spare parts with individual weights less than 50 pounds and dimensions less than 2 feet wide, or 18 inches high, or 3 feet in length in a hinged wooden box. Paint box and identify with stenciled lettering stating name of equipment, equipment numbers, and words "spare parts".
4. Prepare and provide a neatly typed inventory of spare parts inserted in watertight plastic sleeve and taped to underside of box cover.

1.05 INSPECTION

- A. Certificate of factory inspection and testing prior to delivery shall be supplied by the manufacturer to the Owner, who shall provide a copy to the Engineer and Contractor.
- B. Upon delivery to the site and prior to unloading; the Contractor, Engineer and Owner shall jointly inspect the materials and products. The Shipping Document or Bill of Loading shall be provided by the shipper and each item shall be verified as delivered. Items delivered shall be checked against the shop drawings to verify that all items were shipped. The manufacturer shall be informed of any discrepancies.
- C. Items shall be carefully inspected to verify that no damage occurred during shipping. If acceptable to Contractor, Engineer and Owner, the products shall be unloaded and stored by the Contractor and the Shipper released.
- D. If products are damaged but can be repaired in the field after discussion with the manufacturer, the products may be unloaded and stored for repair by the manufacturer at a location determined by the Owner and the Shipper released.
- E. If the products are damaged but can only be repaired at the factory or must be replaced, the Shipper will be directed to return the product to the manufacturer.

END OF SECTION

SECTION 01340

SHOP DRAWINGS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The CONTRACTOR shall submit to the ENGINEER for approval all shop drawings required by the specification sections.

1.02 SHOP DRAWINGS

- A. Shop drawings shall be prepared by a qualified detailer for CONTRACTOR, subcontractor, supplier, or manufacturer, and shall illustrate some portion of the work, showing fabrication, layout, setting, or erection details.
- B. Identify details by reference to sheet and detail numbers shown on Contract Drawings. Use same symbols used on Contract Drawings to identify shop drawing details wherever practicable.

1.03 PRODUCT DATA

- A. Submit manufacturer's standard schematic drawings:
 - 1. Modify drawings to delete information that is not applicable to the project.
 - 2. Supplement standard information to provide additional information applicable to project.
- B. Submit manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.
 - 1. Clearly mark each copy to identify pertinent materials, products or models.
 - 2. Show dimensions and clearances required, performance characteristics and capabilities, wiring diagrams and controls, and any other pertinent data applicable to the project.
- C. Submit manufacturer's certificate of compliance certifying to compliance with specification requirements, applicable reference standards and test data requirements. Include reference to the specification section and paragraph with which the product or materials is intended to comply.

1.04 CONTRACTOR RESPONSIBILITIES

- A. CONTRACTOR shall submit quantities specified in Section 01000 General Requirements.
- B. Submittals shall be made by CONTRACTOR to the ENGINEER with a transmittal form or letter and not by subcontractors, suppliers or manufacturers. CONTRACTOR shall review, stamp with his approval, and submit in orderly sequence all submittals required by the specifications. By approving and submitting items, CONTRACTOR represents that he has verified all field measurements, field construction criteria, materials, catalog

numbers, and similar data, and has coordinated each shop drawing with requirements of the project.

- C. The CONTRACTOR shall not begin work that requires submittals until the ENGINEER reviews and approves submittals. The ENGINEER will return an approved copy of the submittal to the CONTRACTOR.
- D. CONTRACTOR'S responsibility for errors and omissions in submittals, or for deviations in submittals from requirements of the Contract Documents, shall not be relieved by review of submittals unless ENGINEER gives written acceptance of specific deviations. The CONTRACTOR shall notify ENGINEER in writing at time of submission of deviations in submittals from requirements of the Contract Documents.

END OF SECTION

SECTION 01450

TESTING AND INSPECTION

PART 1 GENERAL

1.01 SUMMARY

- A. This section covers quality control requirements supplementary to those of the General Conditions and other sections of the Technical Specifications.

1.02 QUALITY ASSURANCE.

- A. **Testing Laboratory.** The services of an independent testing laboratory shall be provided by the Owner as deemed necessary by Owner to assure compliance with project specifications. All such testing shall be performed under the direct supervision and control of a qualified professional engineer employed by the laboratory. Contractor will be required to schedule field visits by testing laboratory with his work schedule to achieve Owner's desired testing frequency.
- B. **Requirements of Regulatory Agencies.** If the laws, ordinances, rules, regulations or orders of any public body or authority having jurisdiction require any Work to be specifically inspected, tested or approved by someone other than the contractor, Owner, inspector, testing firm employed by the Owner; the contractor shall give all required notices and make all required arrangements therefore and shall deliver to the Owner certificates of inspection, testing or approval issued by the appropriate public bodies or authorities having jurisdiction. The cost of all such inspections, tests, and approvals shall be borne by the contractor unless otherwise provided in the contract documents.
- C. **Source Quality Control.** To the extent specified herein or in other sections, the testing laboratory shall obtain samples of various materials at the source of supply, at no cost to the Owner, and shall test the materials for compliance with the contract documents. The testing laboratory shall tag, seal, label or otherwise suitably identify the bulk materials so sampled and no such materials shall be used in the Work until the test reports are submitted to and approved by the Owner. The applicable tests shall be repeated at the specified intervals, whenever the source of supply is changed, or whenever the characteristics of the materials change or vary in the opinion of the Owner.
- D. **Test Witnessing.** The Owner may, at his option, witness testing performed at the factory, supplier's test facility or at the testing laboratory. The Owner may inspect fabricated equipment and or witness testing at the factory without cost to the Contractor and without cost from the supplier or manufacturer charged to the Owner. The Contractor shall notify the Owner in sufficient time so that test witnessing and/or factory inspection can be arranged. Factory inspection will be made after manufacturer has performed satisfactory checks, adjustments, tests and operations.
- E. **Construction Observation and Inspection.** The Owner or Owner's Representative shall perform regular observation and inspection of the Work at the project site. All work shall be performed and constructed under the inspection of the Owner, or Owner's

Representative, unless specified otherwise, elsewhere in the contract documents. Such inspection may include mill, plant, and shop or field inspection as required. Any work requiring inspection that is performed or constructed in the absence of the engineering firm shall be considered defective and is subject to rejection.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 FIELD SAMPLING

- A. Field samples will be selected and obtained by the testing laboratory or inspector unless otherwise specified.

3.02 CONTRACTOR FURNISHED ASSISTANCE

- A. When requested, furnish access, equipment, facilities and labor assistance at the site as necessary for the duties to be performed by the testing laboratory and inspector including ladders, hoisting, temporary lighting, temporary water supply, and like services.

3.03 TESTING AND INSPECTION

- A. Building Permit and other related permits.
 - 1. Contractor is responsible for obtaining and maintaining all building and other related permits (such as electrical, stormwater, grading, etc.).
 - 2. Contractor shall coordinate all required inspections with his work schedule.
- B. Testing Laboratory
 - 1. Contractor shall coordinate and facilitate all Owner directed quality assurance inspections.
 - 2. Contractor shall be solely responsible for scheduling test laboratories with sufficient notice to facilitate Contractor's work schedule. This includes geotechnical inspections, masonry inspections, rebar inspections by Engineer, concrete inspections and any other required special inspections (e.g. metal structure construction inspections).
 - 3. Contractor shall perform all necessary remedial work resulting from inspections to the satisfaction of the Engineer.
- C. Equipment and Process Piping
 - 1. Engineer shall inspect and approve coatings, alignment, support and restraint of all equipment and process piping. Inspection will require Contractor to remove connecting bolts at all equipment to demonstrate proper alignment and stress mitigation.
 - 2. Engineer shall inspect and approve all valves for proper operation. Inspection shall include proper operator type (hand wheel, operator nut, lever, chain as dictated by centerline elevation of the valve) and orientation per manufacturer requirements (seat direction, shaft orientation, operational access to actuator and position indicators).

3. Contractor shall correct any noted deficiencies to satisfaction of Engineer prior to Operational Demonstration.
 4. Contractor shall coordinate inspection with his work schedule.
- D. Yard Piping
1. Engineer shall inspect and approve all thrust restraints prior to backfilling. Contractor shall coordinate inspection with his work schedule.
- E. Pressure Test
1. Contractor shall perform testing in accordance with related project specifications. Testing shall be witnessed by Engineer and shall be repeated until results are accepted by Engineer.
 2. The following shall be tested and accepted by Engineer prior to Operational Demonstration.
 - a. Process piping
 - b. Yard Piping
 - c. Pressurized plumbing – potable and non-potable lines
 - d. Gravity water and sewer lines
 - e. Manholes and equipment vaults
- F. Leak Test
1. Contractor shall perform testing in accordance with related project specifications. Testing shall be witnessed by Engineer and shall be repeated until results are accepted by Engineer.
 2. The following shall be tested and accepted by Engineer prior to Operational Demonstration.
 - a. Water holding tanks and structures
 - b. Water control gates
 - c. Control device elevations: weirs, overflows, etc.
- G. Vendor Equipment Check
1. Contractor supply all required fluids, chemicals and lubricants for operation.
 2. In presence of equipment manufacturer, Contractor shall at minimum verify the following:
 - a. Unit readiness for service
 - 1) proper fluid and lubricant types
 - 2) proper fill levels
 - 3) proper anchoring and mechanical connections to structures and piping
 - 4) proper leveling and alignment
 - b. Electrical service and proper rotational direction.
 - c. Equipment performance range per project specifications.
 - d. Volt and amperage draw under normal operational conditions.
- H. Instrumentation and Control Check (a.k.a. SCADA check)
1. Contractor shall perform testing in accordance with related project specifications. Testing shall be witnessed by Engineer.
 2. Testing shall be approved by Engineer prior to validation testing or start-up demonstration.

END OF SECTION

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SECTION 01500

CONSTRUCTION AND TEMPORARY FACILITIES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. This Section covers the temporary facilities and controls for the Work and is supplementary to the General Conditions. Principal work items are:
 - a. Construction Utilities and Aids.
 - b. Barriers.
 - c. Security Provisions.
 - d. Roads and Access.
 - e. Environmental and Other Controls.
 - f. Traffic Control.
 - g. Field Offices for Inspectors.
 - h. Contractor's Office and Storage Facilities.
 - i. Sanitary Facilities.
 - j. Telephone Services.
 - k. Project Sign for Owner.

B. Related Work Not Included in This Section:

1. Permanent Construction and Facilities.
2. Permanent Utility Services.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

- A. Make all necessary arrangements, secure required permits other than those obtained by the Owner, and pay all fees and charges required by public authorities where temporary facilities or controls are located on public property. The Contractor shall abide by the requirements of all regulatory agencies and the Owner.

1.03 SUBMITTALS

A. Drawings and Data. Follow procedures for submittal of shop drawings and materials lists. Submit the following:

1. Site barriers to prevent access to the fenced areas showing details and layout. Mark on reproducible prints of site plans.
2. Layout of temporary access, parking, material and equipment storage areas and traffic/utility corridors: and layout and arrangement of Contractor's offices and storage facilities. Mark on reproducible prints of site plans.
3. Drawings, sketches, catalog data, brochures and other data to illustrate the location, arrangement, layout, equipment, furnishings and utility services for the field office for the Owner's Representatives. Include calculations and data to demonstrate adequacy of the heating and air conditioning systems.
4. Details of project sign for Owner, including accurately scaled and dimensioned lettering layout.

5. Traffic control plan layout through site during construction. Maintain at least one lane in each direction.

B. Samples

1. Submit paint color samples for Owner's project sign.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 CONSTRUCTION UTILITIES

- A. The Owner will furnish potable water for construction and drinking at no charge to the Contractor limited to the quantities and characteristics available at the designated or specified supply points. The contractor shall furnish and install all piping, trucks, tanks, meters, power, generators, lighting, communications and other services necessary to distribute water to the places where work is to be performed. Contractor shall furnish and pay for all other utilities, including energy charges and other fees (except demand charges which the Owner will pay) and temporary facilities for construction purposes including all field and demonstration testing. Conform to Division 16 as to construction power (temporary power) and install power circuits separately from lighting and communication circuits. Maintain power to existing pump stations and treatment plants. Install construction lighting when Work is performed at night or under deficient daylight conditions to ensure proper performance and workmanship and to provide for inspection and safe working conditions. If power is not available, contractor shall supply sufficient temporary generators at no cost to the Owner. Description

3.02 CONSTRUCTION AIDES

- A. Comply with OSHA requirements and applicable ordinances, rule, regulations and orders pertaining to construction machinery and equipment, hoists, cranes, scaffolding, staging, material handling facilities, tools, appliances and other construction aids. OSHA requirements shall govern where mandatory: otherwise comply with most stringent requirements.

3.03 BARRIERS

- A. Erect and maintain barriers as required to safeguard the site and Works. Equip gates with hold-opens and padlocks: furnish padlock keys to Inspectors. Construction of galvanized or aluminum chain link fencing or maximum 4-inch opening wire mesh: either new or used materials that are clean and free of hazards. Install on nominal 4-inch square wood posts embedded and braced to withstand 150 lb. transverse load applied to the top. Metal posts may be used in lieu of wood posts. Secure fencing or mesh to posts at maximum 12-inch intervals. Provide doubled posts at gates. Construct fence not less than five feet in height.

3.04 SECURITY

- A. Watchman Services

1. At Contractor's option, furnish watchman services to safeguard and protect the site, work, equipment and materials during all hours that construction operations are not in progress.
- B. Fire Protection
1. Conform to requirements of the local fire authority for fire prevention during construction.

3.05 ROADS AND ACCESS

- A. Transportation Facilities. Investigate the availability of transportation facilities and make necessary arrangements for delivery of materials and equipment to the site or excavated material from one area of the site to another. Determine the condition and availability of public roads, access, rights-of-way, railroad crossings and associated restrictions, bridge load limits and other limitations affecting transportation and ingress and egress at the site.
- B. Site Access
1. Access to the site requires crossing of railroad tracks. Although this crossing is controlled, Contractor shall stress safety and stopping and looking for trains prior to crossing, regardless of gate location. Maintain site and temporary roadway ditches, culverts and similar items as required. Maintain access to the existing pump station and electrical equipment, pipelines, manholes and cleanouts.

3.06 SPECIAL CONTROLS

- A. Noise Control
1. Comply with OSHA requirements as to allowable noise levels during construction. Equip all internal combustion engines in vehicles and construction equipment with effective mufflers. Prevent noise disturbance to adjoining property owners and the public.
- B. Mud, Dirt and Dust Control
1. Sprinkle earthmoving and other places where construction activities create a dust nuisance at frequent intervals and not less than twice daily during earthmoving operations. Be responsible for all damage resulting from dust and mud produced by construction operations. All vehicles that transport gravel, sand or earth shall be covered prior to haul to prevent loss of material to public streets. At the south end of the existing asphalt access road on the site, the Contractor shall provide a stabilized construction entrance in accordance with CDOT Standard Plan M-208-1, Sheet 5 of 7, to reduce the amount of mud and dirt tracked by construction vehicles leaving the site.
- C. Water Control
1. Perform grading and other operations as required to maintain site drainage. Do not allow surface or groundwater to accumulate in excavations, under structures and control surface water by means of ditches, dams, temporary pumps and piping and other necessary methods. Do not allow mud, silt or debris from dewatering operations or from runoff to flow on to adjoining property.
- D. Air Pollution Control

1. Comply with all laws, ordinances, rules, regulations and other restrictions pertaining to air pollution. Do not use any fuel nor perform any operation that emits smoke which is defined as equal to Ringleman No. 2 or darker.
- E. Disposal Area
1. The Contractor shall locate a suitable area for legal disposal of surplus and waste construction material from the Work and shall acquire the necessary permits and pay all costs, if any.
- F. Access to Work
1. The Owner, its inspectors, agents, consultants and other employees shall at all times and for any purpose have access to the Work and premises used by the Contractor and the Contractor shall provide safe and proper facilities therefore. Included are State of Colorado and Federal representatives and inspectors.
- G. Preservation of Property
1. Due care shall be exercised to avoid injury to existing improvements, poles, fences, signs, adjacent property and trees and shrubbery that are not to be moved. If such improvements or objects are damaged, by reason of the Contractor's operations, they shall be replaced or restored, at the Contractor's expense, to a condition as good as or better than when the Contractor entered upon the Work.
- H. Property Corners and Monuments
1. The Contractor shall not disturb any monuments, property corners or survey markers without permission from the Owner and he shall bear the expense of resetting any monuments, property corners or survey markers which may be disturbed without permission.
- I. Existing Wastewater Facilities
1. The Owner shall have access to; at all times, the pump stations, pipelines and treatment plants which the Contractor must connect to, work in the vicinity of, or work adjacent to: for operation and maintenance. No valves or gates shall be operated without written approval of the Owner. All operations which affect any of the existing wastewater improvements shall be coordinated with the Utility Director or his representative. Wastewater flows may not be disrupted without an approved bypass in place.
- J. Archaeological Findings
1. Should the discovery of a potential archaeological or historical resource occur during construction, all work in the area of the find shall stop and a qualified archaeologist will be called in to evaluate the situation and make recommendations as to proceeding with the work. If directed to proceed, the Contractor shall conduct operations in the affected area as directed. Delays to construction may be cause for extension of the contract time. Additional work required in the affected area will be paid for by the Owner as agreed with the Contractor.
- K. Traffic Control
1. Furnish traffic control as required under Section 01570.

3.07 FIELD OFFICE OF OWNER, ENGINEER AND INSPECTOR

- A. Furnish and maintain a minimum 12 ft. by 60 ft. field office, located as directed and furnish and pay for utilities and services for the office. Install and connect at site before Work is started. Pac-Van and Satellite are acceptable manufacturers.

- B. Type
 - 1. Office shall consist of a standard commercial mobile office unit complying with the minimum requirements herein, weather tight insulated finished construction having at least two lockable doors, 4 screened windows, resilient tile flooring, uniform office lighting, grounded duplex convenience receptacles, bathroom with water closet and lavatory, small residential kitchen facility having a microwave, sink, refrigerator, storage closet of 12 sq. ft. with 6 adjustable shelves, and lockable door and a heating and air conditioning system that provides automatic continuous control of any selected indoor temperature between 55 and 90 degrees Fahrenheit. Within the office, one conference room of 100 square feet shall be supplied together with two individual work areas (60 SF each).

- C. Utilities
 - 1. The Contractor shall furnish electricity, natural or bottled fuel gas supply, piped potable water supply and janitorial and trash removal service. If piped potable water service is not available, furnish approved storage tank with pump, maintain fresh water supply for washing, toilet flushing and furnish and maintain bottled drinking water service with hot/cold dispenser. If sewage disposal service or line connection is not available, equip office with self-contained water closet of the recirculation or holding tank type with adequate pumped water storage supply and furnish maintenance service. Contractor may also provide a temporary chemical toilet and fresh water washing facilities for the field office of the owner, engineer, and inspector. Contractor to supply paper, soap, and towels and maintain the facilities in a clean and sanitary condition.

- D. Office Furniture
 - 1. Equip office with the equipment and furniture listed; either new or used items that are clean sound, undamaged and operable. Provide a minimum of the following furniture:
 - a. Two office desks with chairs, each 30" by 60" with four drawers.
 - b. Conference Table and eight office chairs.
 - c. Two lockable file cabinets, each with four drawers.
 - d. One lockable storage cabinet.
 - e. One lockable bookcase with six shelves.
 - f. Two hanging plan holders with space for 12 holders each.
 - g. Two 30" by 72" folding tables.
 - h. Three wastebaskets.
 - i. One scanner/printer/copier machine capable of 11x17 paper.
 - j. One 36" by 48" dry erase board, 4 multi-colored dry erase markers, and one eraser

3.08 SANITARY FACILITIES

A. Toilet and Washing Facilities

1. Provide temporary chemical toilets and fresh water washing facilities for the use of all workmen at the site. Supply paper, soap and towels and maintain the facilities in a clean and sanitary condition. Contractor shall supply a dedicated facility for the Owner/Engineer field office as stated in section 3.07, C.

B. Drinking Water

1. Maintain a supply of cool pure drinking water at the site, readily available to workmen, with individual disposable drinking cups or a sanitary bubbler fountain.

3.09 TELEPHONE AND INTERNET

- #### A.
- Furnish and pay for land line telephone service at the site as required for prosecution of the Work. Furnish and pay for separate local and message unit telephone in field office for Owner, Engineer and Inspector, installed as directed, consisting of two telephone lines and numbers serving the fax and a telephone message unit with push buttons and a "Hold" feature. Owner will reimburse Contractor for any long distance toll charges incurred by Owner, Engineer or Inspector.

- #### B.
- Contractor shall also furnish and pay for separate, dedicated high-speed internet service for two computers in the field office for Owner, Engineer and Inspector, installed as directed.

3.10 CONTRACTOR'S OFFICE AND STORAGE FACILITIES

- #### A.
- Furnish and maintain offices for the use of Contractor and Subcontractors as necessary for the Work. Furnish and maintain storage buildings and sheds of acceptable appearance and install them in an orderly approved arrangement. Provide gravel paving or equivalent in storage facilities to prevent contamination of stored products and construct access and haul roads as necessary. If any material or equipment to be incorporated into the Work is stored or installed in partially completed structures and/or is not adequately protected, the Owner may install the necessary protection and the Contractor shall pay to the Owner the costs incurred in furnishing such protection.

3.11 PROJECT SIGN FOR OWNER

- #### A.
- Provide and maintain two (one to be located at the Lift Station Site and one to be located at the WWTF Site) 8 foot wide by 4 foot high signs constructed of a wood frame designed to withstand a 40 psf wind load, faced with ¾-inch thick exterior or marine grade plywood. Apply two coats of paint to all surfaces. Paint lettered name of project and names of Owner, Engineer, Funding Sources, and Contractor as shown in accordance with Engineer's instructions. Use paint colors conforming to approved samples. Paint with water proof paint. Do not place contractor, subcontractor or supplier signs on or adjacent to the site. Locate sign where directed. See sample sign template provided in the Appendices.

3.12 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

- A. Remove temporary facilities and controls from the site and where the Work is performed when no longer required in the Engineer's opinion. Clean up and restore areas occupied by temporary facilities to acceptable condition.

END OF SECTION

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SECTION 01570

TRAFFIC CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. This work shall consist of furnishing, installing, moving, maintaining and removing temporary traffic signs, advance warning signs, barricades, channelizing devices, delineators, and flagmen as required by the latest revision of the "Manual on Uniform Traffic Control Devices for Streets and Highways" and the latest revisions of the Colorado Supplement thereto, in accordance with the Drawings and these Specifications.

1.02 REFERENCE STANDARDS

- A. Federal Highway Administration; Manual on Uniform Traffic Control Devices.
- B. Colorado Department of Transportation, Standard Specifications for Road and Bridge Construction, current version; Subsection 107.10 and Section 630.
- C. Colorado Department of Transportation, Standard Plans, S Standards, current version.

1.03 SUBMITTALS

- A. Review, by Engineer or Owner, of the Contractor's Traffic Control Plan (TCP) and Methods of Handling Traffic (MHT's) in no way limits or removes from the Contractor the full responsibility for the safe and effective handling of traffic both vehicular and pedestrian through or around the project.
- B. Traffic Control Plan. Traffic control, both vehicular and pedestrian, through the construction area is the responsibility of the Contractor. The Contractor shall prepare a Traffic Control Plan (TCP) to be submitted with the return of the signed agreement. The TCP shall include a schedule of traffic control devices to be used on the project, general layout of devices, situations that may require use of flaggers and/or pilot cars, and methods of notifying public of impending traffic changes. The Engineer or Owner will review the TCP for general coordination of the project.
- C. Methods of Handling Traffic (MHT). The Contractor shall control traffic in accordance with the Traffic Control Plan (TCP). 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.
- D. Each MHT shall be submitted to the Engineer/Owner before the corresponding phase of construction will be allowed to begin. The initial MHT shall be submitted a minimum of 10 days prior to the start of work on the project. All successive MHT's shall be submitted to

allow reasonable time for review. MHT's for work in CDOT rights-of-ways shall be submitted a minimum of thirty (30) days prior to commencement of related work.

- E. The proposed MHT shall include detailed information as contained in Section 630.09 of the CDOT Standard Specifications.
- F. The Contractor shall continually review their methods of handling traffic. If revisions are needed for the safe movement of traffic through or around the work areas, the Contractor shall implement the revisions immediately. The Contractor shall notify the Engineer/Owner of all changes made.

PART 2 PRODUCTS

2.01 GENERAL

- A. All materials shall conform to the applicable portions of the Reference Standards.

2.02 BARRICADES

- A. Minimum 8' wide on movable skids.

2.03 DETOURS

- A. As required by the project.

2.04 ROAD RESTRICTIONS

- A. As required by the project.

2.05 FLAGMEN

- A. Certified flaggers only. Provide as needed, as directed by Engineer or as stated on Drawings to control traffic encroaching in construction zone.

2.06 BARRICADES, CHANNELIZING DEVICES, FLASHING WARNING LIGHTS

- A. Provided by a certified traffic control supervisor on a 24-hours-per-day basis. An after-hours contact shall be provided for every calendar day from the first placement of traffic control devices until all devices are removed. Any changes to this contact shall be submitted to the Engineer and to Dispatch Services.

END OF SECTION

SECTION 01580

CONSTRUCTION SURVEYING

PART 1 GENERAL

1.01 SUMMARY

- A. This work consists of the construction surveying, calculating, and staking necessary for the construction of all elements of the project. The Contractor is ultimately responsible for all project construction surveying utilizing employees or subcontractors experienced and competent in the performance of construction surveying. Work within Public or Private Right-of-Ways (CDOT, UPRR, I-70, etc.) must be performed under the supervision of a Professional Land Surveyor (PLS) who is experienced and competent in construction surveying and registered in the State of Colorado. Locating, preserving, referencing, installing, and restoring land monuments and the determination of land lines shall be done in accordance with Section 629 of the referenced standards. The PLS shall be available to review work, resolve problems, and make decisions in a timely manner.
- B. The Contractor shall be responsible for paying and coordinating PLS directly for all work efforts.

1.02 REFERENCE STANDARDS

- A. The Standard Specification for this item is the Colorado Department of Transportation Standard Specifications for Road and Bridge Construction (Section 625) and as modified herein. Survey procedures shall be in conformance with the CDOT Survey Manual: (http://www.dot.state.co.us/Survey_Manual/Index.cfm).

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall furnish all personnel, materials, and traffic control necessary to perform the required construction surveying. All surveying equipment, including Electronic Distance Meters, tapes, tribrachs, theodolites, total stations, GPS receivers, and levels shall be calibrated prior to the start of work. EDM's, total stations, and GPS receivers, and shall be checked on a National Oceanic and Atmospheric Administration (NOAA) calibrated baseline. Equipment calibration accuracy and adjustments made to meet requirements specified in the Colorado Department of Transportation (CDOT) Survey Manual shall be documented in the Survey Records. Traffic control shall be in accordance with the requirements of Section 01570.
- B. The horizontal and vertical control for this project has been established as shown on the plans. All available information defining the extent of that control is provided on the

plans, or is available from the Project Engineer. The survey contact for the Project Engineer is Tim Barnett at 970-403-0253.

- C. A Pre-survey Conference shall be held, along with the preconstruction meeting, prior to performing any survey work. The Engineer, Contractor's Superintendent, Contractor's Surveyor (PLS) and Party Chief shall attend. A surveying work schedule shall be submitted to the Engineer for review prior to the preconstruction conference.
- D. The Contractor shall check all established control points, and verify and document their accuracy, prior to using them for construction surveying control.

3.02 CONTRACTOR SURVEYING

- A. 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 the survey control established and provided by the Engineer.

3.03 STAKING

- A. 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 with or without an approved offset.

3.04 ACCURACY AND TOLERANCES

- A. Accuracy of surveys and survey tolerances shall be as specified in the Contract or the CDOT Survey Manual. If a discrepancy should occur, the higher degree of accuracy or the more restrictive tolerance shall apply.

3.05 RESPONSIBILITY AND INSPECTION

- A. Supervision and coordination of construction surveying is the Contractor's responsibility. The Engineer may inspect the Contractor's surveying; however, such inspection will not relieve the Contractor of any responsibility for accuracy or completeness of work. 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 cost to the Owner or contract time extension.

3.06 RESET CONTROL AND STAKES

- A. 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. Points to be reset that are identified as Control Monuments or Right-of-Way Monuments, and all other monuments and points that are required by law or regulation to be established and recorded by a PLS shall be reset in accordance with Section 629.

3.07 CHANGES

- A. 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 in writing by the Engineer. All changes shall be documented in the survey records.

3.08 SURVEY RECORDS

- A. 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.
- B. Initial staking for major Process Structures shall be done from two independent setups. An independent check shall be made by the Contractor and shown in the survey records for all Process Structures.
- C. All survey records generated shall be the property of the Owner 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 PLS identified in Subsection 625.01.
- D. Copies of the Survey Records for all completed survey work shall be submitted to the Engineer prior to payment of the monthly estimate.

END OF SECTION

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SECTION 01590
EROSION CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. Contractor will be responsible for the development of a Storm Water Management Plan (SWMP). The SWMP shall include the use of Best Management Practices (BMP's) in constructing, installing, maintaining, and removing, when required, erosion control measures during the life of the Contract to prevent or minimize erosion, sedimentation, and pollution of any state waters as defined in subsection 107.25 (CDOT Spec), including wetlands.
- B. The project SWMP shall be submitted to Owners representative prior to the start of construction. The Owners representative will review the SWMP and return to the Contractor with any revisions deemed necessary.
- C. The Contractor will be responsible for the implementation of the SWMP. Contractor shall coordinate the construction of temporary erosion control measures with the construction of permanent erosion control measures to assure economical, effective, and continuous erosion control throughout construction.

1.02 REFERENCE STANDARDS

- A. The erosion control specifications contained in the Colorado Department of Transportation Standard Specifications for Road and Bridge Construction (CDOT Spec) are the basis of this specification section with modification herein. Where specific reference to the CDOT Spec is noted those portions are applicable to performance and incorporation of the erosion control work.

1.03 PROJECT REVIEW

- A. Contractor shall submit modifications to reviewed erosion control measures in a written statement to Owner. The written statement shall include the following minimum information:
 - 1. Reasons for changing the erosion control measures.
 - 2. Diagrams showing details and locations of all proposed modified, additional, or alternative erosion control measures.
 - 3. Schedules for accomplishing all erosion and sediment control work.
 - 4. Effects on permits or certifications caused by the proposed changes and additions.
- B. Owner will review the written statement of modifications and make comments in writing within 10 days after the submittal. Owner may order additional control measures if the measures proposed by the Contractor prove to be insufficient. The Contractor shall be responsible for any amendment to permits or certifications required as a result of the

changes. The changes to the erosion control measures shall not be reason for extension of contract time.

PART 2 PRODUCTS

2.01 BEST MANAGEMENT PRACTICES

- A. Contractor is responsible to determine materials and equipment needed to implement and maintain their Storm Water Management Plan.

PART 3 EXECUTION

3.01 EROSION CONTROL MANAGEMENT

- A. The Contractor shall assign to the project an employee to serve in the capacity of the Erosion Control Supervisor (ECS). The ECS shall be experienced in all aspects of construction and shall have knowledge and experience in Storm Water Management issues.
- B. The ECS responsibilities shall be as follows:
 - 1. Ensure compliance with all water quality permits or certifications in effect during the construction work.
 - 2. Directly supervise the installation, construction, and maintenance of all erosion control measures specified in the Contract and coordinate the construction of erosion control measures with all other construction operations.
 - 3. Direct the implementation of suitable temporary erosion and sediment control features as necessary to correct unforeseen conditions or emergency situations.
 - 4. Direct the dismantling of those features when their purpose has been fulfilled unless the Owner directs that the features be left in place. If removed, the area in which these features were constructed shall be returned to a condition reasonably similar to that which existed to its disturbance.
 - 5. Inspect, with the Owners representative, all erosion control features implemented for the project at least once every 14 days, after each storm event that causes surface runoff, and as required by the Owner. A report shall be submitted to the Owner's representative after every inspection and shall become part of the project records. The appropriate form for this report will be supplied by the Owner. The inspections shall be made during the progress of the work, during work suspensions, and until final acceptance of the work. During free time, inspections shall take place at least every 30 days, or as directed.
 - 6. Attend all project scheduling meetings
 - 7. Upon the Owner's request, implement necessary actions to reduce anticipated or presently existing water quality or erosion problems resulting from construction activities. The criteria by which the Owner initiates this action may be based on water quality data derived from monitoring operations or by any anticipated conditions (e.g., predicted storms) which the Owner believes could lead to unsuitable water quality situations.
 - 8. Make available, upon the Owner's request, all labor, material, and equipment judged appropriate by the Owner to maintain suitable erosion and sediment control features.

3.02 EROSION CONTROL

- A. Under no conditions shall the surface area of erodible earth material, exposed at one time by clearing and grubbing, and earthwork operations exceed 34 acres (140,000 m²): 17 acres (70,000 m²) for clearing and grubbing, plus 17 acres (70,000 m²) for earthwork operations. The Contractor shall permanently stabilize each 17 acre (70,000 m²) increment of the project immediately upon completion of the grading of that section. Once earthwork has begun on a section, it shall be pursued until completion.
- B. The duration of exposed, uncompleted construction to the elements shall be as short as practicable. Completed areas shall be permanently stabilized within seven days after completion. Disturbed areas where work is temporarily halted shall be temporarily stabilized within seven days after the activity ceased, unless work is to be resumed within 30 days after the activity ceased. Payment for this work will be made at a negotiated portion of the Contract lump sum price if the work was abandoned due to no fault or negligence of the Contractor. Payment will not be made for temporary stabilization required by the Contractor's negligence, by the lack of proper Contractor scheduling, or for the convenience of the Contractor.
- C. Clearing and grubbing operations shall be scheduled and performed so that grading operations and permanent stabilization measures can follow immediately thereafter if the project conditions permit. Otherwise temporary stabilization measures may be required between successive construction stages. No payment will be made for additional work required because the Contractor has failed to properly coordinate the entire erosion control schedule, thus causing previously seeded areas to be disturbed by operations that could have been performed prior to the seeding.
- D. Upon failure of the Contractor to coordinate the permanent stabilization measures with the grading operations in a manner to effectively control erosion and prevent water pollution, the Owner may suspend the Contractor's grading operations and withhold monies due to the Contractor or current estimates until such time that all aspects of the work are coordinated in an acceptable manner. Unforeseen Conditions. The Contractor shall design and implement erosion and sediment control measures for correcting conditions unforeseen during the design of the project, or for emergency situations, that develop during construction. The Colorado Department of Transportation's Erosion Control and Stormwater Quality Guide shall be used as a reference document for the purpose of designing erosion and sediment control measures. Measures and methods proposed by the Contractor shall be reviewed and approved in writing by the Owner prior to installation.
- E. Work Outside the Right of Way
- F. Construction Implementation
 - 1. The Contractor shall incorporate into the project all erosion and sediment control features, as well as spill prevention and containment measures, at the earliest practical time as outlined in the accepted schedule.
- G. Stabilization
 - 1. Permanent stabilization means to cover disturbed areas with final seed and mulch, as indicated on the plans. When required in the plans, an erosion control blanket shall be used in combination with the final seed and mulch. Temporary

stabilization means to cover disturbed areas with seed, mulch, and a tackifier, or a combination seed/mulch/tackifier, or to use a soil stabilization technique such as surface roughening. Other permanent or temporary soil stabilization techniques can be proposed, in writing, by the Contractor and used upon approval, in writing, by the Owner.

H. Maintenance

1. The Contractor shall continuously maintain all erosion and sediment control features so that they perform their intended function during construction and work suspensions until the project is accepted.
2. Sediment shall be removed from behind the silt fence when it accumulates to one half the exposed geotextile height.
3. From the time seeding and mulching work begins, until the date the project is declared complete, the Contractor shall keep all seeded areas in good condition at all times. Any damage to seeded areas or to mulch materials shall be promptly repaired, as directed.
4. If the Contractor fails to maintain the erosion and sediment control features in accordance with the Contract, or as directed by the Owner, the Owner may at the expiration of a period of 48 hours, after having given the Contractor written notice, proceed to maintain the features as deemed necessary. The cost, thereof, will be deducted from any compensation.
5. Temporary erosion and sediment control measures shall be removed upon completion of the project unless otherwise directed by the Owner. At the completion of the Contract, removed salvageable temporary erosion control items shall become the property of the Contractor.
6. Temporary erosion and pollution control measures required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled, shall be performed at the Contractor's expense.
7. In the case of repeated failures on the part of the Contractor in controlling erosion, sedimentation, and/or water pollution, the Owner reserves the right to employ outside assistance to provide the necessary corrective measures. Such incurred direct costs, plus project engineering costs, will be charged to the Contractor and appropriate deduction will be made from monies due the Contractor.

I. Disposal of Sediment

1. Sediment removed during maintenance of erosion control features shall remain onsite and may be used in or on embankment provided it meets the conditions of Section 203 (CDOT Spec).

3.03 CONSTRUCTION OF EROSION CONTROL MEASURES.

- A. Silt fence shall be installed in locations specified in the Contract prior to any grubbing or grading activity.
- B. Erosion control measures shall be constructed as specified in the Contract and in accordance with Sections 212, 213, and 216.
- C. Seeding, Mulching, and Sodding shall be performed in accordance with Sections 212 and 213.

- D. Erosion Bales shall be hay, straw, or other approved material containing approximately 5 cubic feet (0.14 m³) of material and weighing not less than 35 pounds (16 kg). Erosion Bales shall be string-tied. Gaps between bales shall be filled with straw or hay to obtain tight joints. The bales shall be placed embedded into the soil and shall be anchored securely to the ground with wood stakes. Stakes shall have a minimum diameter or cross section dimension of two inches (50 mm). Re-bars shall not be used.
- E. Posts shall be metal or wood with a minimum length of 42 inches (1 m). Metal posts shall be "studded tee" or "U" type with minimum weight of 1.33 pounds per linear foot (1.98 kg/m), and wood posts shall have a minimum diameter or cross section dimension of two inches (50 mm).
- F. Temporary berm shall be constructed of compacted soil and shall be graded so as to drain to a designated outlet. Berm shall be constructed to the dimensions shown in the Contract and compacted with a minimum of two passes of a rubber tired vehicle, preferably a grader wheel.
- G. Temporary Diversions shall have the slope and channel stabilized within 14 days of installation, unless otherwise directed or specified in the Contract. The diversion shall be installed prior to any upslope land disturbance.
- H. Temporary slope drains shall consist of fiber mats, plastic sheets, stone concrete or asphalt gutters, half round pipe, metal or plastic pipe, wood flume, flexible rubber, or other materials which can be used as temporary measures to carry water accumulating in the cuts and on the fills down the slopes, prior to installation of permanent facilities or growth of adequate ground cover on the slopes. All temporary slope drains shall be securely anchored to the slope. The inlets and outlets of temporary slope drains shall be protected to prevent erosion.
- I. Brush barriers shall be constructed at the time of clearing and grubbing and consist of brush, limbs, root mat, weeds, vines, soil, rock, and unmerchantable timber. The barrier shall be covered by a filter fabric.
- J. Check dams shall be constructed of stone or logs. Stone shall meet requirements of Section 506. Logs shall be obtained, if possible, from clearing operations on the project. Sediment shall be removed from behind the check dam when it has accumulated to one half of the original height of the dam.
- K. Riprap outlet protection shall conform to Section 506. Geotextile used shall be protected from cutting or tearing. Overlaps between two pieces of geotextile shall be one foot (300 mm) minimum.
- L. Storm drain inlet protection measures shall be constructed in locations and with materials and techniques specified in the Contract. Construction shall be in a manner that will facilitate maintenance, and minimize interference with construction activities.
 - 1. At excavated drop inlet sediment traps, sediment shall be removed when it has accumulated to one half the design depth of the trap. Storm drain inlet protection measures shall be removed when upstream disturbed areas have been stabilized.

- M. Temporary sediment traps or basins shall be installed before any land disturbance takes place in the drainage area. If an excavated trap or basin is required, then the excavated soil may be used to construct the dam embankment, provided the excavated soil meets the requirements of Section 203.
 - 1. Area under the embankment shall be cleared, grubbed, and stripped of all vegetation and root mat. Fill material for the embankment shall be free of roots or other woody vegetation, organic material, large stones, and other objectionable material.
 - 2. Embankment construction shall conform to Section 203. Sediment shall be removed from the trap or basin when it has accumulated to one half of the wet storage depth of the trap or basin. Original grades shall be re-established upon completing the use of temporary sediment basin.
- N. Concrete Washout Structure shall be designed and constructed by Contractor contain washout from concrete placement and construction equipment cleaning operations.
- O. A stabilized construction entrance shall be constructed to eliminate dirt and debris from entering the public right of way. The stabilized entrance shall conform to Section 208.

END OF SECTION

SECTION 01600

GENERAL MECHANICAL AND EQUIPMENT PROVISIONS

PART 1 GENERAL

1.01 SUMMARY

- A. These General Mechanical and Equipment Provisions, which apply to all systems and equipment, are hereby made a part of each and all of the separate Sections of this Project Manual. Contractor shall require all subcontractors and suppliers of mechanical and related appurtenances for the work to follow the provisions of this Section. The requirements of detailed specifications take precedence over this section in the event of an apparent conflict.

1.02 SUBMITTALS

- A. Refer to Sections 01300, 01340 and 01730 for submittal requirements.

1.03 MANUFACTURER'S EXPERIENCE

- A. Unless specifically named in the detailed specifications, a manufacturer shall have furnished equipment of this type and size specified which has demonstrated successful operation and is in regular use.

1.04 STANDARD OF QUALITY

- A. Items of equipment are specified by the name of a manufacturer for the purpose of establishing a standard of quality and acceptable experience. Substitute equipment will be acceptable if it complies with the requirements for substitutions in the Contract Documents. Manufacturers specified have been determined by the Owner to meet or exceed the minimum acceptable standard for the designated equipment style and model. Refer to the General Conditions for requirements pertaining to substitutions and equals. All mechanical equipment furnished under this specification shall be new and of current design.

1.05 QUALITY ASSURANCE

- A. Source Quality Control and Tests
 - 1. Observation of Performance Tests
 - a. Where specifications require presence of Engineer for testing of equipment, Owner is to pay for all costs of Engineer's first visit.
 - b. If subsequent visits by Engineer are required because of incomplete tests, retesting or subsequent tests, Contractor shall reimburse Owner for all costs.
 - 2. Balancing
 - a. Where specified, submit balancing reports as product data, demonstrating compliance with this requirement.

- b. Unless specified otherwise, fully assemble all rotating elements in motors, pumps, blowers, and centrifugal compressors including coupling hubs, before being statically and dynamically balanced.

Balance all rotating elements to the following criteria: $e = 16 W/N$

Where:

e = imbalance, ounce-inches, maximum

W = Weight of the balanced assembly, pounds mass

N = Maximum operational speed, rpm

B. Source Quality Control and Tests

1. Factory assemble and test equipment and pumps before shipped to job site.
2. Ship units assembled for erection by Contractor unless shipping limitations or special installation requirements dictate otherwise.
 - a. If knocked down, ship equipment in minimum practical number of pieces for field assembly by Contractor.
3. Subject each blower and pump to non-witnessed test at full speed using calibrated motor.
 - a. Comprehensive test to develop head, capacity and efficiency for at least 6 points on unit's head/capacity curve and shall confirm performance at guaranteed performance condition (rated condition).
4. Conduct all pump tests in accordance with test code of standards of the Hydraulic Institute except that predicted performance for model tests will not be accepted.
5. Test results shall be signed and certified correct under penalty of perjury by and officer of manufacturing corporation.
6. Upon completion of testing, produce curves showing unit performance at full speed and predicted performance at speeds required to meet all other specified operating conditions.
7. Do not ship or deliver blowers or pumps until certified test have been submitted and reviewed by Engineer.
8. Final acceptance of equipment will depend on satisfactory operation after installation of Work.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Box, crate or otherwise enclose and protect equipment during shipment, handling, storage and following installation until final acceptance by the project. Keep equipment dry and covered from exposure to weather. Store pumps, motors, electrical equipment and equipment having antifriction or sleeve bearings in weather-tight storage facilities. Lift large equipment items only at the points designated by manufacturer.
- B. Factory Painted Surfaces
 1. Protect against impact, abrasion, discoloration, and other damage. Repair damage as directed and approved.
- C. Electrical Equipment
 1. Maintain electrical equipment, controls and insulation dry at all times. Keep heaters in equipment connected and operating until equipment is placed in operation.

1.07 JOB CONDITIONS

- A. Drawings are diagrammatic and show the intended arrangement of principal apparatus, piping and appurtenances. Conform to drawings as closely as possible and exercise care to secure approved headroom and space conditions, neat arrangement of piping valves, hangers and like items and to overcome structural interferences. Verify dimensions and conditions at the place of installation and install materials and equipment in the available spaces. Submit written details and reasons for proposed deviations from Drawings and Specifications and do not deviate from them unless authorized by Field Order or Change Order. If approved changes require alteration of structures or related work, make such alterations as approved in advance by Owner at no additional cost to Owner.

1.08 ADAPTATIONS OF EQUIPMENT

- A. No responsibility for alteration of a planned structure to accommodate substitute equipment will be assumed by the Owner. Equipment which requires alteration of the structures will be considered only if the Contractor assumes all responsibility for making and coordinating all necessary alterations. All revisions to structures, mechanical, electrical, instrumentation or other work made necessary by such substitution shall be approved by the Owner and the cost of such revisions, including cost of redesign, shall be made at the Contractor's expense.

PART 2 PRODUCTS

2.01 MATERIALS AND WORKMANSHIP

- A. All equipment furnished shall be new and guaranteed free from defects in materials, design, and workmanship. It shall be the Contractor's responsibility to ascertain the condition and service under which the equipment will operate and to warrant that operation under those conditions shall be successful. All parts of the equipment shall be amply proportioned for all stresses that may occur during fabrication, erection and intermittent or continuous operation.
- B. General
 - 1. All equipment shall be designed, fabricated and assembled in accordance with the best modern engineering and shop practice. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests. Materials shall be suitable for service conditions. Iron castings shall be tough, close-grained gray iron free from blowholes, flaws or excessive shrinkage and shall conform to ASTM A48. Except where otherwise specified, structural and miscellaneous fabricated steel used in items of equipment shall conform to the Standards of the American Institute of Steel Construction. All structural members shall be considered as subject to shock or vibratory loads. Unless otherwise specified, all steel which will be submerged, all or in part, during normal operation of the equipment shall have a minimum nominal thickness of ¼ inch. Provide equipment and materials suitable for the service conditions and meeting standard specifications such as ANSI, ASME, AWWA, ASTM, NEMA, UBC and UL. The location of the fabricator

and his shop schedule shall be furnished to the Owner prior to the beginning of fabrication so that the Owner can schedule shop inspection.

2. Contractor to perform all maintenance and startup procedures as required by the equipment manufacturer, prior to substantial completion. This includes but is not limited to turning motors, lubricating equipment, and inspecting for construction debris. Contractor shall replace all spare parts used during equipment installation and startup prior to Final Completion.

2.02 LUBRICATION

A. Lubricants

1. Provide lubricants of types recommended by equipment manufacturers, quantities sufficient for consumption prior to completion, testing and final acceptance.

B. Lubricant Systems

1. Lubrication of equipment shall insure constant presence of lubricant on all wearing surfaces. Lubricant fill and drain openings shall be readily accessible. Easy means for checking the lubricant level shall be provided. Prior to testing and/or operation, the equipment shall receive the prescribed amount and type of lubricant as required by the equipment manufacturer. Equipment lubrication systems shall be systems that require attention no oftener than weekly during continuous operation, shall not require attention during start-up or shut down and shall not waste lubricant.

2.03 EARTHQUAKE DESIGN AND RESTRAINT

- A. All machinery, mechanical and electrical equipment, instrumentation panels and electrical panels supplied under this contract shall be designed, constructed and attached to resist stresses produced by seismic forces specified in this Section. Equipment that does not vibrate during normal operation shall be rigidly attached to the foundation or other adequate support to prevent lateral and vertical displacement. Equipment that vibrates during normal operation shall be attached by means of isolators with mechanical stops that limit movement in all directions unless it can be demonstrated by calculations that such stops are not required. Equipment or portions of equipment that move during normal operation shall be restrained with mechanical devices that prevent displacement unless it can be demonstrated by calculations that such restraints are not required.

B. Equipment Restraint Design Factors

1. All equipment restraints, utilizing ductile materials, shall be designed to resist lateral seismic forces equal to 0.35 of the equipment weight with allowable working stresses increased by one-third, or 0.50 of the equipment weight with allowable stresses equal to the yield point of the material. For brittle materials, the allowable stresses shall not exceed 50 percent of the ultimate strength of the materials, based on a lateral force equal to 0.50 of the equipment weight. Cantilever posts supporting equipment shall be designed to resist lateral seismic forces equal to 0.50 of equipment weight with allowable working code stresses increased by one-third.

C. Minimum Earthquake Forces

1. Except as provided herein the minimum earthquake forces shall be those prescribed by the International Building Code. The Edition, Importance Category, and Seismic Use Group shall be as specified on Sheet S1.

D. Submittal Requirements

1. The contractor shall submit, with the equipment shop drawings, complete details showing method of anchoring equipment and/or mechanical stops and engineering calculations for all equipment within a Seismic Design Category C and a Component Importance Factor of 1.5, and all equipment within a Design Category D, E, or F. All engineering required to comply with these provisions shall be the contractor's responsibility. Submittals shall state the weight of the equipment involved the materials of the anchor system and show all information in sufficient detail to permit an evaluation of its structural adequacy. Submittals not meeting these requirements in full will be returned not approved, with deficiencies noted. The contractor shall be required to correct all deficiencies and resubmit the proposed system of anchorage for approval. Submittal requirements under this Section shall also be met for all equipment and attachments when, in the opinion of the Engineer, do not appear to meet minimum IBC requirements.

2.04 STRUCTURAL STEEL FABRICATIONS

- A. Conform to "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" of the AISC unless otherwise indicated or specified. Design all fabrication for dynamic and vibratory loadings. Use structural steel shapes conforming to ASTM A36, A440, A500, A570, A618 or equal, as applicable. Conform welding to AWS D1.1 Structural Welding Code. Galvanize specified items in accordance with ASTM A123, A153 or A386 as applicable; use galvanized bolts and fasteners with galvanized assemblies.

2.05 EQUIPMENT BASES AND BEDPLATES

- A. Not used.

2.06 ANCHORS AND SLEEVES

- A. Not used.

2.07 SAFETY GUARDS

- A. Not used.

2.08 DRIVE UNITS

- A. Not used.

2.09 GEARS

- A. Not used.

2.10 ELECTRICAL MOTORS FOR MECHANICAL EQUIPMENT

- A. Not used.

2.11 GAGES

- A. Provide pressure gage taps on suction and discharge sides of pumps, blowers, and compressors.
- B. Provide pressure and vacuum gages where specified.
- C. The gages shall be liquid filled, 4-1/2 inch diameter, and in accordance with the specification. Gages shall be provided with a ball valve for isolation. Discharge gage ranges shall be standard commercially available range with the maximum reading not less than 15 psi greater than the pump rated shut-off pressure and shall be equipped with snubbers.
- D. Gages shall read in psi over their entire range.

2.12 EQUIPMENT IDENTIFICATION

- A. Nametags: Identify all valves, instruments, and devices with equipment tag designation numbers and prefix and suffix letters as specified and/or shown on Process and Instrumentation Drawings (P&ID's), per requirements of Section 09900.
- B. Nameplates: not used.

2.13 PAINTING

- A. Conform to applicable requirements of Section 09900

2.14 SPECIAL TOOLS, ACCESSORIES, AND LIFTING HANDLES

- A. Provide all special tools, instruments and accessories required for proper maintenance.
- B. Provide all special lifting and handling devices required.
- C. Provide lifting handles, lugs, or eye bolts on all individual components of equipment systems weighing 50 pounds or more.

2.15 PROTECTION AGAINST ELECTROLYSIS

- A. Provide suitable insulation between dissimilar metals where used in conjunction with each other between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis.

PART 3 EXECUTION

3.01 COORDINATION

- A. General

1. The drawings show in a diagrammatic form the arrangements desired for the principle apparatus, piping and similar appurtenances and shall be followed as closely as possible. Proper judgment must be exercised in carrying out the work to secure the best possible headroom and space conditions throughout, to secure neat arrangement of piping valves, fixtures, hangers and similar appurtenances and to overcome local difficulties and interferences of structural conditions wherever encountered.

B. Measurements

1. The Contractor shall take all measurements for his work at the installation sites, verify all subcontractor drawings and be responsible for the proper installation, within the available space of the apparatus specified and shown on the drawings and shall secure the approval of the Owner for any variations before making changes.

C. Unit Responsibility

1. Refer to pertinent Sections for items of equipment to be assembled of several components under the unit responsibility of a single manufacturer. To coordinate this requirement, the Contractor shall monitor and verify the unit responsibility processes and submit the following information to the Owner in writing on a monthly basis:
 - a. Shipment dates of the various components to the unit responsibility manufacturers.
 - b. Scheduled dates of factory tests by unit responsibility manufacturers.
 - c. Schedule shipment dates to site of unit responsibility items.
 - d. Schedule arrival date, installation date and start-up date.

3.02 CONTRACTOR INSPECTION

A. Inspect each item of equipment for damage, defects, completeness, and correct operation before installing. Inspect previously installed related work and verify it is ready for installation of equipment.

3.03 PREPARATION

A. Prior to installing equipment, ensure that installation areas are clean and that concrete or masonry operations are completed. Maintain the areas in a broom-clean condition during installation operations. Clean, condition and service equipment in accordance with the approved Operation Manuals and requirements in other Sections of these Specifications before installing.

3.04 INSTALLATION

A. Structural Fabrications

1. Conform to the AISC Code and Specification references in Article "Structural Steel Fabrications".

B. Equipment

1. Conform to approved Instruction Manuals. Employ skilled craftsmen experienced in installation of the types of equipment specified. Use specialized tools and equipment such as precision machinist levels, dial indicators, gages and

micrometers as applicable. Produce acceptable installations free of vibration or other defects.

C. Anchor Bolts

1. Deliver bolts with templates or setting drawings and verify that bolts are properly sized and correctly located before structural concrete is placed.

D. Base and Bedplate Grouting

1. Do not place grout until initial fitting and alignment of connected piping is completed. Level and align equipment on the concrete foundations, then entirely fill the space under the base or bedplates with grout. Bevel exposed grout at 45 degree angle. Except round exposed grout at horizontal surfaces for drainage. Trowel or point exposed grout to a smooth dense surface and damp cure with burlap for three days. When grout is fully hardened, remove jacking screws and tighten nuts on anchor bolts. Check the installation for alignment and level and perform corrective work as required to conform to the tolerances given in the applicable Instruction Manual.

3.05 FIELD QUALITY CONTROL

- A. Refer to Section 01450 Testing and Inspection.

END OF SECTION

SECTION 01605
PIPE SCHEDULE AND TESTING

PART 1 GENERAL

1.01 SUMMARY

- A. Piping designations, materials, locations and test conditions.

PART 2 PRODUCTS

- A. NOT APPLICABLE

PART 3 EXECUTION

3.01 PIPE SCHEDULE

- A. See following pages:

PIPE SCHEDULE

Media	Description	Material	Spec. Section	Installation	Temp. Deg F	Test Pressure	Test Type	Remarks
Compressed Air		Copper		Exposed, Buried	40-160	150	P	
Influent/Effluent		RJ DIP Protecto 401 Lining		Buried	40-100	15	P	
Outfall		C905 PVC		Buried	40-100	15	P	
Natural Gas	Interior or Exterior	Sch 40 Black Steel		Exposed or Concealed	40-100	10	P	Testing per Building Code
		HDPE		Buried	40-100	15	P	
Potable Water	Interior	Copper		Exposed	40-100	150	H	
	Yard	Standard Cement Mortar Lining		Buried	40-100	150	H	
Sanitary Sewer		SDR 35 PVC		Buried	40-100	5	P	
Storm Sewer		HDPE (ADS)		Buried	40-100	5	P	
Force Mains	Yard	C905/RJ PVC		Buried	40-100	150	H	
(Sanitary) Force Main	Yard	HDPE Purecore/Cencore		Buried	40-100	150	H	

3.02 ABBREVIATIONS

A. Test Type

1. H – Hydraulic (water) pressure testing procedures.
2. P – Low pressure (air) testing procedures.

B. Pipe

1. DIP – Ductile Iron Pipe.
2. CML – Cement Mortar Lined.
3. STL – Steel Pipe.
4. RCP – Reinforced Concrete Pipe.
5. HDPE – High Density Polyethylene Pipe.
6. CI – Cast Iron Pipe.
7. RJ – Restrained Joint.

END OF SECTION

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**SECTION 01631
REQUEST FOR SUBSTITUTION**

PROJECT: _____	
OWNER: _____	
TO: SGM	
SPECIFIED ITEM:	
Section	Page
Paragraph/Article	Description
The Contractor hereby requests consideration of the following:	
PROPOSED SUBSTITUTION: _____	
<p>Attached data includes product description, specifications, drawings, photographs, performance, and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.</p> <p>Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.</p> <p>The Contractor certifies that the following paragraphs, unless modified by attachments, are correct:</p> <ol style="list-style-type: none"> 1. The proposed substitution does not affect dimensions shown on Drawings. 2. The Contractor will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution. 3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements. 4. Maintenance and service parts will be locally available for the proposed substitution. <p>The Contractor further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item</p>	
Submitted by: Signature: _____ Firm _____ Address _____ _____ Date _____ Telephone _____	For use by the Engineer <input type="checkbox"/> Accepted <input type="checkbox"/> Accepted as <input type="checkbox"/> Rejected <input type="checkbox"/> Received too By _____ Date _____ Remarks _____
Attachments	

END OF SECTION

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SECTION 01650

STARTING OF SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance validation testing requirements.
- B. Operational demonstration requirements for equipment, systems or facility.

1.02 DEFINITIONS

- A. Project System: Specific system, consisting of an independent arrangement of equipment, structures, components, piping, wiring, materials or incidentals that that work together to achieve an identifiable.
- B. Validation Testing: A period of time during which equipment and related systems are operated to demonstrate the generally performance intended by the project specifications.
- C. Start-up Period: A period of time, of specified duration, following Validation Testing, during which process flow or product is introduced to the facility or Project System. This period is used to demonstrate successful operation and performance of the project without exceeding specified downtime limitations, to prove functional integrity of mechanical systems, electrical equipment and control interfaces to the satisfaction of the Engineer.
- D. Related System: Equipment or subsystem whose function is necessary for the start-up, testing and operation of the project system as a whole.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 GENERAL

- A. It is understood that Validation Testing and Start-up must be a coordinated, collaborative effort between the Contractor, Owner and Engineer as many personnel and existing systems may be affected.
- B. When requested, Contractor shall furnish access, equipment, facilities and labor assistance as necessary for the Engineer and Owner to evaluate system operation during testing and start-up, including ladders, hoisting, temporary lighting, temporary water supply, and like services.
- C. Contractor to provide sufficient number of properly trained personnel to supervise and conduct testing. Contractor shall be pay all costs associated with facility, systems or

equipment start-up, including all fluids, lubricants, chemicals, consumables, equipment and maintenance. Items provided for testing and startup is in addition to those to be provided under the technical specifications.

- D. Coordination meetings shall be held 7-days before all validation and start-up testing. Meetings shall include Owner, Engineer and any manufacturers or trades associated with the system test.
- E. Contractor responsible for all pumping and by-pass connections required during the Validation and Start-up processes.
- F. Contractor shall also provide the first required maintenance checkup for all equipment. Contractor to coordinate with owner for timing of checkup to ensure operations and maintenance staff is involved to the extent possible.
- G. Mandatory prerequisites:
 - 1. Manufacturer training has been completed on all components of the related system to be tested.
 - 2. Each piece of equipment within the related system has successfully completed the Vendor Equipment Check.
 - 3. The control system for the related equipment is complete and functional, including alarming and trending.
 - 4. Approved vendor Operation & Maintenance manuals are on-site.

3.02 TESTING PROCEDURES

- A. Ranges for Testing
 - 1. Flow metering systems shall be tested at not less than 3 values corresponding approximately to minimum, average, and maximum capacity, respectively.
 - 2. Liquid level indicating systems shall be tested at not less than 5 levels corresponding to low, average, normal, maximum and high alarm levels, respectively. Low-low and High-high level alarms and system reaction shall also be tested where equipment or instruments are required to react to such conditions.
 - 3. Remotely controlled valves shall demonstrate suitable operation both from local controls and remote controls. As a minimum, these procedures shall include full-open and full-closed positioning. Each test shall be repeated not less than 3 times for non-throttling and non-modulating valves. In addition to these minimum requirements, and subject to approval, all throttling valves and modulating valves shall be operated at not less than 3 intermediate positions and shall demonstrate the ability of each valve to hold the set position under operating conditions.
 - 4. Variable speed equipment shall demonstrate accurate response to speed controlling devices and controls within the required operating range. Actual output shaft speeds of manually adjustable speed equipment shall be validated by measurement of shaft speeds versus speeds shown by equipment instruments.
- B. Equipment response to appropriate manual or automatic controls, or combinations of both automatic and manual controls, shall be demonstrated to be correct and accurate. Where applicable, all components shall be tested for both manual and automatic

operation. Where a component performs more than one function, every function shall be validated.

1. Pumping equipment shall respond accurately and reliably to liquid level and flow rate signals from appurtenant basins, sumps or wet wells. Automatic alternation and backup pump functions shall also be validated.
2. Chemical feed systems shall respond accurately to flow signals and feed proportionally over the ranges of process flows to be validated.
3. Auxiliary equipment items such as annunciators, alarms and like items shall respond accurately and reliably to every condition to which they are programmed, in the manner specified.

C. Recording of Data.

1. Neat and comprehensive records of each operational Start-up and system validation test shall be maintained by the contractor. Each portion of the demonstration or validation procedure shall be described with all components itemized. Records shall be prepared on forms in a step-by-step fashion paralleling the approved procedure plans. Forms shall list for each condition:
 - a. Step taken;
 - b. Result anticipated;
 - c. Result obtained
 - d. If incorrect, corrective action taken
 - e. Retest result
 - f. Steps 4 and 5 shall be Repeated Until all System Operate as required.
2. Instruments, gages and other sensors and display devices forming a part of the various systems shall be employed for data acquisition to the extent applicable. The contractor shall furnish all other instruments, gages, recorders and test devices as required, types conforming to the approved procedure plans.
3. All applicable data such as but not limited to water and other liquid levels, flows, pressures, head differentials, duration of runs, instrument readings, chemical feed rates, voltage settings, drive speeds, motor running currents, torque, voltages, gpm, pressures, BOD, chlorine and related information, as applicable, and in accordance with the approved procedure plans, shall be recorded at the start and finish of each operational Start-up and at maximum 8-hour intervals during system validation tests, unless shorter intervals are specified elsewhere.
4. When a repeat of the same demonstration or validation test is required to verify the results, the repeat procedure shall be indicated on the recorded data by numerical indication, date and time.

3.03 RELATED SYSTEMS DEMONSTRATION AND START-UP

- A. Not Used.

3.04 VALIDATION TESTING

- A. Contractor shall coordinate with Owner and Engineer to ensure means of operation under simulated representative operational conditions without interference with existing operations.
- B. Testing shall be done using clean water.

- C. Validation testing may only occur after successful Vendor Equipment check of the extended related system components.
 - D. Validation testing must be witnessed and accepted in writing by Engineer.
 - E. Validation testing will be accepted after the entire related system operated as intended and uninterrupted for 72 hours.
 - F. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled times, at equipment location.
 - G. Demonstrate the functional integrity of the mechanical, electrical, and control interfaces of the respective equipment and components comprising the facility or system as evidence of Substantial Completion.
 - H. Owner reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, etc., to verify the functional integrity of automatic and manual backup systems and alternate operating modes.
- 3.05 TESTING, ADJUSTING, AND BALANCING
- A. Perform testing, adjusting and balancing under provisions of Section 15990.
 - B. Reports will be submitted by an independent firm to the Engineer indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

- A. Work to be performed under this section shall include all labor, equipment, materials and miscellaneous items necessary to provide all documents, information and items as specified herein.

1.02 PROJECT RECORD DOCUMENTS.

- A. Maintain at the job site one record copy of the following (updated daily):
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda.
 - 4. Reviewed Shop Drawings.
 - 5. Change Orders.
 - 6. Other Modifications to Contract.
 - 7. Field Test Records.
- B. Do not use record documents for construction purposes. Maintain documents in clean, dry legible condition, apart from documents used for construction.
- C. Label each document "Record Document". Mark all information with contrasting color using ink. Keep each record current. Do not permanently conceal any work until required information is recorded.
- D. Record following information on Drawings:
 - 1. Northing and Easting coordinates for all building corners and all buried pipes and utilities (at ends, changes in alignment, fittings and valves). Coordinates shall be in the project coordinate system.
 - 2. Building Locations and depth of foundation elements.
 - 3. Horizontal and vertical location of underground utilities.
 - 4. Location of internal utilities and appurtenances concealed in construction.
 - 5. Structural, architectural, mechanical and electrical installations.
 - 6. Field changes of dimension and detail.
 - 7. Changes by Change Order or field order.
 - 8. Details not on original Contract Drawings.
- E. Record following information on Specifications:
 - 1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 - 2. Changes by change order or field order.
 - 3. Other matters not originally specified.

- F. Maintain Shop Drawings as record documents recording changes made after review as specified for Drawings above.
- G. At completion of project, deliver record documents to Engineer with transmittal letter containing date, project title and number, contractor's name and address, title and number of each record document, and certification that each document is complete and accurate. Submittal shall be signed by Contractor or his authorized representative.

1.03 CLOSEOUT PROCEDURES

- A. The following project closeout procedure defines the responsibilities of the Contractor, Owner and Engineer in closing the project. Closeout may be conducted by areas or portions of the work if required by the project or requested by Owner.
 - 1. Step 1: Contractor advises Engineer in writing that he has reached "Substantial Completion" and provides a list of items to be completed or corrected.
 - a. Completion of all testing and training required.
 - b. Have all utilities connected and operational.
 - c. Dismantled and removed temporary construction facilities.
 - d. Completion of sanitary sewer line testing and inspection and bringing new sewer lines online as shown and/or specified.
 - 2. Step 2: Engineer inspects the work to determine if it is substantially complete, and issues a Certification of Substantial Completion plus a "punch list" of items to be completed or corrected.
 - 3. Step 3: Contractor completes and/or corrects all punch list items and notifies in writing that his work is ready for final inspection. At this time, a final application for payment is submitted to the Engineer.
 - a. Engineer's and Contractor's punch list of deficiencies from the substantial completion inspection stating how each item has been corrected or otherwise resolved.
 - b. Submit a final meter reading for all utilities, a measured record of stored fuel and chemicals and similar data as of the time of final inspection.
 - c. Complete listing of all consumables and spare parts used by the contractor to service the elector-mechanical equipment after testing.
 - d. Submittal of Record Drawings.
 - e. Notify the Engineer that the facility is ready for the final inspection including the punch list items and that all marred or damaged finishes have been repaired or restored in the notification letter.
 - 4. Step 4: Engineer makes final inspection. When the Work is found to be acceptable under the Contract Documents, and the contract fully performed, Engineer will issue a final Certificate of Payment.

1.04 RE-INSPECTION FEES

- A. Should the Contractor fail to complete and/or correct all punch list items such that additional inspections are required by the Engineer, the Contractor will be billed at the Engineer's current rate for additional services. If the Contractor has any question with regard to any items on the punch list, he is to request clarification before final inspection.

1.05 FINAL PAPERWORK

- A. Prior to release of final payment, the General Contractor shall deliver the following items to the Engineer:
1. Inspection Certificates, as applicable.
 2. Equipment and material guarantees/warranties.
 3. General Contractor's two-year guarantee of materials and workmanship.
 4. Materials and Equipment Manuals and Spare Parts as specified.
 5. All other guarantees, warranties and submittals, as specified.
 6. Receipts for extra materials delivered to the Owner.
 7. Make final change-over of locks and deliver keys.
 8. Final application for payment.
 9. Contractor's affidavit of release of liens (Spec. Section 00691).
 10. Consent of surety to final payment (Spec. Section 00692).

Final Project Record Documents. The purpose of final project record documents is to provide factual information regarding all aspects of work, both concealed and visible, to enable future modification of work to proceed without lengthy and expensive site measurement, investigation, and examination.

- a. Transfer of Data to Drawings
 - 1) Carefully transfer all data to a clean set of drawings, coordinating changes as required.
 - 2) Clearly indicate at each affected detail and other drawing, a full description of changes made during construction, and the actual location of items to be located.
 - 3) Call attention to each entry by drawing a "cloud" around the area/s affected.
 - 4) Make changes neatly, consistently, and with the proper media to assure longevity and legibility.
 - b. Transfer of Data to other Documents
 - 1) If documents other than drawings have been kept clean during progress of work, and if entries thereon have been orderly and acceptable to the Engineer, the job set of those documents other than drawings will be accepted as final record documents.
 - 2) If any such document is not acceptable to the Engineer, secure a new copy of that document from the Engineer at Engineer's usual charge for reproduction and handling, and carefully transfer the changed data to the new copy for acceptance by the Engineer
 - c. Changes subsequent to acceptance
 - 1) Contractor has no responsibility for recording changes in work subsequent to final completion, except for changes resulting from warranty work.
11. Contractor acknowledgement of Date of Substantial Completion.
 12. Provide copy of all certificates and approvals required from outside agencies, i.e. State Electrical Board.
 13. The above items are described in following articles or applicable sections of the Specifications.
 14. Inspection Certificates. Each subcontractor shall, upon completion of the Work, secure in triplicate from any state or local governing bodies having jurisdiction in

dictating that the Work is in strict accordance with the applicable codes and deliver the same to the General Contractor for transmittal to the Owner.

1.06 WARRANTY

- A. The General Contractor and each subcontractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other Work resulting therefore, which shall appear in his Work within the specified Warranty Period, as specified in the Supplementary General Conditions. The Contractor's warranty shall begin upon issuance of the Notice of Acceptance and in accordance with the terms of any special warranties provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness.
- B. A final warranty inspection will be required thirty (30) days prior to expiration of the warranty.
- C. Upon completion of his Work, the General Contractor shall deliver to the Engineer in duplicate, a written warranty based on the provision of the Article properly signed and notarized. Warranty shall be address to the Owner and assembled in a binder with a durable plastic cover and with a table of contents.
- D. The warranty period shall begin upon acceptance by Owner with written Notice of Substantial Completion.
- E. In the event that multiple or phased system startups are required, warranty periods will begin upon acceptance by Owner with written Notice of Substantial Completion for each system after successful startup of the complete system.
- F. Equipment warranties shall be the greater of the manufacturer's standard warranty and the project warranty requirement stated in the Supplemental General Conditions.

1.07 MISCELLANEOUS KEYS, SWITCHES AND WRENCHES

- A. At the completion of the project, all loose keys for hose bibs, adjustment keys and wrenches for door closers and panic hardware, keys of electric switches, electrical panels, etc., shall be accounted for and turned over to the General Contractor for transmittal to the Owner.

1.08 SPARE PARTS

- A. The contractor shall provide all spare parts and products as specified in the technical specifications. Contractor shall submit an itemized list of all items furnished describing each item and citing all appropriate specification sections and paragraphs. Each item shall be packed for long term storage and marked or tagged for easy identification.
 - 1. Items shall be delivered to the project site to an area designated by the Owner.
 - 2. The contractor shall provide an inventory of delivered items and obtain a receipt from the Owner after inspection. The inventory shall be delivered with an affidavit stating these are the specified spare parts or products delivered by the manufacturer or supplier of the installed equipment or material.

1.09 FINAL CLEANING.

- A. Prior to final inspection, the contractor shall clean all interior and exterior surfaces exposed to view but shall avoid disturbing natural weathering of exterior surfaces.
 - 1. Interior Cleaning (During Construction)
 - a. Keep work areas clean so as not to hinder health, safety or convenience of personnel.
 - b. At maximum weekly intervals, dispose of waste materials, debris, and rubbish.
 - c. Control dust in work areas of existing facilities.
 - 2. Exterior Cleaning (During Construction)
 - a. Construction debris shall be confined in strategically located container(s) covered to prevent blowing by wind. Debris shall be removed from the work area to container daily. Debris shall be hauled from the site once a week at a minimum.
 - b. Keep weeds and other vegetation trimmed to 3 inch max height.
 - c. Remove soils, sand, and gravel deposited on paved areas and walks as required to prevent muddy or dusty conditions.
 - d. Comply with stormwater general permit requirements and monitor and employ best management practices.
 - 3. Exterior Cleaning (Final Cleaning)
 - a. Remove trash and debris containers from the site. Reseed areas disturbed by location of debris containers.
 - b. Broom clean all paved surfaces.
 - c. Rake clean other surfaces of grounds.
- B. The contractor shall comply with all safety standards and shall not bury or burn waste on the site.

1.10 CERTIFICATE OF FINAL COMPLETION

- A. The Owner/Engineer will issue a Certificate of Final Completion in writing after successful plant startup with proper operation and control, correction of all punch list items, receipt and acceptance of the verification letter, and all items in Project Closeout section are completed.

END OF SECTION

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DIVISION 2



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SECTION 02101

REMOVAL OF STRUCTURES AND OBSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

- A. This Work shall consist of furnishing all labor, equipment, materials and miscellaneous items for the removal and satisfactory disposal or abandonment in place of all fences, signs, structures, old pavements, roads, sidewalks, retaining walls and any other obstructions. It shall also include salvaging of designated materials and backfilling the resulting trenches, holes, and pits.
- B. This Work shall include sawing concrete and asphalt in reasonably close conformity with the dimensions of these Specifications to create lines of weakness in order to facilitate controlled breaking for removal.

1.02 SUBMITTALS

- A. Copies of written agreements for disposal areas will be given to the Engineer before work begins.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.01 GENERAL

- A. Contractor shall meet with Owner to determine which items are to be removed and which are to be salvaged. The Contractor shall remove and dispose of all signs, structures, fences, old pavements, abandoned pipelines, and other obstructions. All salvageable materials noted shall be removed, without unnecessary damage, in sections or pieces that may be easily transported and stored.

3.02 DISPOSAL

- A. It is the Contractor's responsibility to dispose of all materials that are not deemed salvageable.
- B. Where portions of structures are to be removed, the remaining portions shall be prepared to fit new construction. The work shall be done in accordance with Drawings, and in such manner that materials to be left in place shall be protected from damage; all damage to portions of structures to remain in place shall be repaired by the Contractor at his expense. Reinforcing steel projecting from the remaining structure shall be cleaned and aligned to provide bond with new extension.

3.03 SALVAGE

- A. Salvage all items shown on the Drawings. During demolition, Owner or his representatives may designate additional materials to be salvaged rather than disposed. All salvage materials shall be removed from the job site by the Contractor and stored at a site to be designated by the Owner.

3.04 PIPE TO BE LEFT IN PLACE

- A. All metal pipe and metal culverts directed to be left in place shall have the ends crushed and crimped back where possible. The ends of all masonry and plastic pipe products shall be completely back-filled with concrete or grout a minimum of 18" or one pipe diameter, whichever is greater. All headwalls and appurtenances shall be removed. Where shown on the Drawings, pipe shall be backfilled their full length.

3.05 SAWING OF CONCRETE

- A. The sawing of concrete shall be done carefully, and all damages to concrete remaining in place, due to Contractor's operations, shall be repaired by the Contractor at his expense and as directed by Project Engineer. An effective dust control method must be utilized throughout concrete sawing operations. The minimum depth of saw cut in concrete shall be two (2) inches or to the depth of the reinforced steel, whichever occurs first, unless otherwise designated.

3.06 SAFETY

- A. Operations that may damage or constitute a hazard to the traveling public will not be permitted. Contract shall abide by OSHA standards.

3.07 REMOVAL OF CULVERTS AND OTHER DRAINAGE STRUCTURES

- A. Culverts and other drainage structures in areas under traffic use shall not be removed until satisfactory arrangements have been made to accommodate traffic.
- B. Where portions of existing structures lie wholly or in part within the limits of a new structure, they shall be removed as necessary to accommodate the construction of the proposed structure.

3.08 REMOVAL OF PIPE

- A. Pipes indicated on the Drawings to be removed for salvage and reuse shall be carefully removed, cleaned and every precaution taken to avoid damage to the pipe. Removal of pipe shall include all appurtenances. Pipe to be salvaged shall be taken to the Owner's designated storage yard; pipe to be re-laid shall be stored by the Contractor so that no damage to pipe will occur. The Contractor shall replace, at his expense, all pipe lost or damaged due to negligence, improper storage or improper construction techniques.

3.09 REMOVAL OF PAVEMENT, SIDEWALKS, CURBS, ETC.

- A. All concrete pavement, sidewalks, curbs, gutters, etc., designated for removal, shall be broken into pieces, the size of which shall not exceed approximately 400 pounds or 3

square yards of surface area, and shall be disposed of offsite by Contractor or otherwise directed by Project Engineer.

- B. Where old concrete construction abuts new concrete construction, edges of pavement sidewalks, curbs, etc., to be left in place shall be sawn to a true line with a vertical face (see sawing of concrete).
 - C. Asphalt and bituminous pavements to be cut to the full depth of pavement with a vertical face in a straight line parallel to the limit of excavation. Cuts shall be made with flat bladed air hammer or saw, or as approved in writing by Engineer, so as to provide a straight, true cut. Concrete pavements, including curbs, gutters and sidewalks, to be saw cut to the full depth of pavement with a vertical face in a straight line parallel to the limit of excavation. An effective method of dust control shall be utilized throughout concrete sawing operations.
 - D. Feathering of new asphalt pavements onto old pavements will not be permitted under this Contract.
- 3.10 ABANDONMENT OF MANHOLES, CATCH BASINS, INLETS, ETC.
- A. Remove all portions of structure to 12 inches below finish grade. Fill all voids with concrete or Class 1 Structure Backfill (95% Standard Proctor density). Backfill to surface with concrete, Class 6 aggregate and/or bituminous asphalt or topsoil to match final surface treatment.

END OF SECTION

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SECTION 02221

TRENCHING, BACKFILLING AND COMPACTION

PART 1 GENERAL

1.01 SUMMARY

- A. Work to be performed under this section shall include all labor, equipment, materials and miscellaneous items necessary to perform all excavation, backfilling and compaction of underground pipelines, conduits, cables and appurtenances shown on the Drawings and specified herein.
- B. All work within the rights-of-way of the Federal Government of the Colorado Division of Highways, County Governments or Municipal Governments shall be done in compliance with requirements issued by those agencies. All such requirements shall take precedence over these Specifications. It shall be the Contractor's responsibility to secure all required excavation permits and pay all costs thereof. Contractor will be required to obtain necessary road cut permits.

1.02 SUBMITTALS

- A. Bedding Material
 - 1. Submit sieve analysis
- B. Select Fill
 - 1. Submit sieve analysis

1.03 FIELD CONDITIONS

- A. Existing Utilities. Underground utilities, except service lines, known to the Engineer have been shown on the Drawings. Locations are approximate only and may prove to be inaccurate. The Contractor is responsible for verification of the existence, location and protection of all utilities within the construction area.
 - 1. Before commencing with work, the Contractor shall notify all public and private companies who may have utilities within the project limits. The Contractor shall coordinate with these entities all excavation performed. The Contractor shall obtain all permits required by utility owners.
 - 2. In the event of damage to any existing utility, the Contractor shall be solely responsible for the repair and payment for repair of all such damage.
 - 3. The Contractor shall make arrangements for and pay all costs for relocation of utilities requiring relocation as indicated on the Drawings. Should utility obstructions, not shown on the Drawings, be encountered and require relocation, the Contractor shall notify the Owner and the Engineer and shall make arrangements necessary for such relocation. The Owner shall pay the costs for such relocation.
- B. Existing Improvements. The Contractor shall restore or protect from damage all existing improvements encountered in performance of the work. Improvements damaged, as a

result of this work shall be restored to original condition or better, as determined by the Engineer.

1. Adjacent property shall be protected by the Contractor from any damage. The Contractor shall be held solely liable for any damage to adjacent property and shall be responsible for all costs resulting from repair of such damage.

C. Soil Conditions. It shall be the responsibility of the Contractor to examine soil conditions and characteristics, including the presence of groundwater that will be encountered within the limits of construction.

1.04 PROTECTION OF WORK

A. Safety. All excavation shall be protected by barricades, lights, signs, etc., as required by governing federal, state and local safety codes and regulations.

B. Sheeting, Shoring and Bracing. Where trench walls are not excavated at a stable slope, the Contractor shall provide and maintain support sufficient to prevent caving, sliding or failure and property or bodily damage. Any damage due to inadequate support shall be repaired at the sole expense of the Contractor.

1. Under normal construction conditions, support shall be removed as work progresses. Support shall remain installed if directed by the Engineer or if pipe does not have sufficient strength to support backfill based on trench width as defined by the sheeting. Sheeting shall not be removed after the start of backfilling.

2. Use of a movable trench shield or coffin box will not be allowed where pipe strength is insufficient to support backfill as defined by the trench width after the trench shield is removed.

3. The Contractor shall be held solely responsible for any violation of applicable safety standards. Particular attention is called to minimum requirements of OSHA and COSH (Colorado Occupational Safety and Health).

C. Site Drainage. Excavation to be protected from surface water at all times. At no time shall excavated area be allowed to fill with storm water runoff. Contractor shall provide proper, temporary drainage structures at their cost to detour runoff from excavated areas.

1.05 BLASTING

A. No blasting shall be permitted without written consent of the Engineer. Blasting shall be done only after Engineer receives permission from the appropriate governmental authority(ies). Blasting shall be performed only by properly licensed, experienced individuals and in a manner such that no damage to any property or persons will occur due to either the blast or debris. Contractor shall provide proof of insurance as required by these Specifications, the governing authority or as required by Engineer prior to any blasting. All damage as the result of blasting shall be repaired, at the Contractor's expense, to the satisfaction of the Engineer. All earth or rock loosened by blasting shall be removed from excavations prior to proposed construction.

1.06 CONSTRUCTION IN STREETS

- A. When construction operations are located within streets make provisions at cross streets and walks for free passage of vehicles and pedestrians. Do not block streets or walks without prior approval.

PART 2 PRODUCTS

2.01 EMBEDMENT & BACKFILL MATERIAL

- A. Pipeline bedding and backfill requirements shall be per the City of Creede standard details C.9 "Sewer Main and Service Bedding and Backfill Detail".

2.02 CONCRETE FOR EMBEDMENT

- A. Shall be minimum 3000 psi concrete (28-day compressive strength) per City of Creede Collection System Standards. Refer to Appendix for details.

PART 3 EXECUTION

3.01 SITE PREPARATION

- A. Clearing. Remove all vegetation, stumps, roots, organic matter, debris and other miscellaneous structures and materials from project site. Dispose of off site.
- B. Topsoil Removal. Strip existing topsoil from all areas to be disturbed by construction. Topsoil to be stockpiled separately from excavated materials.
- C. Pavement Removal. See Section 02101 - Removal of Structures and Obstruction.

3.02 TRENCH EXCAVATION

- A. Limits of Excavation. Trenches to be excavated along lines and grades shown on the Drawings, or as modified in the field by the Engineer. Trench widths for pipe loading to be measured 12 inches above top of pipe.
 1. Minimum trench width to be the outside diameter of the pipe or conduit plus 16 inches.
 2. Maximum trench width to be the outside diameter of the pipe or conduit plus 24 inches for all pipes or conduits with outside diameter of 24 inches or less, and plus 30 inches for all pipes or conduits with outside diameters greater than 24 inches.
 3. If maximum trench width is exceeded, Contractor will provide at his expense, higher strength pipe or special bedding including concrete at the direction of the Engineer.
 4. Trench excavation not to be completed more than 100 feet in advance of pipe installation. Backfill to be completed within 100 feet of pipe installation.
- B. Groundwater Control. Contractor to maintain facilities on-site to remove all groundwater from trench and keep water at least 12 inches below the trench bottom to a point such that a firm base for pipe or conduit installation exists. Facilities shall be maintained until all concrete is cured and backfilling is in place at least 24 inches above anticipated water

levels before water removal is discontinued; all water removal shall be subject to approval by the Engineer.

- C. Stockpile Excavated Material. Excavated material to be stockpiled so as not to endanger the work or public safety. Maintain existing vehicular and pedestrian traffic with minimum disruption. Maintain emergency access and access to existing fire hydrants and water valves. Maintain natural drainage courses and street gutters.
 - 1. Backfill material to be segregated from stockpiled topsoil and unusable backfill materials.
- D. Excavation for Appurtenances. Excavation to be done in accordance with these Specifications and as shown on the Drawings. Adequate working clearances to be maintained around appurtenances. Provisions for base and bottom preparations shall apply to all appurtenances. Precautions to be taken to maintain trench widths in the vicinity of adjacent pipelines and conduits.

3.03 BOTTOM PREPARATION

- A. Undisturbed Foundation. Where soils are suitable and have adequate strength, bottom to be graded and hand-shaped such that pipe barrel rests uniformly on undisturbed soil. All rocks or stones, which may result in a point bearing on the pipe, shall be removed.
 - 1. Undisturbed grades shall be within 0.1 feet \pm tolerance. Soils for final pipe grade placed within these limits shall be fine granular (100% passing No. 4 sieve) or may be native materials, hand compacted to 95% maximum density.
- B. Bell Holes. Material to be removed to allow installation of all fitting and joint projections without affecting placement of pipe.
- C. Over-excavation. Whenever trench is over-excavated to eliminate point bearing by rocks or stones or when undisturbed grade tolerances of 0.1' are exceeded, the Contractor is to re-establish grade using Class 6 aggregate bedding material. Compaction shall be 95% maximum density. All work to re-establish grade shall be at the Contractor's expense.
- D. Unstable Materials. Materials incapable of supporting superimposed loadings are defined as unstable materials. Should unstable materials be encountered during excavation, immediately notify Engineer. If, in the opinion of the Engineer, unstable soil excavation is required and the Contractor could not have reasonably been expected to discover the existence of such materials during his site investigation, then a contract price for Unstable Soil Excavation shall be negotiated between Owner and Contractor. No payment shall be made for materials excavated prior to notification of the Engineer and negotiation of payment for extra work.
- E. Inclusion of a bid item for Unstable Soil Excavation indicates such excavation is anticipated. The Contractor is to notify the Engineer prior to any unstable soil excavation; no payment shall be made for excavation prior to authorization of Engineer.
- F. Rock Excavation. Rock excavation shall be defined as removal of boulders in excess of three (3) cubic yards of solid or fractured rock, which makes hand shaping of the bottom impossible and which requires techniques, such as blasting or jacking for removal, other than those which are being employed by the Contractor or are normally used in trench

excavation, such as use of backhoes, trenchers, draglines, etc. Should unanticipated rock conditions be encountered, immediately notify the Engineer. If in the opinion of the Engineer, rock excavation is required and the Contractor has in fact made a diligent and determined effort to remove the material using normal excavation procedures as stated above, and the Contractor could not have reasonably been expected to determine the existence of such material during his site investigation, then a contract price for rock excavation shall be negotiated between the Contractor and the Owner. No payment shall be made for excavation performed prior to determination of a negotiated price.

1. Rock shall be removed to a 4" depth below grade. Additionally, all rock loosened during jacking, blasting, etc., shall be removed from the trench. For payment purposes, maximum trench width to be paid for shall be as defined in Subsection 3.02, A. Maximum depth to be paid for shall be 12" below required grade. All over-excavation shall be replaced as specified in Subsection 3.03, C.
2. Inclusion of a bid item for rock excavation indicates such excavation is anticipated. Contractor to notify Engineer prior to any rock excavating; no payment shall be made for excavation prior to notification.

3.04 BACKFILLING

- A. Tamping Equipment. Except immediately next to the pipe, mechanical or air operated tamping equipment to be used. Hand equipment, such as T-bar, to be used to pipe if necessary. Care to be taken when compacting under, alongside and immediately above pipe to prevent crushing, fracturing or shifting of the pipe. The Contractor is to note densities required for materials being backfilled and shall use appropriate approved equipment to obtain those densities.
 1. Wheel rolling is not considered to be an adequate compaction technique to meet these Specifications and will not be allowed. Where 85% compaction is required, wheel rolling may be considered. Before acceptance, the Contractor shall backfill a portion of the trench and pay for density testing to verify adequacy of the proposed backfill techniques.
 2. A hydro hammer may be allowed to obtain the specified density up to 4' in depth. The Contractor will be required to re-excavate those areas that have been tamped so that density tests can be taken to insure that the specified intensity is being obtained full depth.
- B. Moisture Control. Generally maintain moisture of backfill material with $\pm 2\%$ of optimum moisture content as determined by ASTM D698. Maintain closer tolerances as needed to obtain densities required.
- C. Compaction. Maximum density (100%) based on ASTM D698 or AASHTO T99.
 1. Bedding Material, including material used for over-excavation of any kind: 95%.
 2. Select Material: 95%.
 3. Backfill beneath existing or proposed pavement, roadways, sidewalks, curbs, utility lines and other improvements or within 5' horizontally of such improvements: 95%.
 4. Backfill within public or designated right-of-way: 90% or as shown on the Drawings.
 5. Backfill within undeveloped, green or undesignated area: 85%.
 6. Backfill for any fill over over-cut grading in areas of lot/home construction: 95%.

- D. Placing Backfill. The maximum loose lifts of backfill material to be placed in the reverse order as removed and as follows: use smaller lifts where necessary to obtain required densities:
 - 1. Bedding and select material: 6" (or see Section 3.03A).
 - 2. Backfill Material: 12" where 95% compaction required; 24" where less than 95% compaction required.
- E. Backfilling Appurtenances. Backfilling to be done generally at the same time as adjacent pipelines. Backfilling procedure to conform to this section. Use special techniques or materials as shown on drawings.
- F. Disposal of Excess Excavation. Contractor to dispose of excess excavation off site. Disposal in any case shall be the sole responsibility of the Contractor.
- G. Jetting. Jetting and water inundation are generally not permitted methods of compaction. The Engineer may allow jetting under certain field conditions. Techniques including depth of lifts, amount of water to be used, penetration of hose jet, etc., shall be at the direction of the Engineer. No jetting will be allowed on materials with a 200 minus gradation of greater than 15%. Contractor shall pay cost of all water used, soil classification testing and a retesting or recompaction required. No jetting shall be done prior to written approval and direction of the Engineer.
- H. Maintenance of Backfill. Contractor to maintain all backfill in a satisfactory condition during the extent of the contract and warranty period. All surface deterioration determined to be the responsibility of the Contractor and all settlement shall be repaired at once by the Contractor upon notice by the Owner. All costs for repair and all liability as a result of surface deterioration or settlement shall be the responsibility of the Contractor.
- I. Clay Barrier Water Stops. Because of the presence of ground water, a clay barrier may be required to be installed full depth in trench in place of all bedding material and backfill. This barrier shall be full depth and two feet thick and installed every 500 lineal feet of trench. Clay barrier installation shall be considered incidental to the pipe installation and not paid for separately.

3.05 SURFACE RESTORATION

- A. All existing surface improvements and site conditions disturbed or damaged during construction to be restored to a condition equal to pre-construction condition. All restoration costs are considered incidental to excavation and backfill.
 - 1. Improvements. Replace, repair or reconstruct all improvements as required. Work will not be accepted until Engineer and all affected property owners accepts restoration. Improvements include, by example, other utilities, culverts, structures, curb and gutter, mailboxes, signs, sprinkler systems, etc.
 - 2. Final Grading. The Contractor is to re-establish existing final grade or finish final grades as modified and shown on the Drawings. The Contractor is to backfill to proper subgrade elevation with backfill material to allow placement of surface improvements or materials.
 - 3. Roadways. All roadways to be restored to original condition with material types removed. Materials and methods to conform to Section 02222, Embedment and

Base Course Aggregate; and Section 02612, Hot Bituminous Pavement.
Additional requirements are:

- a. Minimum base course material on gravel roadways or minimum depth gravel on hard surface roadways to be 8", unless shown otherwise on Drawings.
- b. Minimum bituminous surfacing to be 3" unless shown otherwise on Drawings.
- c. Minimum concrete pavement surfacing to be 6", unless shown otherwise on Drawings.

3.06 COMPACTION

- A. It should be fully understood that it will be the sole responsibility of the Contractor to achieve the specified densities for all embedment and backfill material placed. Contractor will be responsible for ensuring that correct methods are being used for the placement and compaction of said materials. Correct backfill methods include, but are not limited to:
 1. Use of proper equipment for existing soil condition encountered.
 2. Moisture content of existing soils; determination if water should be added or if soil should be air dried to reduce moisture content.
 3. Thickness of backfill lift.
- B. Contractor may, at his own expense, have an approved geotechnical engineer monitor the methods of backfill and compaction used to ensure that the desired densities are being obtained.
- C. Inspection and testing will be performed as directed by the Engineer. Testing will be conducted as a quality control check to verify the Contractor's compliance with the standards indicated in the Specifications.

3.07 INSPECTION AND TESTING

- A. Inspection and testing to be performed at the direction of the Engineer. Contractor to cooperate fully with all persons engaged in testing. Contractor to excavate as required to allow testing. Contractor to backfill all test excavations in accordance with these Specifications. Any areas that require a specified density, including fill, backfill, trenches, embankments, road base, hot bituminous pavement, backfill for structures, shall be tested.
- B. Contractor shall test sanitary sewer lines in accordance with City of Creede Collection System Standards. Refer to Appendix for details.

3.08 DENSITY TESTING AND CONTROL

- A. Reference Standards. Density/moisture relationships to be developed for all soil types encountered according to ASTM D698 or AASHTO T99.
- B. Field Testing. Testing for density during compaction operations to be done in accordance with ASTM D2922 using nuclear density methods

- C. Frequency of Testing. Minimum of one (1) test every 250' trench per lift or as directed by Engineer. Contractor to excavate to depths required by Engineer for testing and backfill test holes to density specified. Testing to be paid for by Owner.
- D. Retesting. In the event of failure to meet compaction criteria, Contractor shall re-excavate and re-backfill at direction of Engineer. All retesting to be paid for by Contractor and to be performed by soils testing firm approved by the Engineer.

3.09 PAYMENT FOR TESTING

- A. Owner responsible for all costs of initial testing of backfill. Contractor to pay all costs of any retesting required.

END OF SECTION

SECTION 02222

EMBEDMENT AND BASE COURSE AGGREGATE

PART 1 GENERAL

1.01 SUMMARY

- A. This work shall consist of furnishing and placing one or more courses of aggregate on the prepared surface in accordance with these Specifications in reasonably close conformity with the lines, grades and typical cross sections shown on the drawings or established by the Engineer in the field.

1.02 REFERENCE STANDARDS

- A. Colorado Department of Transportation "Standard Specifications for Road and Bridge Construction," latest edition.

1.03 SUBMITTALS

- A. Aggregates. Certified statement from independent testing laboratory, acceptable to Engineer, of material compliance.

PART 2 PRODUCTS

- A. Aggregate used for pipeline bedding, base course and sub base course and specified by Class in other sections of this Specification shall conform to the gradation schedule shown below.

B. CLASSIFICATION TABLE FOR AGGREGATE BASE COURSE*

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
	LL not greater than 35			LL not greater than 30			
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7
4 inch	----	100	----	----	----	----	----
3 inch	----	95-100	----	----	----	----	----
2½ inch	100	----	----	----	----	----	----
2 inch	95-100	----	----	100	----	----	----
1½ inch	----	----	----	90-100	100	----	----
1 inch	---	----	----	95-100	----	100	----
¾ inch	----	----	----	50-90	----	100	----
No. 4	30-65	----	----	35-50	30-70	30-65	----
No. 8	----	----	----	----	----	25-65	20-85
No. 200	3-15	3-15	20 max.	3-12	3-15	3-12	5-15

PART 3 EXECUTION

3.01 PLACING

- A. The base course material shall be placed on the previously prepared subgrade at the locations and in the proper quantities to conform to the typical cross sections as shown on the Drawings and as directed by the Engineer. Placing and spreading shall be done by means of spreader machine, moving vehicle, motor grader or other approved equipment methods. The material shall be placed without segregation. Any segregated areas shall be removed and replaced with uniformly graded material at the Contractor's expense.
- B. The base material may be placed in lifts of up to 6 inches, providing that after compaction, uniform density is obtained throughout the entire depth of the lift. If the required depth exceeds 6 inches, it shall be placed in two or more lifts of approximately equal thickness. If uniform density cannot be obtained by 6-inch lifts, the maximum lift shall not exceed 4 inches in final thickness.

3.02 COMPACTING

- A. Rolling will be continuous until the base material has been compacted to not less than 95% of maximum density as determined by ASTM D698 or AASHTO T99. Water shall be uniformly applied as necessary during compaction to obtain optimum moisture content and to aid in consolidation. The surface of each layer shall be maintained during the compaction operations in such a manner that a uniform texture is produced and the aggregates are firmly keyed.
- B. The finished base course surface shall be smooth and free of ruts and irregularities and true to grade and crown as shown on the plans or as directed by the Engineer. The final surface shall be finished with a surface smoothness tolerance of $\frac{1}{4}$ inch, measured as vertical ordinate from the face to a ten-foot straight edge. The base course shall be maintained in this condition by watering, drying, rolling or blading as necessary, or as the Engineer may direct, until the surface material is placed.

3.03 INSPECTION AND TESTING

- A. Inspection and testing to be performed at the direction of the Engineer. Contractor to cooperate fully with all persons engaged in testing. Contractor to excavate as required to allow testing; Contractor to backfill all test excavations in accordance to these Specifications.

3.04

- A. Reference Standards. Density/moisture relationships to be developed for all soil types encountered according to ASTM D698 or ASSHTO T99.
- B. Field Testing. Testing for density during compaction operations to be done in accordance with ASTM D2922 using nuclear density methods.

- C. Frequency of Testing. Conduct a minimum of one test for each layer of specified depth of fill or backfill as follows:
1. Foundations: For each 100 lineal feet or less of trench.
 2. Slabs on Grade: For each 2,000 square feet or less of building area.
 3. Pavement and Walks: For each 2,000 square feet or less.
 4. All other areas: For each 5,000 square feet or less.
 5. Utility Trenches: For each 250 lineal feet or less of trench.

3.05 PAYMENT FOR TESTING

- A. Owner is responsible for all costs of initial testing of backfill. Contractor to pay for all costs of any retesting required.

END OF SECTION

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SECTION 02255
DUST SUPPRESSION

PART 1 GENERAL

1.01 SUMMARY

- A. Work under this Section shall include furnishing all materials, labor, equipment and miscellaneous items necessary to provide dust control over the entire project site.

1.02 SUBMITTALS

- A. Chemical Products. Descriptive literature defining chemical constituents.

PART 2 PRODUCTS

2.01 MAGNESIUM CHLORIDE

A. Constituents	Percentage by Weight
Magnesium Chloride	28%-36%
Sulfate	2.5%
Potassium, sodium, calcium	Less than 1%
Nitrate	-0-

2.02 STARCH-BASED OR OTHER 100% NATURAL POLYMER

- A. Accepted Product – DustStar by Chemstar or approved equal

PART 3 EXECUTION

3.01 DUST CONTRTOL

- A. Dust control to be considered an integral part of the Work. Control shall be provided from the start of construction until the Work is complete. Fugitive dust as a result of construction shall be controlled at all times.

3.02 WATERING

- A. For road construction, the Contractor shall have a water truck on site at all times for dust control. Wetting shall be done at the direction of the Engineer as required until the final wearing surface is completed.
- B. For utility construction, dust control may be accomplished by water truck or spray system from an on-site water system if approved. Contractor shall be prepared to provide dust control until the final surface is completed.
- C. The Contractor shall provide a water meter for metering any water taken from the municipal water system whether from fire hydrants or private taps. Watering shall be considered incidental to the related work and will not be paid for separately.

3.03 CHEMICAL CONTROL

- A. Where required by the Engineer, dust control shall be provided by the use of magnesium chloride chemical spray to the road surface.
- B. After the surface has been prepared, the road shall be pre-wet to a very damp condition. The product shall be applied using a watering truck with spray applicator, providing an even distribution across the surface. Application rate shall be 1/3 - 1/2 gallon per square yard. The surface shall be re-sprayed until complete coverage is attained. If Contractor is ordered to use magnesium chloride, Contractor shall be paid as per unit price in Bid Schedule, or in the absence of unit price, shall be negotiated with engineer and Owner before any application. No additional payment will be made for dust control.

END OF SECTION

SECTION 02560
SANITARY SEWERLINES

PART 1 GENERAL

1.01 SUMMARY

- A. Work under this section shall include furnishing all materials, labor and tools necessary to perform all installation, cleaning and testing of all sanitary sewerlines and appurtenances as specified herein and shown on the Drawings.

1.02 SUBMITTALS

- A. Product data including catalog sheets and descriptive literature shall be submitted for all materials and equipment specified. Submittals shall state manufacturer's compliance with all published standards referenced herein.

1.03 PROTECTION OF WORK

- A. All pipe, fittings and equipment shall be carefully handled, stored and protected in such a manner as to prevent damage to materials. At no time shall such materials be dropped or dumped into trench.
- B. Precaution shall be taken to prevent foreign matter from entering the pipe and fittings prior to and during installation. Place no debris, tools, clothing or other materials in the pipe during installation.
- C. At such time as pipe installation is suspended, either temporarily or overnight, the open end of the pipe shall be sealed with a watertight plug to prevent entrance of trench water, debris or foreign matter. A mechanical-type fitting shall be used for this seal. At no time shall duct tape or any other tape be used for this seal.
- D. Under no circumstances shall trench water be allowed to enter the pipeline. When water is present in the trench, the seal shall remain in place until such time the trench is pumped dry. Whenever trench water becomes evident, adequate measures shall be taken to prevent pipe flotation. Contractor shall bear all costs associated with keeping trench free of liquids.
- E. If, in the opinion of the Engineer, the Contractor is incapable of keeping the pipe free of foreign matter during installation, the Engineer shall require the Contractor to cover the pipe ends with close woven bags until the start of the jointing operation.

PART 2 PRODUCTS

- A. This item covers the types of materials that will be allowed for the construction and installation of sewerlines. All materials used shall be new, of the best quality available and conform to applicable standards as indicated herein.

2.01 DUCTILE IRON PIPE AND FITTINGS

A. Ductile Iron Pipe

1. Reference Standard - ANSI 21.51/AWWA C151, latest edition.
2. Thickness Class – 52.
3. Pipe joints shall be push on, restrained joints, except where specifically shown or detailed otherwise.
4. Pressure Rating - 350 psi.
5. Restrained Joint (Snap-Lok or Engineer approved Equal).

B. Fittings

1. Type - All fittings shall be mechanical joint, except where specifically shown or detailed otherwise.
2. Reference Standard - ANSI/AWWA C153, latest edition, for mechanical "compact" joints.
3. Material - Ductile iron, DIP fittings, sleeves and valves shall be polyethylene encased.
4. Pressure Rating - 350 psi.

C. Joints

1. Mechanical, Reference Standard - ANSI A. 21.53/AWWA C153, latest edition.
2. Push-on, Reference Standard - ANSI A 21.15/AWWA C115, Class 125.
3. Flanged, Reference Standard - ANSI B 16.1, Class 125

D. Gaskets

1. Gasket shall be suitable for the specified pipe sizes, pressure and temperature.
2. Reference Standard - AWWA C111, latest edition.
3. Lubricant - A non-toxic vegetable soap lubricant shall be supplied with the pipe.

E. Protective Coating

1. Underground Service - Manufacturer's standard bituminous coating, refer to section 09900.
2. Polyethylene Film Envelope - Polyethylene encasement shall conform to AWWA C105, latest edition, or ANSI A.21.5. Film shall be Class C with a nominal thickness of 8 mils. Tape for securing the film shall have a minimum thickness of 8 mils and a minimum width of 2 inches. The polyethylene film shall be free of streaks, pinholes, tears or blisters.

F. Protective Lining

1. Type – "Epoxy lined"
2. Reference Standard - ANSI A 21.4/AWWA C104, latest edition.
3. Thickness – Standard.

2.02 POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS (GRAVITY MAIN)

A. PVC Pipe, through 15" diameter.

1. Material Reference Standard - ASTM D1784.
2. Pipe Reference Standard - ASTM D3034.
3. Class - SDR35.

4. Markings - Manufacturer's name, nominal size, PVC classification, Type PSM, SDR-35, PVC gravity sewer pipe, ASTM D3034 and code number, green coloring dyed into PVC.
- B. PVC Pipe, 18" to 48" diameter.
1. Material Reference Standard - ASTM D1784.
 2. Pipe Reference Standard - ASTM F679
 3. Markings - Manufacturer's name, nominal size, PVC cell classification, PS 46 PVC Sewer Pipe and ASTM F679. Green coloring dyed into PVC.
 4. Variance - PVC piping meeting the stiffness requirement of ASTM F679, but not meeting wall thickness requirement will be allowed under this specification. Manufacturers will be required to provide a list of at least five (5) similar projects with references in which pipe has been successfully used and laboratory testing data showing the pipe meets the structural requirements of ASTM F679.
- C. Fittings
1. Type - PVC push-joint.
 2. Materials - ASTM D1784.
 3. Reference Standard - ASTM D3034 or ASTM F679.
- D. Joints
1. Type - push-on rubber gasket.
 2. Gasket reference standard - ASTM F477
- E. Restraint-type Glands
- 2.03 FORCE MAIN
- A. PVC Pipe
1. Materials - ASTM D 1784, Type 1, Grade 1, PVC 1120
 2. Reference Standard - AWWA C900 and C905.
 3. Thickness: (DR18).
 4. Markings - Manufacturer's name, nominal size, AWWA pressure rating
 5. Specialties - Tracing wire: 14-gauge stranded copper insulated wire.
 6. Size - Shall conform to outside diameter of DIP.
- B. Fittings
1. DIP Restrained mechanical joints except where specifically shown or detailed otherwise.
 2. Reference Standard - AWWA/ANSI C153/A 21.53.
 3. Pressure Rating - 250 psi.
 4. Gasket Reference Standard - AWWA C-111.
- 2.04 CONCRETE FOR THRUST BLOCKS AND ENCASING OF PIPE
- A. Concrete for thrust blocks and for encasing the sewer pipeline shall have 28-day compressive strength of not less than 3000 psi.
- 2.05 MANHOLES
- A. Concrete Rings/Cones

1. Type – Precast.
2. Reference Standard - ASTM C478.
3. Size - Four-foot or five-foot inside diameter

B. Manhole Bases

1. Shall be precast or cast-in-place, depending upon local jurisdiction standards with integrally cast-in water stops. Tee tops of base shall be at least 12 inches above top of pipe.
2. Reference Concrete Standard - ASTM C150 Type II modified or Type V.

C. Manhole Steps

1. Manhole steps shall conform to ASTM C-478-94 and shall be steel reinforced copolymer polypropylene with materials conforming to the following:
 - a. The deformed steel reinforcing bar shall be \square " conforming to ASTM A-615 Grade 60.
 - b. The copolymer polypropylene shall conform to ASTM D4101-92b PP0344B33534Z02.
 - c. Manufacturer's Reference: M.A. Industries Model PS2-PFDF, or approved equal.

D. Joints

1. Type - Rub'r Nek preformed gasket as manufactured by K.T. Snyder Co., Inc., Houston, Texas or equal.
2. Cement Mortar Material Reference Standard - One part Portland Cement, Type II, modified with three parts of sand. Cement mortar to be used with concrete grade rings only.

E. Grade Adjustment Rings

1. Type - Precast ASTM C150 Type II modified concrete.
2. Size - Not less than 6" wide x heights to allow for two-inch adjustments.
3. Alternate - HDPE grade rings.
4. Manufacturer's reference: Ludtech, Inc., or approved equal.

F. Frame and Cover

1. Material Reference - Grey Iron, ASTM A48-83, Class 35B.
2. Cover - Stamped with "SEWER", machined bearing surface with ring.
3. Type - Heavy, weight of cover greater than 140 pounds.
4. Manufacturer Reference - Castings MH-400-24Cl.

2.06 SEWER SERVICE LINE MATERIAL

A. Wyes - Required for all new sewer line construction

1. Material - ASTM D3034 PVC.
2. Strength - for use with SDR-35.
3. Joint - Slip-on rubber gasket.

B. Saddles (Required for tapping existing mains)

1. Material - ASTM D3034 PVC.
2. Joint - Rubber seal to main with stainless steel compression bands. Slip-on service joint with rubber gasket.

2.07 PLUG VALVE

- A. NOT USED

2.08 BUTTERFLY VALVE

- A. NOT USED

2.09 GATE VALVE

- A. NOT USED

2.10 VALVE BOXES

- A. Screw Type – Three Piece
 1. Material - Cast Iron.
 2. Size - 5 1/4 inch diameter.
 3. Type - Three piece adjustable screw type.
 4. Cover - Deep socket type with the work "water" cast in the top.
 5. Base - #160 type with 20.5" bottom opening.

2.11 TRACER WIRE

- A. No. 14 gauge insulated, stranded copper. All splices to be watertight, underground type, (Tracer wire is required for all pipes).

2.12 MAGNETIC TAPE

- A. Detectable marking tape shall consist of a minimum of 5 mil (0.0005") overall thickness; five-ply composition; ultra-high molecular weight 100% virgin polyethylene; acid alkaline and corrosion resistant.
- B. Elongation properties shall be in accordance with ASTM D882-80A and shall be less than 150% at break. The tape shall have a 20 gauge (0.0020") solid aluminum foil core, encapsulated within 2.55 mil (0.00255") polyethylene backing.
- C. Tape color and legend combination shall be in accordance with APWA or local requirements. The color shall be blue. The legend shall read "CAUTION - SEWERLINE BELOW".
 1. The tape tensile strength shall be in accordance with ASTM D882-80A and be not less than 7800 psi.
 2. Tape width shall be 3/4 of the diameter of the pipeline being protected

Tape Width	2"	3"	6"	12" or wider
Tape Bury Depth	6"- 18"	6"- 28"	6"- 36"	6"- 36"
 3. The tape shall be as manufactured by T. Christy Enterprises, or equal.
 4. Magnetic tape is required for all pipe and shall be 2 feet above the top of pipe.

PART 3 EXECUTION

3.01 CLEANING AND INSPECTION

- A. Clean all pipe, fittings and related materials thoroughly of all foreign material and inspect for cracks, flaws or other defects prior to installation. Mark all defective, damaged or unsound materials with bright marking crayon or paint and remove from job site.
- B. The Contractor shall take all necessary precautions to prevent any construction debris from entering the sewerlines during construction. If this debris should enter the pipeline system, the Contractor shall furnish all labor and materials necessary to clean the system. Under no circumstances will the Contractor flush the debris into an existing sanitary sewer system.

3.02 PLACEMENT OF PIPE

- A. All sanitary sewer pipe must be installed with a laser. If bending of the beam due to air temperature variations becomes apparent with "in pipe" units, a fan shall be provided to circulate air in the pipe. Air velocity shall not be so excessive as to cause pulsating or vibrating of the beam. If, in the opinion of the Engineer, the beam cannot be accurately controlled, this method of setting line and grade shall be abandoned.

3.03 PIPE EMBEDMENT

- A. Placing embedment material - Refer to Section 02221 for placement methods.
- B. Embedment Classes - Refer to Section 02221 and Construction Drawings for embedment materials for each class listed below:
 - 1. Pipe shall be embedded according to applicable details on the Construction Drawings.

3.04 PIPE INSTALLATION

- A. Installation of Ductile Iron Pipe Lines.
 - 1. Not Applicable.
- B. Installation of PVC Pipe.
 - 1. Pipe Handling. Pipe should be carefully lowered into the trench to avoid pipe falling into trench
 - 2. Pipe Laying. Pipe shall be laid true to line and grade, in an uphill direction, with bell ends facing in the direction of laying. When pipe laying is not in progress, the open end of the pipe shall be closed by a watertight plug.
 - 3. Jointing the Pipe. The outside of the spigot and the inside of the bell shall be thoroughly wiped clean. Set the rubber ring in the bell with the marked edge facing toward the end of the bell. Lubricate the spigot end using a thin film of the manufacturer-supplied lubricant. Push the pipe spigot into the bell. Position the completed joint so that the mark on the pipe end is in line with the end of the bell.
 - 4. Pipe Cutting. The cutting of pipe for manholes or for fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or lining and so as to leave a smooth end at right angles to the axis of the pipe. Bevel the

end of the pipe with a beveling tool after the pipe is field cut. Place a clearly visible position mark at the correct distance from the end of the field-cut pipe.

- C. Installation of Slipline Pipe.
 - 1. Not applicable.

3.05 SEWER MANHOLE INSTALLATION

- A. General. Manholes shall be furnished and installed to depths and dimensions shown on the Construction Drawings and/or staked in the field. Manholes shall be constructed of precast concrete rings in accordance with details shown on the Construction Drawings.
- B. Connections to Manholes. Connection of manhole with pipe shall be made with flexible connector detail. See details on Construction Drawings. In addition, extra care shall be taken by grouting or other means of sealing to assure positive watertight manholes around the inlet or outlet pipes.
- C. Manhole Floor and Inverts. Manhole bases shall be constructed to conform to the details shown on the Drawings. The invert channels shall be smooth and semi-circular in shape, conforming to the inside of the incoming and outgoing sewer pipelines. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be made gradually and evenly. Where large differences in invert elevations exist, sloped flow channels shall be formed so the wastewater does not undergo a vertical drop. The invert channels may be formed directly in the concrete of the manhole base. The floor of the manhole outside the channel shall be smooth and shall slope toward the channels.
- D. Finish Grade and Adjustment. To bring the manhole cover to the correct elevation, the top section of each manhole shall be constructed of pre-cast concrete grade adjustment rings. These rings shall be not less than six inches (6") wide and furnished in heights to allow for two-inch (2") adjustments. Grade adjustment with rings shall be eight inches (8") maximum and two inches (2") minimum. All rings shall be grouted in place.
 - 1. Finish Grade and Adjustment HDPE Alternate. High-density polyethylene grade rings may also be used to bring manhole cover to correct elevation. Grade rings shall be molded from HDPE as defined in ASTM Specification D1248-84. Available thicknesses are 1.25", 1.50", 2.00" 4.00" and a sloped thickness .75" x 1.50". When this alternate is used, pavement slope should be matched using one or more sloped rings. Manufacturer's reference - Ludtech, Inc., or approved equal.
- E. Manhole Stubs. All pipe stubs required from manholes are shown on the Drawings. Stubs shall extend approximately 24" from the outside face of the manhole and shall be capped or plugged with manufactured fittings to form a watertight installation.

3.06 CONNECTION TO EXISTING SEWER FACILITIES

- A. Connections to existing sewer facilities where live flows exist shall be made only after prior consultation with and receipt of written permission from the Engineer. No bypass of sewage to the surface will be allowed in the completion of this connection. Connections shall be made as shown on the Drawings. All connections between pipes of different materials shall be made with approved manufactured connectors.

3.07 PROTECTION OF WATER SUPPLIES

- A. Sewerlines shall be located a minimum of ten feet (10') horizontally from existing or proposed water mains. Where the sewer line crosses above the waterline, or is less than eighteen inches (18") vertically below the invert of the water line, or is less than ten feet (10') horizontally from the water main, the sewer line shall be made impervious by either of the methods listed below:
1. The sewer pipe shall be reinforced with a concrete encasement. The encasement shall be at least six inches (6") thick on all sides of the sewer pipe and extend ten feet (10') on either side of the water main. Use three No. 4 rebar the length of the encasement.
 2. Install one piece of C-900 PVC pipe centered over the waterline.
 3. Install a ground collar over the two sewer joints on either side of the water crossing. The grout collar shall be around the entire perimeter of the joint.
 4. If clearance is less than 12 inches vertically, the space between the water and sewer mains shall be filled by 3000 psi concrete.
 5. In all cases, bedding material shall be used to prevent any settling of the higher pipe.

3.08 SERVICE CONNECTIONS

- A. Customer service connections shall be installed in accordance with the details set forth on the construction Drawings. After the service connection is installed, the end shall be plugged watertight with a manufactured plug and marked with a stake except as shown otherwise on the Drawings.

3.09 ALIGNMENT AND GRADE

- A. Sewer pipelines will be checked by the Engineer to determine whether any displacement of the pipe has occurred after the trench has been backfilled. The test will be as follows:
1. A light will be flashed between manholes, or if the manholes have not as yet been constructed, between the locations of the manholes, by means of a flashlight. If the illuminated interior of the pipeline shows poor alignment, displaced pipe, earth or other debris in the pipe, or any other kind of defect, the defects determined by the Engineer shall be remedied by the Contractor at his own expense. Test will be repeated after completion of backfilling and any poor alignment, displaced pipe, or other defects determined by the Engineer, shall be corrected.

3.10 LEAKAGE TEST

- A. Sewerlines shall be tested using a low-pressure air test only; water tests will not be allowed. Only after the sanitary sewers, including appurtenances and sanitary laterals have been installed, backfilled and cleaned, shall the Contractor proceed with an air test on the installed facilities.
1. Low Pressure Air Test Procedure. The section of sewer line to be tested should be flushed and cleaned prior to conducting the low-pressure air test. This serves to clean out any debris, wet the pipe, and produce more consistent results. Isolate the section of sewer line to be tested by means of inflatable stoppers or other suitable test plugs. One of the plugs should have an inlet tap, or other provision for connecting a hose to a portable air control source.

2. If the test section is below the groundwater level, determine the height of the ground water above the spring line of the pipe at each end of the test section and compute the average. For every foot of groundwater above the pipe spring line, increase the gauge test pressure by 0.43 pounds per square inch. Connect the air hose to the inlet tap and a portable air control source. The air equipment should consist of necessary valves and pressure gauges to control the rate at which air flows into the test section and to enable monitoring of the air pressure within the test section. Also, the testing apparatus should be equipped with a pressure relief device to avoid the possibility of loading the test section with the full capacity of the compressor. Locate valves and gauges above ground.
3. Add air slowly to the test section until the pressure inside the pipe is raised to 5.0 psig greater than the average backpressure of any groundwater that may be over the pipe. After a pressure of 5.0 psig is obtained, regulate the air supply so that the pressure is maintained between 4.5 and 5.0 psig (above the average ground water back pressure) for a period of two minutes. This allows the air temperature to stabilize in equilibrium with the temperature of the pipe walls. The pressure will normally drop slightly until temperature equilibrium is obtained.
4. Determine the rate of air loss by the time/pressure drop method. After the two-minute air stabilization period, the air supply is disconnected and the test pressure allowed to decrease to 4.5 psig. The time required for the test pressure to drop from 4.5 psig to 4.0 psig is determined by means of a stopwatch and this time interval is then compared to the required time in the attached table to determine if the rate of air loss is within the allowable time limit. If the time is equal to or greater than the times indicated in the tables, the pipeline shall be deemed acceptable.

Nominal Pipe Size (Inches)	Minimum Test Time (min/100 feet)
3	0.2
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0

5. Upon completion of the test, open the bleeder valve to allow air to escape. Plugs should not be removed until all air pressure in the test section has been released. During this time, no one should be allowed in the trench or manhole while the pipe is being decompressed. Air test shall also include service lines and appurtenances.

3.11 MANHOLE INSPECTION

- A. During the construction of the manholes, the Contractor shall, in accordance with good practice, ensure that no earth, sand, rocks or other foreign material exists on the joint surfaces during assembly of the section. The Engineer shall check each manhole to determine whether the manhole fulfills the requirements of the Drawings and Specifications.
1. Visual Examination. The Engineer shall visually check each manhole, both exterior and interior, for flaws, cracks, holes, or other inadequacies which might affect the operation or watertight integrity of the manhole. Should any inadequacies be found, the Contractor, at his own expense, shall make any repairs deemed necessary by the Engineer
 2. Leakage Test. All manholes shall be tested for leakage and all tests shall be witnessed by the Engineer. The leakage test shall be conducted prior to backfilling around the manhole and shall be carried out in the following manner:
 - a. Stubouts, manhole boots and pipe plugs shall be secured to prevent movement while the vacuum is drawn.
 - b. Installation and operation of vacuum equipment and indicating devices shall be in accordance with equipment specifications for which performance information has been provided by the manufacturer and approved by the Engineer.
 - c. A measured vacuum of 10" of mercury shall be established in the manhole. The time for the vacuum to drop to 9" of mercury shall be recorded.
 - d. Acceptance standards for leakage shall be established from the elapsed time for a negative pressure change from 10" to 9" of mercury. The maximum allowable leakage rate for a 4' diameter manhole shall be in accordance with the following:

MANHOLE DEPTH	MINIMUM ELAPSED TIME FOR A PRESSURE CHANGE OF 1 INCH Hg
10 ft. or less	60 seconds
> 10 ft. but < 15 ft.	75 seconds
> 15 ft. but < 25 ft.	90 seconds

For manholes 5' in diameter, add an additional 15 seconds and for manholes 6' in diameter, add an additional 30 seconds to the time requirements for 4-foot diameter manholes.

- e. If the manhole fails the test, necessary repairs shall be made and the vacuum test and repairs shall be repeated until the manhole passes the test or the manhole shall be tested in accordance with the standard exfiltration test and rated accordingly.
- f. If a manhole joint mastic is completely pulled out during the vacuum test, the manhole shall be disassembled and the mastic replaced.

3.12 DEFLECTION TEST FOR NON-RIGID PIPE

- A. The maximum allowable pipe deflection for a completely backfilled, non-rigid sewer pipe shall not exceed five percent (5%) of the nominal internal pipe diameter. Deflections in non-rigid pipe shall be checked by measurement or by pulling a mandrel with the minimum allowable diameter through the pipe. The minimum allowable diameter shall

be equal to the minimum interior diameter of the pipe, as specified in the applicable portions of the ASTM Standard Specifications or the pipe manufacturer's recommendations, minus five percent of the minimal interior diameter of the pipe. Those sections of non-rigid pipe with deflections greater than the maximum allowable five percent shall not be acceptable and the Contractor will remove and replace these sections at his own expense.

- B. Deflection tests will be run if in the opinion of the Engineer testing is warranted. The program for testing shall be mutually determined by the Engineer and the Contractor. The Contractor shall furnish all labor, tools and equipment necessary to make the tests and to perform any work incidental thereto.

3.13 PRESSURE TESTING OF FORCE MAIN

- A. Make pressure and leakage tests on all newly laid pipe. Furnish all necessary equipment and material, make all taps in the pipe as required, and conduct the tests. The tests shall be conducted between valved sections of the pipeline, or as approved by the Engineer. The Engineer will monitor the tests.

<u>Amount</u>	<u>Description</u>
2	Approved graduated containers.
2	Pressure gauges.
1	Hydraulic force pump approved by the Engineer.
1	Additional 1/2-inch pressure tap for Engineer's test gauge Suitable hose and suction pipe as required.

- B. Conduct the tests after the trench has been partially backfilled with the joints left exposed for inspection, or when completely backfilled, as permitted by the Engineer. Where any section of pipe is provided with concrete reaction blocking, do not make the pressure test until at least 5 days have elapsed after the concrete thrust blocking is installed. If high-early cement is used for the concrete thrust blocking, the time may be cut to 2 days.
- C. Conduct pressure test in the following manner, unless otherwise approved by the Engineer: after the trench has been backfilled or partially backfilled as hereinbefore specified, fill the pipe with water, expelling all air during the filling. The test pressure shall be 1½ times normal working pressure at the point of lowest elevation of the test gauge.
- D. Duration
 - 1. The duration of each pressure test shall be 2 hours, unless otherwise directed by the Engineer.
- E. Procedure
 - 1. Slowly fill the pipe with water and allow to stand for 24 hours. Expel all air from the pipe. Allow and maintain the specified test pressure by continuous pumping if necessary for the entire test period. The test pressure shall be calculated for the point of lowest elevation, or as specified by the Engineer. The pump suction

shall be in a barrel or similar device, or metered so that the amount of water required to maintain the test pressure may be measured accurately.

2. Before the line is pressurized, the Engineer shall verify that all necessary main line valves are open or closed with regard to the section of line being tested. In addition, the Engineer shall verify that all hydrant valves are open.

F. Leakage

1. Leakage shall be defined as the quantity of water necessary to hold the specified test pressure for the duration of the test period. No pipe installation will be accepted if the leakage is greater than the number of gallons per hour as determined by the following formula:

$$a) \quad L = \frac{ND\sqrt{P}}{7400}$$

In the above formula:

L = Allowable leakage, in gallons per hour

N = Number of joints in the length of pipe tested

D = Nominal diameter of pipe, in inches

P = Average test pressure during the leakage test, in pounds per square inch gauge.

- G. The pressure testing of water service lines shall follow the same procedure as outlined in the section. In all cases, however, the corporation stop, service line and curb stop shall be visually inspected under full test pressure and any leaks fixed.

H. Correction of Excessive Leakage

1. Should any test of pipe laid disclose leakage greater than that allowed, locate and repair the defective joints or pipe until the leakage of a subsequent test is within the specified allowance.

3.14 TELEVISIONING MAIN

All sewer connection lines eight inches (8") or larger shall be televised. The tape shall have a running footage meter showing the exact footage from the entry manhole. Tapes shall be provided with a log showing the location of all defects and service lines.

END OF SECTION

SECTION 02612

HOT BITUMINOUS PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Work to be performed under this section shall include all labor, equipment, materials and miscellaneous items necessary to furnish and install one or more courses of bituminous mixture constructed on a prepared surface in accordance with the Specifications or as shown on the Drawings. The finished product shall be in close conformity with the lines, grades, thickness, and typical cross sections shown on the Drawings or as established in the field.

1.02 REFERENCE STANDARDS

- A. All work is to be performed in accordance with the "Colorado Department of Transportation - Standard Specifications for Road and Bridge Construction", latest revision Section 400 and as modified herein. The reference Specifications are not reproduced in their entirety.

1.03 SUBMITTALS

- A. Mix Design. Provide complete mix design by independent testing laboratory, including certifications of all material compliance. The job-mix formula for each mixture shall establish a single percentage of aggregate passing each required sieve size, a single percentage of bituminous material to be added to the aggregate, and a single temperature for the mixture at the discharge point of the plant.
 - 1. Submitted mix design shall be sealed by a Professional Engineer in the State of Colorado.

- B. Tack Coat. Certification of material.

1.04 COORDINATION

- A. It shall be the responsibility of the Contractor under this section to coordinate this work with all other trades involved in the project. No paving work shall be started until the work of others has progressed to a point that a definable area can be paved; patching, blending, butting, etc. of work under this section will not be allowed except as required as part of the normal paving operation.

PART 2 PRODUCTS

2.01 COMPOSITION OF MIXTURE

- A. Reference Section 403.02 (further reference 401.02 through 401.06) Section 702, Section 703, and Section 704, with revisions and additions as follows:
 - 1. Aggregate. The proposed job-mix gradation shall be in accordance with Table 703-03 Grading SX. The weight of lime, if used, shall be included in the total

weight of the material passing the No. 200 sieve. The restricted zone boundaries given in the Asphalt Institute's Superpave Series No. 2 (SP-2) Manual, Appendix B are to be used as guidelines in mix design development. However, the job-mix gradation is not required to pass above or below the restricted zone boundaries.

- a. For Gradings S, SX, and SG, a percentage of the aggregate retained on the No. 4 sieve shall have at least two mechanically induced fractured faces when tested in accordance with Colorado Procedure 45. This percentage will be specified in Table 403-1. The angularity of the fine aggregate shall be a minimum of 45.0% when determined according to CP L-5113, Method A. Aggregate samples representing each aggregate stockpile shall be non-plastic if the percent of aggregate passing the Number 4 sieve is greater than or equal to 10 percent by weight of the individual aggregate sample. Plasticity will be determined in accordance with AASHTO T 90.
 - b. The material shall not contain clay balls, vegetable matter, or other deleterious substances. The aggregate for Grading S, SX, and SG shall have a percentage of wear of 45 or less when tested in accordance with AASHTO T 96.
2. Bituminous Material (binder). Asphalt cement to be Performance Grade (PG) 58-28.
 3. Design Gyration. N (design) equals 75. Contractor to provide to the Engineer, a job mix composition meeting this section. Submittal shall include testing results sufficient to show compliance. Testing shall be under the certification of an independent testing laboratory acceptable to the Engineer. The mix design shall have been completed within the preceding 12 months.
 4. Contractor may use an anti-stripping additive from the current CDOT approved list of additives.
 5. The Contractor shall prepare a quality control plan outlining the steps to be taken to minimize segregation of HBP. This plan shall be submitted to the Engineer prior to beginning the paving operations. When the Engineer determines that segregation is unacceptable, the paving shall stop and the cause of segregation corrected before paving operations will be allowed to resume.
 - a. The Hot Bituminous Pavement shall not contain reclaimed material.

2.02 PRIME COAT

- A. Reference Section 702.02.
 1. Prime coat shall be MC-70 (ASTM D2026)

2.03 TACKCOAT

- A. Reference Section 702.03.
 1. Tack Coat to be SS-1h (ASTM D977) or CSS-1h (AASHTO M208).

2.04 PAVEMENT MARKINGS

- A. Reference Section 708.05
 1. Glass beads required

2.05

Tables (see following pages)

The design mix for hot bituminous pavement shall conform to the following:

TABLE 403-1

Property	Test Method	Value For Grading			
		S()	SG()	SX()	Patching
Air Voids, percent at: N (initial) [for information only] N (design)	CPL 5115	3.5 – 4.5	3.5 – 4.5	3.5 – 4.5	3.5 – 4.5
Lab Compaction (Revolutions): N (initial) [for information only] N (design)	CPL 5115	☐	☐	75	☐
Stability, minimum	CPL 5106			28	
Aggregate Retained on the 4.75 mm (No. 4) Sieve with at least 2 Mechanically Induced fractured faces, % minimum	CP 45	☐	☐	70	☐
Accelerated Moisture Susceptibility Tensile Strength Ratio (Lottman), minimum	CPL 5109 Method B	80	80	80	80
Minimum Dry Split Tensile Strength, kPa (psi)	CPL 5109 Method B	205 (30)	205 (30)	205 (30)	205 (30)
Grade of Asphalt Cement, Top Layer		PG__	PG__	PG 58-28	PG__
Grade of Asphalt Cement, Layers below Top		PG__	PG__	PG 58-28	PG__
Voids in the Mineral Aggregate (VMA) % minimum	CP 48	See Table 403-2	See Table 403-2	See Table 403-2	See Table 403-2
Voids Filled with Asphalt (VFA), %	AI MS-2	☐	☐	65-80	☐
Dust to Asphalt Ratio Fine Gradation Coarse Gradation	CP 50	0.6 – 1.2 0.8 – 1.6	0.6 – 1.2 0.8 – 1.6	0.6 – 1.2 0.8 – 1.6	0.6 – 1.2 0.8 – 1.6

Note: AI MS-2 = Asphalt Institute Manual Series 2.

Note: The current version of CPL 5115 is available from the Region Materials Engineer.

Note: Mixes with gradations having less than 40% passing the 4.75 mm (No. 4) sieve shall be approached with caution because of constructability problems.

Note: Gradations for mixes with a nominal maximum aggregate size of one-inch or larger are considered a coarse gradation if they pass below the maximum density line at the #4 screen.

Note: Gradations for mixes with a nominal maximum aggregate size of ¾ inch or smaller are considered a coarse gradation if they pass below the maximum density line at the #8 screen.

TABLE 403-2

Minimum Voids in the Mineral Aggregate (VMA)			
Nominal Maximum Size*, mm (inches)	***Design Air Voids **		
	3.0%	4.0%	5.0%
25.0 (1)	11	12	13
19.0 (¾)	12	13	14
12.5 (½)	13	14	15

* The Nominal Maximum Size is defined as one sieve larger than the first sieve to retain more than 10%.

** Interpolate specified VMA values for design air voids between those listed.

***Extrapolate specified VMA values for production air voids beyond those listed.

PART 3 EXECUTION

- A. Reference Section 403.03 (further reference 401.07 through 401.20) and Section 407.04 through 407.08.
1. Maximum compacted pavement depth per pass to be 3".
 2. Prime not required unless indicated on Drawings. Prepared base course or Subgrade surfaces receiving pavement courses shall be primed at Contractor's expense if the surface has deteriorated, due to traffic, weather or time lapse between surface preparation and placement of bituminous materials, such that in the opinion of the Engineer, use of prime coat is required.
 3. Tack coat required between lifts, on all abutting old pavement surfaces and for overlays on existing pavements unless waived by Engineer. Application rate shall be 0.05 to 0.10 gallons per square yard diluted. Dilution shall be one part tack emulsion to one part water.
 - a. All cut asphalt surfaces that are to butt new pavement sections shall be tacked with a liberal application of tack coat prior to paving.

3.01 COMPACTION

- A. The plant mix bituminous pavement shall be compacted by rolling. The number, weight and type of rollers furnished shall be that which is sufficient to obtain the required density while the mixture is in a workable condition. Compaction shall begin immediately after the mixture is placed and be continuous until the required density is obtained. When the mixture surface temperature falls below 185 degrees F, no further compaction effort will be permitted unless approved.
- B. All roller marks shall be removed with the finish rolling. Use of vibratory rollers with the vibrator on will not be permitted during surface course final rolling and will not be permitted on any rolling on bridge decks covered with waterproofing membrane.
- C. Pavement shall be compacted to a density of 92 percent to 96 percent of the maximum theoretical density, determined according to AASHTO T209. Field density determinations will be made in accordance with Colorado Procedure 44 or 81.

- D. Along forms, curbs, headers, walls and all other places not accessible to the rollers, the mixture shall be thoroughly compacted with mechanical tampers.
 - E. Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective, shall be immediately removed and replaced with fresh hot mixture, and compacted to conform to the surrounding area.
- 3.02 SURFACE TOLERANCES
- A. Section 401.20. No skin patching will be allowed.
- 3.03 PAVEMENT MARKING
- A. Reference CDOT Section 627 and as contained in the Contract Documents.
- 3.04 INSPECTION AND TESTING
- A. Contractor is solely responsible for Quality Control. They must take whatever means they deem necessary to assure the quality of the product.
 - B. Owner will provide Quality Assurance testing. Contractor to cooperate fully with all persons engaged in testing.
- 3.05 DENSITY TESTING AND CONTROL
- A. See Section 3.01, Compaction, above
 - B. Field Testing. Testing for density during compaction operations to be done using nuclear density methods
 - C. Frequency of Testing. Minimum of one (1) test every 10,000 square feet or as directed by Engineer.
 - D. Retesting. In the event of failure to meet compaction criteria, Contractor shall re-compact and/or replace defective work at direction of Engineer. All retesting to be paid for by Contractor, and to be performed by testing firm approved by the Engineer.

END OF SECTION

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SECTION 02626

CONCRETE CURB AND GUTTER, SIDEWALK, CURBWALK AND DRIVEWAY

PART 1 GENERAL

1.01 SUMMARY

- A. This Work shall include furnishing all materials, labor, equipment and miscellaneous items necessary for the construction of concrete curb, gutter, sidewalk, handicap ramps, driveway or any combination thereof, all in accordance with these Specifications and in close conformity with the lines, grades, and typical sections as shown on the Construction Drawings or established in the field.

PART 2 PRODUCTS

- A. The materials shall conform to the requirements specified in the following:
 - 1. Section 02222 - Embedment and Base Course Aggregate.

2.01 JOINT FILLER

- A. Pre-molded, preformed conforming to AASHTO M213 to the full depth of the section.

2.02 STRUCTURAL CONCRETE

- A. See Section 03300 for complete Specification.

2.03 FIBERMESH

- A. Fibermesh additive at the rate of 1½ pounds/cubic yard shall be used with all concrete. Use shall be in accordance with manufacturer's recommendations.

PART 3 EXECUTION

3.01 EXCAVATION

- A. Excavation shall be made to the required depth and width to permit the installation and bracing of the forms. The foundations shall be shaped and compacted to a firm even surface conforming to the section shown on the Construction Drawings. Material determined to be unsuitable or non-compact by the Engineer will be removed and replaced.

3.02 FORMS

- A. Forms shall be wood or metal and shall extend for the full depth of the concrete. All forms shall be straight, free from warp and of sufficient strength to resist the pressure of the concrete without springing. Bracing and staking of forms shall be such that the forms remain in alignment both horizontally and vertically until removal. Satisfactory slip forms may be used when approved. Use of curbing machine will be permitted providing line and grade tolerances can be met.

- B. Steel plates that can be shaped to the desired radius shall be used on all short radii. Open joints shall be formed with a steel separator plate conforming to the section being installed.
- C. Oil and clean all forms prior to placement of concrete.

3.03 MIXING AND PLACING

- A. The foundations shall be thoroughly moistened immediately prior to the placing of the concrete. Compaction of the concrete shall have thorough consolidation achieved by tamping, spading, vibrating or other acceptable methods. Forms shall be left in place until the concrete has set sufficiently to prevent deformation due to removal. Upon removal of the forms, the curb face shall be immediately finished to a uniform surface. In the case of matching existing concrete finishes, an approved method shall be used.

3.04 FINISHING

- A. The surface shall be floated with a wood or magnesium float and given a broom finish. No plastering of the surface will be permitted. All outside edges of slabs and joints shall be rounded to a ¼-inch radius. Broom marks to be perpendicular to traffic or pedestrian flow for installation of sidewalk or concrete flatwork. Broom marks to be parallel to traffic flow for installation of curb and gutter.

3.05 JOINTS

- A. Expansion joints shall be made using ½" pre-molded expansion joint. Construction joints, using ½" pre-molded joint filler, shall be placed at the end of a day's run or during a day's work if there is more than a 30 minute delay in concrete delivery.
- B. Construction joints shall be formed around all appurtenances such as manholes, utility poles, adjacent structures, etc., extending into or abutting the Work. Pre-molded expansion joint filler ¼" thick shall be installed in these joints. Expansion joint filler shall be installed between concrete sidewalks and any fixed structure.
- C. Dummy joints (contraction joints) shall be made by a forming tool to a depth of ¼ of the section with a width of ⅛" to ¼". Open joints shall be made with a separator plate, ⅛" to ¼" in width. Dummy joints in lieu of open joints will be permitted with use of curbing machine.
- D. Joint spacing shall be located as follows:
 1. Expansion joints: Every 100' on center; at end of corner radius; at driveway sections; as shown on Construction Drawings.
 2. Construction joints: As required during construction; at appurtenances and structures through or abutting Work.
 3. Dummy or open joints: Every 10' on center for curb and gutter and curbwalk; equal to width of sidewalk for sidewalk; as shown on Construction Drawings.

3.06 CURING

- A. Immediately upon completion of the finishing, concrete shall be moistened and kept moist for a minimum of 72 hours. In lieu of wetting, use of a membrane-curing compound, at the direction of the Engineer, will be permitted.

3.07 BACKFILLING

- A. After the concrete has set sufficiently, the areas behind the curb shall be backfilled to the required elevations and shall be thoroughly compacted in accordance with Section 02200 - Earthwork.

3.08 FIELD QUALITY CONTROL

- A. Tolerances

All vertical surfaces shall not vary more than $\frac{1}{4}$ " in 10' in the horizontal direction. Surface deviation shall not exceed $\frac{1}{4}$ " when measured with a 16' straight edge.

- B. Concrete Strength

The Geo-technical Engineer may take field samples for purposes of testing concrete strength. All substandard strength concrete shall be removed and replaced at Contractor's expense.

END OF SECTION

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SECTION 02700

FINISHED GRADING AND RESTORATION

PART 1 GENERAL

1.01 SUMMARY

- A. This Work shall consist of finish grading, restoration of grounds and cleanup. This shall be a continuous process from project start-up to final acceptance of the Work by the Engineer.

PART 2 PRODUCTS

2.01 GENERAL CLEANUP[

- A. Cleanup shall include the regrading, resurfacing, rebuilding and replacing of all surfaces on which construction took place, and rebuilding or replacing any areas disturbed by the construction. The streets or roads where disturbed shall be resurfaced by the Contractor, including both gravel and oil roads, and shall be replaced in as good or better condition than that at the start of construction. The Engineer shall be the sole judge as to whether streets, roads or property have been restored to a condition as good or better than at the start of construction.
- B. The Contractor shall, at all times, keep property on which Work is in progress free from accumulation of waste material or rubbish caused by employees or caused by the Work, and he shall carry on a constant program to maintain Work area, structure sites, right-of-ways and the surface of streets and roads in a condition satisfactory to the appropriate authority, grantor of the right-of-way, and the Engineer.
- C. Preliminary cleanup shall commence as soon as the construction site is occupied by the Contractor (including his employees, supplies, materials or equipment) and shall be a continuous process, if necessary, in order that the site of the Work shall have an appearance and/or utility equal to or better than the start of the Work.
- D. Upon completion of the Work, the Contractor shall remove all remaining rubbish, tools, equipment, scaffolds and surplus materials from the job and leave the Work area clean and free of debris

PART 3 EXECUTION

3.01 GENERAL

- A. All driveways, retaining walls, concrete flatwork, drainage ditches, trees, shrubs, and other miscellaneous items shall be returned to as good as or better than original conditions, if they are damaged by Work.

3.02 LANDSCAPING

- A. See appropriate sections for reseeding requirements. Decorative Landscaping is not applicable.

END OF SECTION

SECTION 02822

TEMPORARY EROSION CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. This work consists of furnishing and applying soil binding slurry over disturbed slopes as a temporary soil erosion inhibitor. Disturbed slopes that will not be re-worked and finished slopes that are not scheduled revegetation for a period 21 days or more shall be treated as construction progresses. As construction progresses into the Fall season, all disturbed slopes that will not be re-worked before spring and finished slopes that are not scheduled for revegetation until spring shall be treated before the onset of winter and far enough in advance, in order for the treatment to be applied in accordance of the climatic requirements of this specification. Contractor shall furnish the equipment and labor necessary for performing the work.
- B. Soil binding agent shall be applied to all disturbed open slopes using standard mechanized hydraulic equipment used for broadcasting water based slurry products.
- C. The soil-binding agent shall be added to the proportionate quantity of water and thoroughly mixed per manufacturer's recommendations.
- D. This specification shall apply to all disturbed areas outside CDOT right-of-way.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Soil binder shall be Soil Master WR or approved equal. Soil binder shall be non-toxic, non-flammable and conform to the following properties:

Copolymer of methacrylates/acrylates/acrylics/tripolycate	60%
Extgoxylated surfactants	2%
Silicates	2%
Inert ingredients	36%
pH	4 - 5.1
Color	Milky white
Lbs. per U.S. gallon	9 - 10 lbs.

- B. Wood cellulose fiber mulch shall be Mat-Fiber, or approved equal. Wood cellulose fiber mulch shall conform to the following requirements:

Moisture content (total weight basis)	12.0% ± 3%
Organic matter (oven-dried weight basis, min.)	99.3%
Inorganic content (oven-dried weight basis, max.)	0.7%
pH at 3% consistency in water slurry (avg.)	4.9

Water holding capacity (min.)
Color

1.2 gal/lb.
Green

- C. Water used for establishing the proper dilution ratio shall be clean, free of sediment and other debris and pollutants.

2.02 OTHER ACCEPTED DUST SUPPRESSION ADDITIVES

A. Starch-Based or other 100% Natural Polymer

- 1. Accepted Product – DustStar by Chemstar or approved equal.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. Liquefied soil binder (Soil Master WR) shall be thoroughly mixed with water and wood cellulose fiber mulch (Mat-Fiber) into a homogeneous mix and applied to the disturbed ground at the following rate per acre:

<u>Soil Binder/Acre</u>	<u>Cellulose Fiber/Acre</u>	<u>Water/Acre</u>
165 gallons	200 pounds	2,000 gallons

- B. The soil-binding product and cellulose fiber mulch shall be slowly poured into the slurry tank with agitators activated until homogeneous slurry is formed. The soil binding slurry shall be applied when the ground temperature is fifty degrees F. or greater at time of application and sustained while the slurry solidifies and stabilizes for a forty-eight hour period.
- C. The soil binding slurry shall be sprayed uniformly over the disturbed areas. Application shall be in the form of a mist and avoid over saturation that results in the slurry running off the slope. Contractor may need to spray areas more than once to achieve the proper coverage and avoid over-saturation. The slurry shall be applied to a moistened ground, but not in the presence of freestanding surface water. Any areas not sealed with the soil binder properly or areas damaged due to the negligence of the Contractor shall be repair and retreated.
- D. The Engineer may order test sections be established for adjusting the equipment and assure proper application and conformance to the specification.

END OF SECTION

APPENDIX A



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State Revolving Fund Required Specifications

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Colorado State Revolving Fund Required Specifications

Section 1

Davis Bacon Prevailing Wage Requirements

This contract is governed by the Davis Bacon and Related Acts and is subject to General Decision Number CO20210003 dated 01/01/2021. A copy of this General Decision Number is attached as [REDACTED] to this document.

The SRF Program is subject to Davis Bacon and Related Acts, which extends the requirements of the Davis-Bacon Act. Compliance with the Davis-Bacon Act is required for any project funded by the Drinking Water Revolving Fund (DWRF) or Water Pollution Control Revolving Fund (WPCRF) programs. Non-Compliance with the Davis-Bacon Act may result in debarment and suspension from working on future projects funded with federal dollars for up to three years and/or loss of funding for the current project.

Preamble

With respect to the Clean Water and Safe Drinking Water State Revolving Funds, EPA provides capitalization grants to each State which in turn provides sub-grants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I - 5.

Attachment 1

Wage Rate Requirements under:

- The Consolidated Appropriations Act, 2016 (P.L 114-133), or
- The Water Resources Reform and Redevelopment Act of 2014 (WRRDA):

I. For Subrecipients that Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis - Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance under The 2014 Act with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. The recipient or subrecipient may also obtain additional guidance from US Department of Labor (DOL) web site at <https://www.dol.gov/agencies/whd/government-contracts/construction>

1. Applicability of the Davis-Bacon (DB) prevailing wage requirements.

Under The Consolidate Appropriations Act, 2016, or The Water Resources Reform and Redevelopment Act of 2014, DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.



- (a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.
- (1) While the solicitation remains open, the subrecipient shall monitor <https://beta.sam.gov/> weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.
- (2) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor <https://beta.sam.gov/> on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.
- (b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from <https://beta.sam.gov/> into the ordering instrument.
- (c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.
- (d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

- (a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment works under the Clean Water State Revolving Fund (CWSRF) or a construction project under the Drinking Water State Revolving Fund (DWSRF) financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or The



2014 Act, the following clauses:

(1) Minimum wages.

- (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, <https://beta.sam.gov/>

- (ii) (A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (2) The classification is utilized in the area by the construction industry; and
 - (3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the request to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of



Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

- (C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
 - (D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
 - (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding.

- (i) The subrecipient(s) shall, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Federal Agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

- (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe



benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- (ii) (A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at www.dol.gov/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).
- (B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
 - (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;
 - (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work



performed, as specified in the applicable wage determination incorporated into the contract.

- (C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.
 - (D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- (iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.
- (4) Apprentices and trainees--
- (i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
 - (iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
- (5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
 - (6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
 - (7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
 - (8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
 - (9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.
 - (10) Certification of eligibility.



- (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (iii) The penalty for making false statements is prescribed in the U .S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

- (a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above, or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.
 - (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
 - (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section, the contractor and any subcontractor responsible, therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.
 - (3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.
 - (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.



- (b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Federal Agency, State, and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

- (a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.
- (b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicated that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.
- (c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of non-compliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments there under by contractors and subcontractors who claim credit for fringe benefit contributions.
- (d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.
- (e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at: <https://www.dol.gov/agencies/whd/contact/local-offices>



Section 2

American Iron and Steel

The State Revolving Fund Program is subject to, and requires compliance with, the American Iron and Steel requirement (AIS). American Iron and Steel requires Water Pollution Control State Revolving Fund (WPCRF) and Drinking Water Revolving Fund (DWRf) assistance recipients use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed on or after January 17, 2014.

In providing bids, proposals, or services, the Contractor represents and warrants to and for the benefit of the borrower and the State that:

- a. The Contractor has reviewed and understands the American Iron and Steel requirement.
- b. All of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved.
- c. The Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the borrower or the State.

Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the borrower or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the borrower or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the borrower). While the Contractor has no direct contractual privity with the State, as a lender to the borrower for the funding of its project, the borrower and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of the Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

For purposes of the WPCRF and DWRf projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings;
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel;
- Reinforced precast concrete; and
- Construction materials.

If the subrecipient can justify a claim made under one of the categories below, a waiver may be granted. Until a waiver is granted by the EPA, the AIS requirement must be adhered to as described in the act.

A waiver may be provided if EPA determines that:

1. Applying these requirements would be inconsistent with the public interest.
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

All waiver requests must be routed through the Grants and Loans Unit project manager or compliance specialist.

EPA's guidance on AIS requirements, available at http://water.epa.gov/grants_funding/aisrequirement.cfm includes specific instructions for communities interested in applying for a waiver. After receiving a completed application for a waiver from the Grants and Loans Unit, EPA will publish the waiver request and all material submitted with the application on this website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to the EPA.

Approved National Waivers available for borrowers and contractors include:

- April 15, 2014 De Minimis Waiver:

“The EPA is hereby granting a nationwide waiver pursuant to the American Iron and Steel requirements of P.L. 113-76 CAA 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of five percent of the total cost of the material used in and incorporated into a project; the cost of an individual item may not exceed one percent of the total cost of materials used in and incorporated into a project.”

Section 3

National Term on Suspension and Debarment

Under Executive Order 12549, an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program, or a subagreement thereunder for \$25,000 or more.

The status of prospective individuals or organizations can be checked at the System for Award Management at <https://beta.sam.gov/>

It is the prime contractor's responsibility to verify that subcontractors, vendors, suppliers and manufacturers are not on the excluded parties list.



Section 4

Equal Employment Opportunity and Affirmative Action Requirements on Federally Assisted Construction Contracts

A. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

This notice shall be included in, and shall be a part of, all solicitations for offers and bids on all federal and federally assisted construction contracts or subcontracts.

- (1) The Offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
- (2) The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

County	Minority Participation in Each Trade ¹	Female Participation in Each Trade ¹
Fort Collins, Larimer	6.9%	6.9%
Archuleta, Delta, Dolores, Eagle, Garfield, Grand Junction, Gunnison, Hinsdale, Jackson, La Plata, Mesa, Moffat, Montezuma, Montrose, Ouray, Pitkin, Rio Blanco, Routt, San Juan, San Miguel	10.2%	6.9%
Colorado Springs, El Paso, Teller	10.9%	6.9%
Chaffee, Cheyenne, Clear Creek, Grand, Elbert, Kit Cason, Logan, Morgan, Park, Phillips, Sedgwick, Summit, Washington, Yuma	12.8%	6.9%
Greeley, Weld	13.1%	6.9%
Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Gilpin, Jefferson	13.8%	6.9%
Alamosa, Baca, Bent, Conejos, Costilla, Crowley, Custer, Fremont, Huerfano, Kiowa, Lake, Las Animas, Lincoln, Mineral , Otero, Prowers, Rio Grande, Saguache	19.0%	6.9%
Pueblo	27.5%	6.9%

1) Source: FR Vol.45 No. 194 / Friday, October 3, 1980



These goals are applicable to all the contractor's construction work (whether or not it is Federal or Federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

- (3) The contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number for the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed (See Form C).
- (4) As used in this Notice, and in the contract resulting from this solicitation, the covered area is Mineral County.

B. EQUAL OPPORTUNITY CLAUSES

- (1) The Equal Opportunity Clause published at 41 CFR Part 60-1.4(b) is required to be included in, and is part of, all nonexempt federally assisted construction contracts and subcontracts. By operation of the order, the equal opportunity clause shall be considered to be a part of every contract and subcontract required by the order and the regulations in this part to include such a clause whether or not it is physically incorporated.
- (2) In addition to the clauses described above, all federal contracting officers, all applicants, and all non-construction contractors, as applicable, shall include the specifications set forth in this section in all federal and federally assisted construction contracts in excess of \$10,000 to be performed in geographical areas designated by the Director pursuant to 41 CFR 60-4.6 of this part and in construction subcontracts in excess of \$10,000 necessary in whole or in part to the performance of non-construction Federal contracts and subcontracts covered under the Executive Order.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

A. DEFINITIONS AS USED IN SPECIFICATIONS

- (1) "Covered Area" means the geographical area described in solicitation from which this contract resulted;



- (2) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
- (3) "Employer identification number" means the Federal Social Security number used on the employer's quarterly Federal Tax Return, U.S. Treasury Department Form 941.
- (4) "Minority" includes:
 - (a) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (b) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
 - (c) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asian, the Indian Subcontinent, or the Pacific Islands);
 - (d) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North American and maintaining identifiable tribal affiliations through membership and participation or community identification).

B. DETAILED SPECIFICATIONS

- (1) Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$25,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
- (2) If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan (Plan) approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area, (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved Plan is individually required to comply with its obligations under the Equal Employment Opportunity (EEO) clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
- (3) The contractor shall implement the specific affirmative action standards provided in paragraphs (6)(a) through (p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
- (4) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.



- (5) In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the contractor during the training period, and the contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- (6) The contractor shall take specific affirmative action to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - (a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
 - (b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations where the contractor or its unions have employment opportunities available, and maintain a record of the organization's responses.
 - (c) Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the contractor may have taken.
 - (d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
 - (e) Develop on-the-job training opportunities and/or participate in training programs for the areas which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under (7)(b) above.



- (f) Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- (g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- (h) Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.
- (i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations servicing the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- (j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.
- (k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- (l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- (m) Ensure that seniority practices, job classification, work assignments and other personnel practices, do not have a discriminatory effect by continually

monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations are followed.

- (n) Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - (o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - (p) Conduct a review, at least annually, of all supervisor's adherence to and performance under the contractor's EEO policies and affirmative action obligations.
- (7) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (6)(a) through (p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under (6)(a) through (p) of the specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.
- (8) A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally, the contractor may be in violation of the order if a specific minority group of women is under-utilized).
- (9) The contractor shall not use the goals and timetables of affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- (10) The contractor shall not enter into any subcontract with any person or firm debarred from government contracts pursuant to Executive Order 11246.
- (11) The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- (12) The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in



paragraph (6) of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.3.

- (13) The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
- (14) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).



Section 5

Williams-Steiger Occupational Safety and Health Act of 1970

A. Authority

- (1) The contractor is subject to the provisions of the Williams-Steiger Occupational Safety and Health Act of 1970.
- (2) These construction documents and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the Federal law(s), including but not limited to the latest amendment of the following:
 - (a) Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 94-596;
 - (b) art 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;
 - (c) Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

B. Safety and Health Program Requirements

- (1) This project, its prime contractor and its subcontractors, shall at all times be governed by Chapter XVII of Title 29, Code of Federal Regulations, Part 1926 - Safety and Health Regulations for Construction (29 CFR 22801), as amended to date.
- (2) To implement the program and to provide safe and healthful working conditions for all persons, general project safety meetings will be conducted at the site at least once each month during the course of construction, by the construction superintendent or his/her designated safety officer. Notice of such meeting shall be issued not less than three (3) days prior, stating the exact time, location, and agenda to be included. Attendance by the owner, architect, general foreman, shop steward(s), and trades, or their designated representatives, witnessed in writing as such, shall be mandatory.
- (3) To further implement the program, each trade shall conduct a short gang meeting, not less than once a week, to review project safety requirements mandatory for all persons during the coming week. The gang foreman shall report the agenda and specific items covered to the project superintendent, who shall incorporate these items in his/her daily log or report.
- (4) The prime contractor and all subcontractors shall immediately report all accidents, injuries, or health hazards to the owner and architect, or their designated representatives, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Act of 1970.
- (5) This program shall become a part of the contract documents and the contract between the owner and prime contractor, prime contractor and all subcontractors, as though fully written therein.



Section 6

Discovery of Archaeological and Other Historical Items

A. Construction Procedures

In the event of an archaeological or more recent historical find (e.g., artifacts, housing sites) during any phase of construction, the following procedure should be followed:

- (1) Construction shall be halted, with as little disruption to the archaeological site possible.
- (2) The Contractor shall notify the Owner who shall contact the State Historical Preservation Officer.
- (3) The State Historical Preservation Officer may decide to have an archaeologist inspect the site and make recommendations about the steps needed to protect the site, before construction is resumed.
- (4) The entire event should be handled as expediently as possible in order to hold the loss in construction time to a minimum while still protecting archaeological finds.

B. National Register Status

In the event archaeological/historical data are evaluated to meet National Register criteria, the Advisory Council on Historic Preservation may be notified and asked to comment by the Water Quality Control Division.

Section 7

SRF Required Forms by Section

SRF forms can be found on this webpage: <https://cdphe.colorado.gov/water-quality/drinking-water-info-for-public-water-systems/grants-and-loans/loans-srf/water-quality>

Section 1 - Davis Bacon Prevailing Wages

- Davis Bacon Certification Form (SRF form);
- WH - 347 - Contractors Payroll Form;
- Standard Form 1444 - Request for Authorization of Additional Classification and Rate;
- Standard Form 1445 - Labor Standards Interview Form.

Section 2 - American Iron and Steel

- American Iron and Steel Certification Form (SRF Form);
- American Iron and Steel Product Spreadsheet (SRF Form).

Section 3 - National Term on Suspension and Debarment

- No applicable forms.

Section 4 - Equal Employment Opportunity and Affirmative Action Requirements

- No applicable forms.

Section 5 - Williams-Steiger Occupational Safety and Health Act of 1970

- No applicable forms.

Section 6 - Discovery of Archaeological and Other Historical Items

- No applicable forms.



Superseded General Decision Number: C020200003

State: Colorado

Construction Type: Heavy

Counties: Alamosa, Archuleta, Baca, Bent, Chaffee, Cheyenne, Clear Creek, Conejos, Costilla, Crowley, Custer, Delta, Dolores, Eagle, Elbert, Fremont, Garfield, Gilpin, Grand, Gunnison, Hinsdale, Huerfano, Jackson, Kiowa, Kit Carson, La Plata, Lake, Las Animas, Lincoln, Logan, Mineral, Moffat, Montezuma, Montrose, Morgan, Otero, Ouray, Park, Phillips, Pitkin, Prowers, Rio Blanco, Rio Grande, Routt, Saguache, San Juan, San Miguel, Sedgwick, Summit, Teller, Washington and Yuma Counties in Colorado.

HEAVY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number 0 Publication Date 01/01/2021

ELEC0012-002 06/01/2019

ALAMOSA, ARCHULETA, BACA, BENT, CHAFFEE, CONEJOS, COSTILLA, CROWLEY, CUSTER, FREMONT, HUERFANO, KIOWA, LAS ANIMAS, MINERAL, OTERO, PROWERS, RIO GRANDE AND SAGUACHE COUNTIES

Rates Fringes

Electricians:

Electrical contract over \$1,000,000.....	\$ 27.50	12.50+3%
Electrical contract under \$1,000,000.....	\$ 24.85	12.50+3%

ELEC0068-011 06/01/2020

CLEAR CREEK, EAGLE, GILPIN, GRAND, JACKSON, LAKE, LOGAN, MORGAN, PHILLIPS, SEDGWICK, SUMMIT, WASHINGTON AND YUMA COUNTIES

Rates Fringes

ELECTRICIAN.....	\$ 38.00	16.97
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ELEC0111-002 09/01/2020

Rates Fringes

Line Construction:

Groundmen.....\$ 22.04 24.25%+6.80
Line Equipment Operator.....\$ 35.61 24.25%+6.80
Lineman and Welder.....\$ 49.45 24.25%+6.80

ELEC0113-004 06/01/2020

CHEYENNE, ELBERT, KIT CARSON, LINCOLN, PARK AND TELLER COUNTIES

Rates Fringes

ELECTRICIAN.....\$ 33.25 3%+15.75

ELEC0969-003 06/01/2019

DOLORES, GARFIELD, GUNNISON, HINSDALE, LA PLATA, MOFFAT,
MONTEZUMA, RIO BLANCO, AND ROUTT COUNTIES

Rates Fringes

ELECTRICIAN.....\$ 25.20 10.06

ELEC0969-006 01/01/2019

OURAY, PITKIN, SAN JUAN AND SAN MIGUEL COUNTIES

Rates Fringes

ELECTRICIAN.....\$ 30.80 10.92

ELEC0969-010 06/01/2019

DELTA AND MONTROSE COUNTIES

Rates Fringes

ELECTRICIAN.....\$ 25.20 10.06

ENGI0009-004 05/01/2020

Rates Fringes

Power equipment operators:

Mechanic.....\$ 30.53 11.15
Motor Grader: Blade-finish..\$ 30.37 11.15
Motor Grader: Blade-rough...\$ 30.37 11.15
Roller: self-propelled,
all types over 5 tons.....\$ 29.67 11.15
Roller: self-propelled,
rubber tires under 5 tons...\$ 29.67 11.15
Trackhoe.....\$ 30.20 11.15

* PLUM0003-003 06/01/2020

CLEAR CREEK, GILPIN, GRAND, JACKSON, LAKE, LOGAN, MORGAN,
PHILLIPS, SEDGWICK, SUMMIT, WASHINGTON, AND YUMA. PARTS OF
ELBERT, EAGLE, KIT CARSON, LINCOLN, AND PARK COUNTIES

Rates Fringes

PLUMBER.....\$ 43.63 16.67

PLUM0058-010 07/01/2018

ALAMOSA, BACA, BENT, CHAFFEE, CHEYENNE, CONEJOS, COSTILLA,
CROWLEY, CUSTER, ELBERT (Southern portion including towns of
Elbert, Matherson and Simla), FREMONT, HUERFANO, KIOWA, KIT
CARSON (Including towns of Dfalglar, Siebert, Vona, Stratton
and Bethune), LAS ANIMAS, LINCOLN (Including towns of Geona and
Arriba in the southern portion of the county), MINERAL, OTERO,

PARK (Including towns of Fauplay, Hartsel and Lake George),
 PROWERS, PUEBLO, RIO GRANDE, AND SAGUACHE COUNTIES

	Rates	Fringes
PLUMBER.....	\$ 32.75	14.85

PLUM0058-012 07/01/2018		

TELLER COUNTY

	Rates	Fringes
PLUMBER		
Includes HVAC Work.....	\$ 32.75	14.85

PLUM0145-004 08/01/2020		

ARCHULETA, DELTA, DOLORES, EAGLE (Eagle County is divided from where Pitkin and Lake Counties join on the north, and in a straight line to and including the town of Edwards and northerly to the south east corner of Routt County), GARFIELD, GUNNISON, HINSDALE, LA PLATA, MOFFAT, MONTEZUMA, MONTROSE, OURAY, PITKIN, RIO BLANCO, ROUTT, SAN JUAN AND SAN MIGUEL COUNTIES

	Rates	Fringes
PLUMBER.....	\$ 28.93	12.99

SUCO2001-005 12/20/2001		

	Rates	Fringes
Carpenters:		
Form Building and Setting...	\$ 16.16	.82
All Other Work.....	\$ 15.72	
Cement Mason/Concrete Finisher...	\$ 14.76	2.28
Laborer, common.....	\$ 11.11	3.80
PIPEFITTER.....	\$ 18.13	1.84
Power equipment operators:		
Backhoe.....	\$ 15.93	3.58
Bobcat/Skid Loader.....	\$ 20.22	4.41
Bulldozer.....	\$ 15.08	4.44
Excavator.....	\$ 15.39	
Front End Loader.....	\$ 15.86	3.59

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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APPENDIX B



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APPENDIX B
CITY OF CREEDE
SERVICE LINE STANDARDS

B-1 GENERAL. The sizing of service lines shall be the decision of the City. When requested by the City, the Applicant shall, at his expense, furnish data, plans, calculations, or other information as required for the evaluation of the service.

Point of Connection. Service lines shall connect to the City's system in a public street or similar place where the City has a free right of access and which other wise is suitable for the buried pipe.

The Customer for a service connection shall notify the City when the service line is ready for connection to the City's main. The connection to the main shall not be made until after the City's inspection and approval. The actual connection to the main shall be made in the presence of the City's Inspector, or shall be made by the City, at the City's option.

Where parallel or approximately parallel to a structural wall, the service shall be at least 5' from the wall. Penetrations through structures shall be approximately at right angles and shall provide flexibility such that the service will not be damaged by differential movement.

All potable water and sanitary sewer service lines are to be constructed in accordance with applicable codes, generally accepted good construction practices, and the minimum standards and details contained in this Appendix. The details are provided for standardizations purposes only, and represent minimum design standards which may require upgrading for specific applications.

B-2 POTABLE WATER SERVICES

B-2.1 Sizing. Sizing for potable water services shall be made in general conformance with AWWA Manual M11, "Sizing Water Service Lines and Meters".

B-2.2 Location. The water service shall be laid at uniform grade and in straight alignment so as to have a minimum cover of 7.0 feet from final finish grade. A reference mark shall be placed on the curb above the service line. The water meter shall be placed in a pit located at the property line.

When the preferred location is not reasonably available or would result in unreasonable costs, the Administrator may permit an in-building installation. In this case, the meter shall be located at an easily accessible location inside a building on the premises to be served, provided that there will be no reasonable possibility for water to be taken from service line without passing through the meter, and

further provided, where applicable, a remote device be installed. In this case, City maintenance responsibility ends at the property line.

B-2.3 Cross Connections. Cross connections of any type that permit a backflow condition from any source other than the City's potable water mains are prohibited. The City will not provide water service to any customer unless the potable water supply is protected from potential or actual cross connections as required by State and City regulations.

B-2.4 Pipeline Materials

Water Service Pipeline: The water service pipeline shall be Type K, soft copper conforming to ASTM B88, unless otherwise specifically approved by the City. Fittings shall be brass or copper alloy. Connections shall be by compression joints and no soldered joints shall be permitted underground. That connections should be provided.

Corporation Stops: Corporation stops shall be used for the connections of services (2-inch and smaller) to the water main. Corporation stops shall be brass and conform with AWWA C800. The inlet shall be standard AWWA corporation stop inlet thread and the outlet shall be for type "K" copper service pipe. Corporation stops shall be Mueller H-15000, Ford F-600, or approved equal.

Curb Stops: Curb stops shall be placed on the inlet side of the meter pit for all services 2" and smaller. Curb stops shall be brass and conform with AWWA C800. Connections shall be for type "K" copper service pipe. Curb stops shall be Mueller H-15204, Ford B-22, or approved equal.

Service Saddles: Service saddles shall be used for all water taps on any pipe other than DIP (Ductile Iron Pipe). For DIP, ¾" taps may be made without using a service saddle on 6" pipe; ¾" and 1" size taps may be made without service saddles on pipe 8" size or larger. All other taps shall be made with a double strap bronze saddle, Rockwell No. 323 or approved equal.

B-2.5 Meters. Unless otherwise approved, water meters shall be housed in an exterior meter pit in accordance with the standard drawing. In-building meters with remote exterior readouts may only be used if specifically approved by the City. Meters shall be SR11, positive displacement with touch read register.

Pits: Potable meters 2" and smaller shall have a circular reinforced concrete barrel. Barrel sections shall be of 5,000 psi minimum strength concrete, with a wall thickness of not less than 2". Reinforcing shall not be less than No.9 circular wire, 6 inches on center. Setting shall consist of a lower bell section with opening at the bottom to allow for entrance/exit of the service line. Barrel sections shall fit together

allowing no visible gaps and the top section shall be shaped for placement of the meter box cover. Adjustable grade rings shall be of reinforced concrete or cast iron. For meters smaller than 1," the City may accept the alternate use of an approved plastic meter pit. (Mid States Plastics, insulated, or approved equal.)

For 1 ½" and 2" meters, 48" or larger precast concrete manhole sections (conforming to ASTM C478) may be used per Drawing B.3. Larger size meter vaults shall be as approved by the City Engineer.

Meter Pit Covers: For ¾" and 1 " meters, covers shall be constructed of cast iron with rubber or plastics inner frost lid. The top lid shall be of cast iron with a worm type lock operated by a pentagon head. The lid and cover shall be Ford Wabash No. W3 or approved equal. All covers to be insulated.

For larger meter installations, the meter cover shall be Ford No. 24 with inner cover, except when located in street paving.

Meter Settings: All ¾ " and 1" meters shall be set with copper setter having an internal angle curb valve on the inlet side. Yokes shall be Ford 70 series or approved equal. Meters larger than 1" shall have (sealed) valve bypasses and be set in accorded with the detail given or as approved by the Administrator.

B-2.6 Excavation, Bedding and Backfill. All excavations for water and sewer installations shall be adequately guarded with barricades and lights so as to protect the public from hazard per existing Governmental requirements. Street, sidewalks, parkways, and other public or private property disturbed in the course of work shall be restored to their original condition in a manner satisfactory to the City of Creede.

The pipelines shall be bedded and backfilled in accordance with the appended drawings, "Pipe Trench Detail-Water," Drawing C.5. Where danger of frost is possible et. 7 ft. of cover, closed cell insulation shall be installed over the service line.

Water and sewer service lines shall have 10' minimum of horizontal separation. Where this separation is impractical the City Administrator may permit other separation requirements, in accordance with the Colorado Department of Public Health and Environment Standards.

All excavations required for the installations of a water and sewer service shall be open-trench work unless otherwise approved by the City.

B-3 SANITARY SEWER SERVICES

B-3.1 Sizing/Capacity. The size and slope of the building service sewer shall be subject to the approval of the City, but in no event shall the diameter be less than 4". Minimum grade and slopes shall be as follows:

4"	2.00% Normal: 1.0% Absolute Minimum
6"	1.00%
8"	0.60%

B-3.2 Service Connection. No connection between the sewer system of the City and the sewer facilities of the owner may be made except in a public street adequate to accommodate sewer facilities or in a similar place to which the City has a free right of access as it would have in a public street.

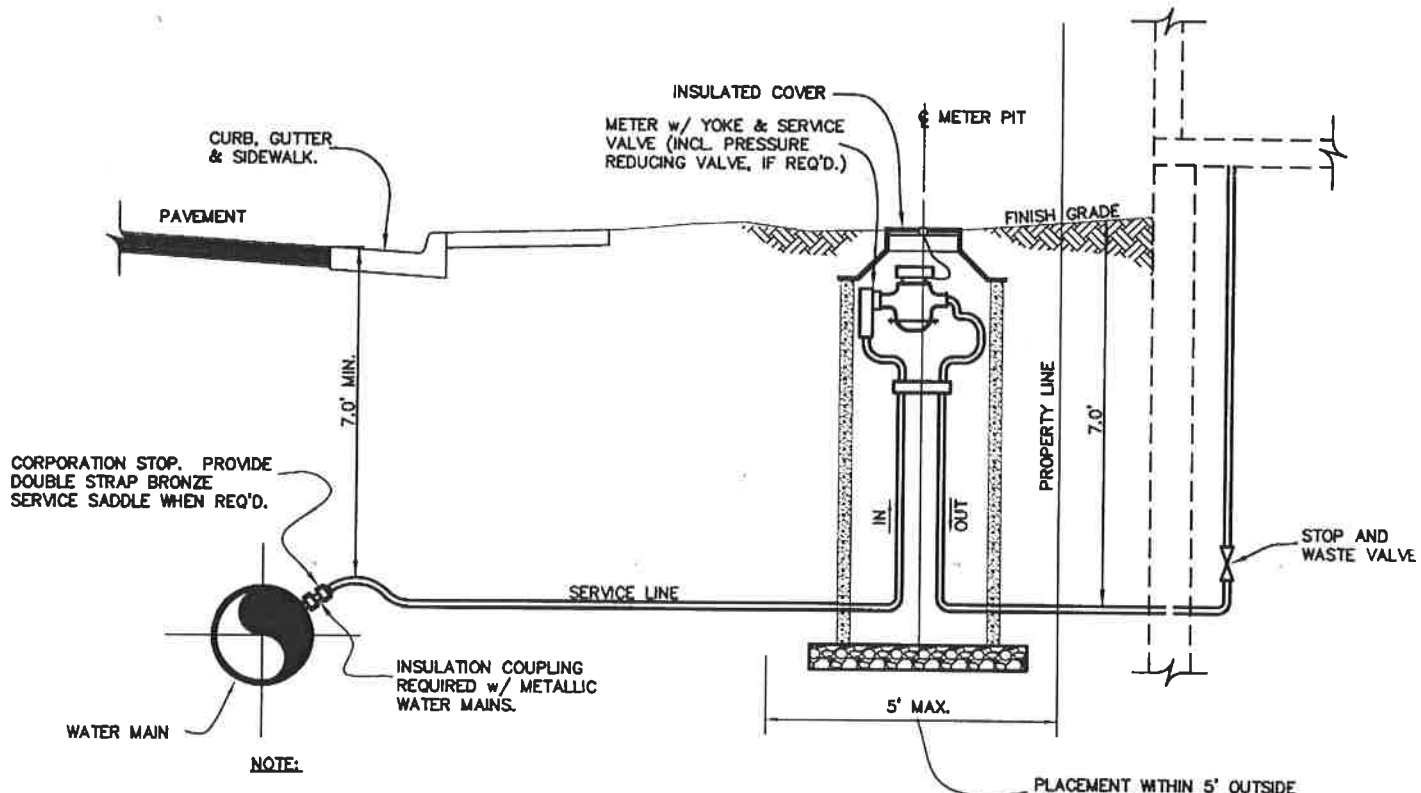
The applicant for a building service sewer shall notify the City when the service line is ready for connection to the public main, and the connections to said public main shall not be made until after inspection and approval by the City. The connection to the main shall be made in the presence of and approved by City Inspector. If practicable, pre-installed wye fittings shall be used for service connections; otherwise the connection of the building service sewer to the public sewer shall be made as follows: If the public sewer is 12" in diameter or less, the Customer shall, at his expense, install a saddle on up to 8" branches in the public sewer. Where the public sewer is greater than 12" in diameter a neat hole may be cut into the public sewer, with entry in the downstream direction at an angle of 45 degrees. The use of saddles is mandatory. The service line connection shall conform to the drawing B.6 "Sewer Service Connection Detail".

B-3.3 Pipeline Materials. Sewer service pipe shall be PVC, with a thickness not less than SDR 35. Sanitary Sewer Pipe shall be green or other acceptable color (no white pipes—white PVC is reserved for drainage only).

B-3.4 Service Line Installation. The line shall be water tight and on a constant grade in a straight line, and not closer than 5' from any bearing wall.

Service line cleanouts, where required, shall conform to the drawing, "Service Line Cleanout Detail". Cleanouts are required for any significant change in service line direction and at intervals no greater than 100'.

Sewer service line excavation bedding and backfill shall be in accordance with Drawing C.9, "Sewer Main & Service Bedding and Backfill Details".

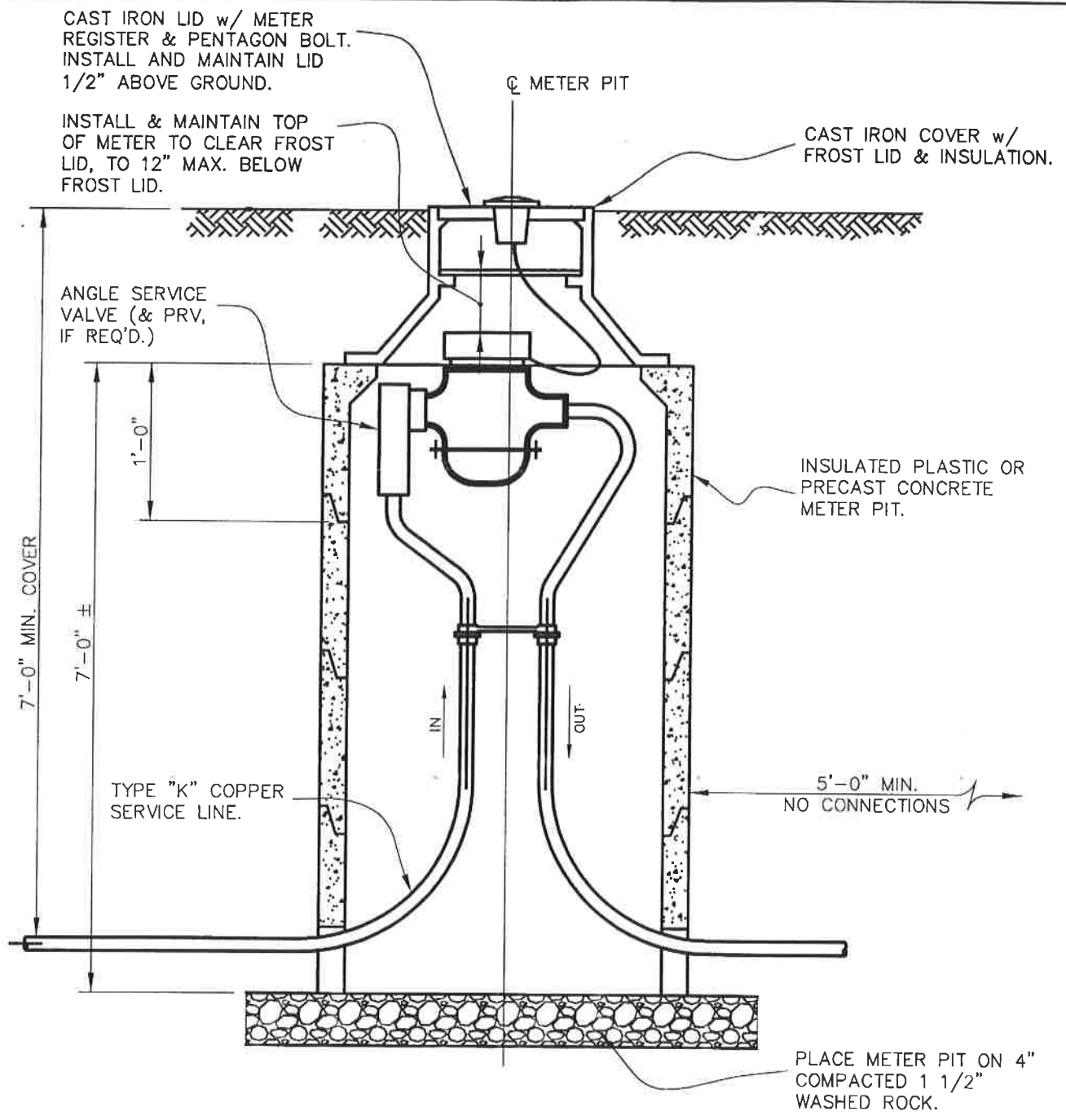


GENERAL NOTES:

1. Service line to be type "K" copper.
2. City owns main, corporation stop, service line to meter and meter.
3. Service customer owns meter pit, cover and lid and the remainder of service facilities shown.
4. Service line and meter vault to be inspected or installed by the City.
5. Install individual pressure reducing valve (PRV) unless specifically not required by the City Engineer. Alternate location for PRV in meter pit.

Typical Potable Water Service Line Installation

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS.



GENERAL NOTES:

1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, OR PARKING AREAS.
2. IF SURFACE IS NOT TO FINAL GRADE AT THE TIME OF INSTALLATION OF METER, OWNER MUST RAISE OR LOWER PIT WHEN SURFACE IS GRADED.
3. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE WITHIN 5 FEET BEYOND THE METER PIT WALL ON THE OUTLET SIDE.
4. METER SHALL BE SENSUS TECHNOLOGIES INC., SR II WITH TOUCHREAD PITLID REGISTERS.

Water Meter Detail - 5/8" x 3/4", 3/4", 1"

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS.

SEWER SERVICE

ADAPTOR COUPLINGS
BEND AS REQUIRED.

SEWER MAIN

REFER TO DRAWING C.9 FOR
BEDDING AND BACKFILL
REQUIREMENTS.

45°

SERVICE LINE TO BE INSTALLED
AT 2% (MIN.) GRADE, UNLESS
OTHERWISE APPROVED.

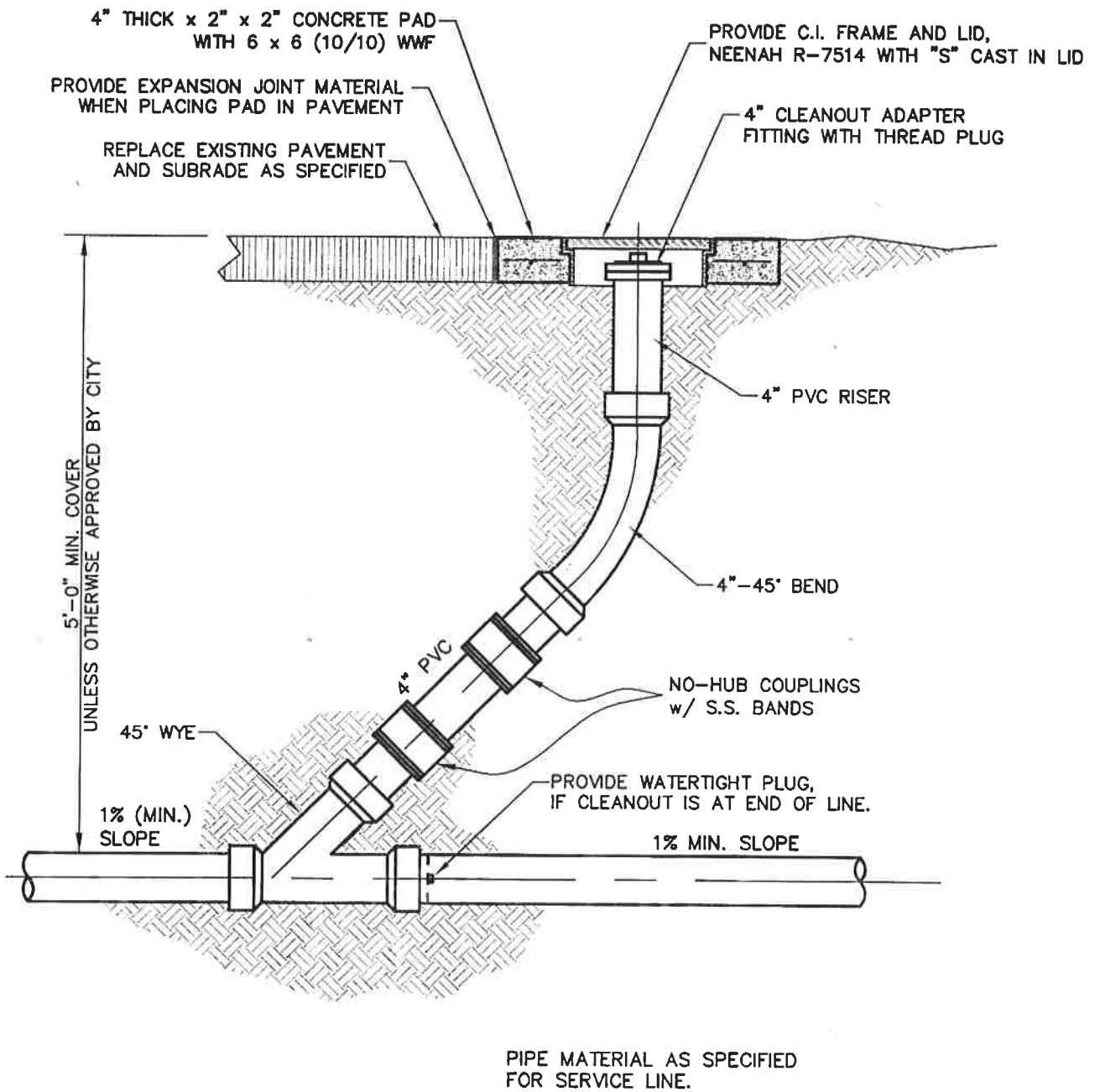
SEWER MAIN

INSTALL WATERTIGHT CAP w/
4 x 4 MARKER POST OR
CONNECT TO BUILDING SEWER.

45° WYE OR APPROVED
SADDLE w/ S.S. BANDS -
ROTATE 45° AS SHOWN
ABOVE.

Sewer Service Connection Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS.



Service Line Cleanout Detail

THESE DETAILS ARE PROVIDED FOR STANDARDIZATION PURPOSES ONLY. THIS DETAIL REPRESENTS MINIMUM DESIGN STANDARDS WHICH MAY REQUIRE UPGRADING FOR SPECIFIC APPLICATIONS.

APPENDIX C

CITY OF CREEDE

LOCAL DISTRIBUTION/COLLECTION SYSTEM STANDARDS

C-1 GENERAL. Local water, sewerage and drainage Facilities are considered to be engineered improvements which are designed for specific applications. All designs, drawings and specifications must be prepared by, or under the direction of, an Engineer registered in Colorado, whose seal must be on a record set of documents.

The standard details and specifications contained herein are minimum design standards which the City will accept in order to facilitate perpetual operation and maintenance procedures. In addition, the Engineer must also design in accordance with the minimum standards of other regulatory agencies. Review and approval of local facilities designs by the City or its Engineer shall not relieve the Engineer of Record from responsibility for adequate design.

C-2 DRAWINGS. Unless otherwise approved by the City Engineer, all design drawings shall be on 24" x 36" mylar, using ink for all background information and permanent pipeline work. Drawings scale for area plans shall be 1" = 50'. The cover sheet for each drawing set shall have an approval block as shown on Exhibit C.1. Original mylars and discs (if CAD based drawings) shall be delivered to the City after acceptance.

Prior to the construction or installation of any Local Facilities, the Developer shall submit Design Documents to the City for review and approval. Each construction drawing set shall have an "approval block" affixed thereto which provides for the signatures of authorized representatives of the City, the City's Engineer. Project review and approval by the Fire Protection Agency is required only for water distribution facilities. The "approval block" shall be a facsimile of that appended to these Standard Specifications, Drawing C.1.

The Developer shall also provide a complete set of record drawings for the facilities. The record drawings shall show adequate dimensioned ties to surface features for all buried facilities to allow for future locating. The record drawings shall be mylar transparencies suitable for blue line reproductions. As-builts shall be in general conformity to the Standard Drawing "Typical Record Drawing Information," Drawing C.2.

C-3 REQUIRED EASEMENTS. Where Local Facilities are to be located out of the public right-of-way, the Developer shall be responsible for obtaining easements required for the construction, maintenance, and operation of the facilities. The legal description for the easements shall be prepared by a Registered Land Surveyor in the State of Colorado. Easements shall be in a form acceptable to the City and shall be shown on the construction drawings. The City will not approve the Contract Documents until all required easements have been deeded to the City.

In general, the minimum width of easements for pipelines shall be 24 feet. Temporary construction easements shall have a minimum width of 30 feet. Wider easements may be required for deep sections of pipeline, multiple lines, storm sewers and overflow swales, or where otherwise required by the City.

C-4 POTABLE WATER DISTRIBUTION SYSTEM

C-4.1 Design/Sizing. Water mains shall be designed to meet the most stringent of the following two conditions:

- a. Maximum hourly demand with pressures not less than 40 psi at any point of the distribution system, or
- b. Maximum daily demand rate plus fire flow demand (as determined by ISO guidelines) with delivery pressure of not less than 20 psi at the hydrant.

The normal minimum size water distribution main shall be 8" or 6" for short looped lines in single-family residential areas. Smaller mains may be individually approved by the City for dead-end mains without fire hydrants or the possibility of future tie-ins with other mains.

Water mains sizing and connections shall be reviewed with the City Engineer prior to final detailing and drafting. The systems shall be designed to maximize interconnections and strengthening of the City's water system. Where certain lines may also have a transmission function, in the opinion of the City, the City may direct that such lines be oversized, and the Developer's Engineer shall so design the system. In this case the City will pay the actual Oversize costs.

Water pipelines shall have a minimum cover of 7.0 feet. Pipelines shall not be placed deeper than 10 feet without approval by the City.

Regulations normally require a 10-foot minimum horizontal separation between water and sewer mains. When located in public streets, potable water pipelines shall normally be located about 11 feet north or east of, and parallel to, the roadway centerline. Whenever a crossing must occur where an irrigation water or sewer main passes within ten feet horizontally of water main, and where the water main is not at least 18-inches vertically clear above the irrigation water or sewer main, special construction will be required in accordance with the "Sewer Crossing Water Line Detail," Drawing C.3.

C-4.2 Pipe. All water mains shall be ductile-iron pipe, conforming to ANSI A21.51, Class 52 minimum thickness. Pipe joints shall be push-on type in accordance with ANSI A21.11. Pipe shall have a cement mortar lining meeting AWWA 104 and bituminous exterior coating.

Fittings shall be ductile-iron or cast-iron, minimum 250 psi working pressure, conforming to AWWA C153 or C110 with mechanical joint connections meeting AWWA C111. Lining and coating shall match pipe.

Sheathing: All ductile-iron pipelines, valves, and fittings shall be polyethylene sheathed in accordance with ANSI A21.5, AWWA C105, 8 mil minimum thickness.

Buried Valves: Valves, 12" and smaller, shall be non-rising stem, bronze mounted gate valves with mechanical joint ends conforming with AWWA C500. Valves shall have 2" square operating nuts and open left (counterclockwise rotation). Valves shall be Mueller, Clow, Waterous, or approved equal.

Valve Boxes: Each buried valve shall be provided with a cast iron valve box and round cover. The box shall have a minimum inside diameter of 5 1/4" and be adjustable in length and of screw type. The word "WATER" shall be cast on the cover. Valve boxes shall be Tyler, Clow, or approved equal. Valve boxes shall allow for at least 3" additional extension above the level required for final grade at the time of installation.

Fire Hydrants: Fire hydrants shall be of the dry barrel type and conform with AWWA C502. Hydrants shall have a 5 1/4" main valve, two 2 1/2" hose connections and one 4 1/2" pumper connections. Hydrants shall have 6-inch mechanical joint connections and safety traffic flange. Fire hydrants shall be Mueller Centurion No. A-423, Waterous Pacer WB-67 with bronze seat ring, or approved equal.

C-4.3 Fire Hydrant Installation. Fire hydrants shall be located as required by the City and as approved by the Fire Protection Authority. The Developer shall be required to obtain the approval by the Fire Protection Authority for fire hydrant locations. Fire hydrants shall be installed in accordance with the drawing "Standard Fire Hydrant Detail," Drawing C.4.

C-4.4 Pipeline Installation. Water pipelines shall be installed in a thorough and workmanlike manner in accordance with the Design Documents that have been approved by the City. The minimum bedding and backfill requirements for pipelines and appurtenances shall be as shown on Drawing C.5, "Water Main and Service Bedding and Backfill Details."

All pipeline fittings (i.e. bends, tees, plugs, and caps) shall be installed with concrete thrust blocks adequately designed for the specific application. Thrust blocks shall be cast-in-place from concrete having a minimum compressive strength of 3,000 psi. Alternate means of thrust restraint may be considered and approved for use where proven to provide similar restraint. Supplemental restraint may also be used where the Engineer believes the soil bearing pressures to be inadequate, or is concerned about subsequent movement.

C-4.5 Testing. All finished water lines, after reaction blocking is in place, shall be pressure and leakage tested at not less than 150 psi.

No pipeline installation will be acceptable until the leakage is less than the amount computed by the following formula:

$$L = \frac{SD(P)^{0.5}}{133,200}$$

- L = Allowable leakage in gallons (per hour)
- S = Tested length of pipe (feet)
- D = Nominal diameter of pipe, inches
- P = Average test pressure during the test, psi

C-4.5 Disinfection. All water piping shall be disinfected in accordance with AWWA C601 after all construction work has been completed. Chlorine shall be added to the water at the necessary locations in the amount to form a 50 ppm free chlorine residual. The chlorine solution shall be left in the pipelines for not less than 24 hours, during which time all valves and fire hydrants shall be operated in order to disinfect the appurtenances. After that length of time, the chlorine residual of the solution, at any place in the system, shall not be less than 10 ppm. All chlorination work must be done under the supervision of the Engineer. At the end of 24 hours, a bacteriological test is to be performed by the local health authority to insure adequate disinfection.

C-5 SANITARY SEWER COLLECTION SYSTEMS

C-5.1 Design/Sizing. Collection sewer system design is intended to provide for all gravity service as provided in the Master Plan. Sewage flows shall be directed to trunk sewer or collection sewer having designed capacity as indicated by the City's Master Plan. Sewage lift stations will not be permitted unless specifically authorized by the Board.

Collection sewers shall be designed to carry not less than the projected peak flow rates flowing half full (safety factor = 2.0), unless otherwise approved by the City Engineer.

The minimum size collection sewer shall be 8" diameter.

Normally, unless otherwise approved by the City Engineer, sewer lines shall be located in the center of the street with water lines being laid parallel to the sewer on either side. (Potable water lines to the north or east, storm sewer to the south or west.)

Sewers shall generally be designed with sufficient depth to serve basements by gravity. The minimum cover shall be 6 feet from top of sewer to finished grade.

Manholes shall be located at a maximum spacing of 400' center-to-center and also at changes in sewer pipeline alignment and/or grade and at the end of each line. Sewers shall be laid with uniform slope between manholes. Sewers shall be so designed and constructed to give mean velocities, when flowing full, of not less than 2 feet per second.

C-5.2 Sewer Pipeline Materials. Pipe: Sewer pipe and fittings shall be polyvinyl chloride (PVC), SDR 35 minimum thickness conforming to ASTM D3034. Joints shall be of the "slip on" type with integrally cast bell having an elastomeric gasket.

Manholes: Manholes shall be precast concrete units conforming with ASTM C-478. Manholes shall have a minimum inside diameter of 4 feet. Manholes shall be constructed and installed in accordance with the appended drawings, "Standard Precast Concrete Manhole," "Shallow Precast Concrete Manhole," and "Drop Detail for Manhole," Drawings C.6, C.7, and C.8.

Manhole Covers: Manhole frames and covers shall be cast iron with the word "SEWER" cast on the cover. The frame shall provide a minimum clear opening of 24."

C-5.3 Installation. Sewer Installation: The sewer system shall be installed in a thorough, workmanlike manner in accordance with the Design Documents that have been approved by the City. The minimum bedding and backfill requirements shall be shown on the appended Drawings C.9, "Sewer Main and Service Bedding and Backfill Detail" or C.9A Sewers with Under drain – Trench Detail.

Where required for structural reasons or to protect potable water pipelines, the sewer shall be encased in reinforced concrete having design characteristics not less than those shown on the Drawings C.10, "Pipe Encasement Detail."

C-5.4 Flushing and Testing. The following testing procedures are intended to determine if the sanitary sewer line meets the City's minimum quality standards. Alternative procedures meeting or exceeding the intent of these procedures, as determined by the City's Engineer, are acceptable. In any case, however, alternative testing procedures must be included in the design plans and specifications.

The Contractor shall notify the City Inspector – no less than 48 hours prior to the desired test time.

The Inspector shall witness all tests and verify the accuracy and acceptability of the equipment utilized. The City's Engineer will inform the Contractor regarding acceptable methods of repair in the event one or more section fail to pass any test.

- a. Pipeline Flushing. The Contractor shall flush the pipelines, as the work progresses by means that are in accordance with good practice, to insure that earth, sand, rocks or other foreign materials are removed from the interior of the pipeline.
- b. Alignment and Grade. Sewer pipelines will be checked by the Inspector to determine whether any displacement of the pipe has occurred after the trench has been bedded. The test will be as follows:

A light will be flashed between manholes, or if the manholes have not as yet been constructed, between the locations of the manholes, by means of a flashlight or by reflecting sunlight with a mirror. If the illuminated interior of the pipelines shows poor alignment, displaced pipe, earth, or other debris in the pipe, or any other kinds of defects, the defects, determined by the Inspector, shall be remedied by the Contractor. The test will be repeated following completion of backfilling and any poor alignment, displaced

pipe, or other defects, determined by the Inspector, shall be corrected at the Contractor's expense.

- c. Leakage. Tests for watertightness shall be made by the Contractor in the presence of the City's Inspector. The Contractor shall provide assistance to the Inspector in development of a detailed record of the testing program. The sewer and connections shall not leak in excess of the following rate for a 24-hour test period.

MAXIMUM ALLOWABLE SEWER LEAKAGE

<u>Pipe Size</u> <u>Inches</u>	<u>Leakage</u> <u>Gal/Foot/24 Hours</u>
18	0.68
15	0.57
12	0.45
10	0.38
8	0.30
6	0.23

Each reach of pipeline between manholes shall be tested individually. Any individual reach that leaks in excess of the amount allowed in the previous paragraph shall be considered as failing, and shall be repaired and retested.

At the discretion of the Inspector, the time for leakage rate test may be shortened to four (4) hours. The tests and measurement of infiltration or exfiltration shall be conducted in a manner as approved by the Inspector. The Contractor shall repair the sewer in a manner that is satisfactory to the Inspector and re-test until satisfactory tightness is obtained.

Infiltration tests in addition to low pressure air test will be used if the groundwater table is 1 foot or more above the finished sewer. Otherwise, exfiltration tests will be used. The minimum head for the exfiltration tests shall be 2 feet above the top of the pipe at its highest point in the test section. Sections shall be bulk-headed so that during any test the head on the sewer at its lowest elevation will not be more than 10'. This restriction does not apply to ductile-iron pipe.

- d. Low-Pressure Air Test. At the option of the Contractor, low-pressure air testing of the installed sewer pipe may be used instead of the leakage exfiltration test.

The following criteria and procedure shall be utilized unless otherwise approved by the Inspector.

- (1) Plug Restraint. It is extremely important and essential that all plugs be installed and braced in such a way that blowouts are prevented. It is recommended that every plug be positively braced and that no one be allowed in the manhole adjoining a line being tested so long as pressure is maintained in the line.
- (2) Relief Valve. All pressurizing equipment used for low-pressure air testing shall include a regulator or relief valve set no higher than 9 psig to avoid over-pressurizing and displacing temporary or permanent plugs. As an added safety precaution, the pressure in the test section should be continuously monitored to make certain that it does not at any time exceed 9 psig.
- (3) Plug Design. Either mechanical or pneumatic plugs may be used. All plugs shall be designed to resist internal testing pressures without the aid of external bracing or blocking. However, the Contractor should internally restrain or externally brace the plugs to the manhole wall as an added safety precaution throughout the test.
- (4) Singular Control Panel. To facilitate test verification by the inspecting Engineer, all air used shall pass through a single, above ground control panel.
- (5) Equipment Controls. The above ground air control equipment shall include a shut-off valve, pressure regulating valve, pressure relief valve, input pressure gauge, and continuous monitoring pressure gauge having a pressure range from 0 to at least 10 psi. The continuous monitoring gauge shall be no less than 4 inches in diameter with minimum divisions of 0.10 psi and an accuracy of ± 0.04 psi.
- (6) Separate Hoses. Two separate hoses shall be used to: (1) connect the control panel to the sealed line for introducing low-pressure air, and (2) a separate hose connection for constant monitoring of air pressure build-up in the line. The requirement greatly diminishes any chance for over-pressurizing the line.

- (7) Pneumatic Plugs. If pneumatic plugs are utilized, a separate hose shall also be required to inflate the pneumatic plugs from the above ground control panel.
- (8) Laterals, Stubs, and Fittings. During sewer construction all service laterals, stubs, and fittings into the sewer test section shall be properly capped or plugged so as not to allow for air loss that could cause an erroneous air test result. It may be necessary and is always advisable to restrain gasketed caps, plugs, or short pipe lengths with bracing stakes, clamps and tierods, or wire harnesses over the pipe bells.
- (9) Plug Installation and Testing. After manholes have been tested for alignment and grade, and a manhole-to-manhole reach of pipe has been backfilled to final grade and prepared for testing, the plugs shall be placed in the line at both manholes and secured.

It is advisable to seal test all plugs before use. Seal testing may be accomplished by laying one length of pipe on the ground and sealing it at both ends with the plugs to be checked. The sealed pipe should be pressurized to 9 psig. The plugs shall hold against this pressure without bracing and without any movement of the plugs out of the pipe. No persons shall be allowed in the alignment of the pipe during plug testing.

The upstream end of the line shall be plugged first to prevent any upstream water from collecting in the test line.

- (10) Line Pressurization. Low pressure air shall be slowly introduced into the sealed line until the internal air pressure reaches 4.0 psig.
- (11) Pressure Stabilization. After a constant pressure of 4.0 psig is reached, the air supply shall be throttled to maintain that internal pressure for at least 2 minutes. This time permits the temperature of the entering air to equalize with the temperature of the pipe wall.
- (12) Timing Pressure Loss. When temperatures have been equalized and the pressure stabilized at 4.0 psig, the air hose from the control panel to the air supply shall be shut off or disconnected. The continuous monitoring pressure

gauge shall then be observed while the pressure is decreased to no less than 3.5 psig. The timing pressure loss test shall then commence at a pressure reading of 3.5 psig, or any convenient observed pressure reading between 3.5 psig and 4.0 psig. (Except as adjusted for groundwater as follows.)

- (13) Air Pressure Adjustment. An air pressure correction, which must be added to the 3.5 psig normal test starting pressure, shall be calculated by dividing the average vertical height, in feet of groundwater above the invert of the sewer pipe to be tested, by 2.31. The result gives the air pressure correction in pounds per square inch to be added. (For example, if the average vertical height of groundwater above the pipe invert is 2.8 divided by 2.31 or 1.2 psig. This would require a minimum starting pressure of 3.5 plus 1.2 or 4.7 psig). The allowable pressure drop of 1.0 psig and the timing in Table 1 are not affected and shall remain the same.

In no case however should the starting test pressure exceed 9.0 psig.

- (14) Determination of Line Acceptance. If the time shown in Table 1 for the designated pipe size and length, elapses before the air pressure drops 1.0 psig, this section undergoing test shall have passed.

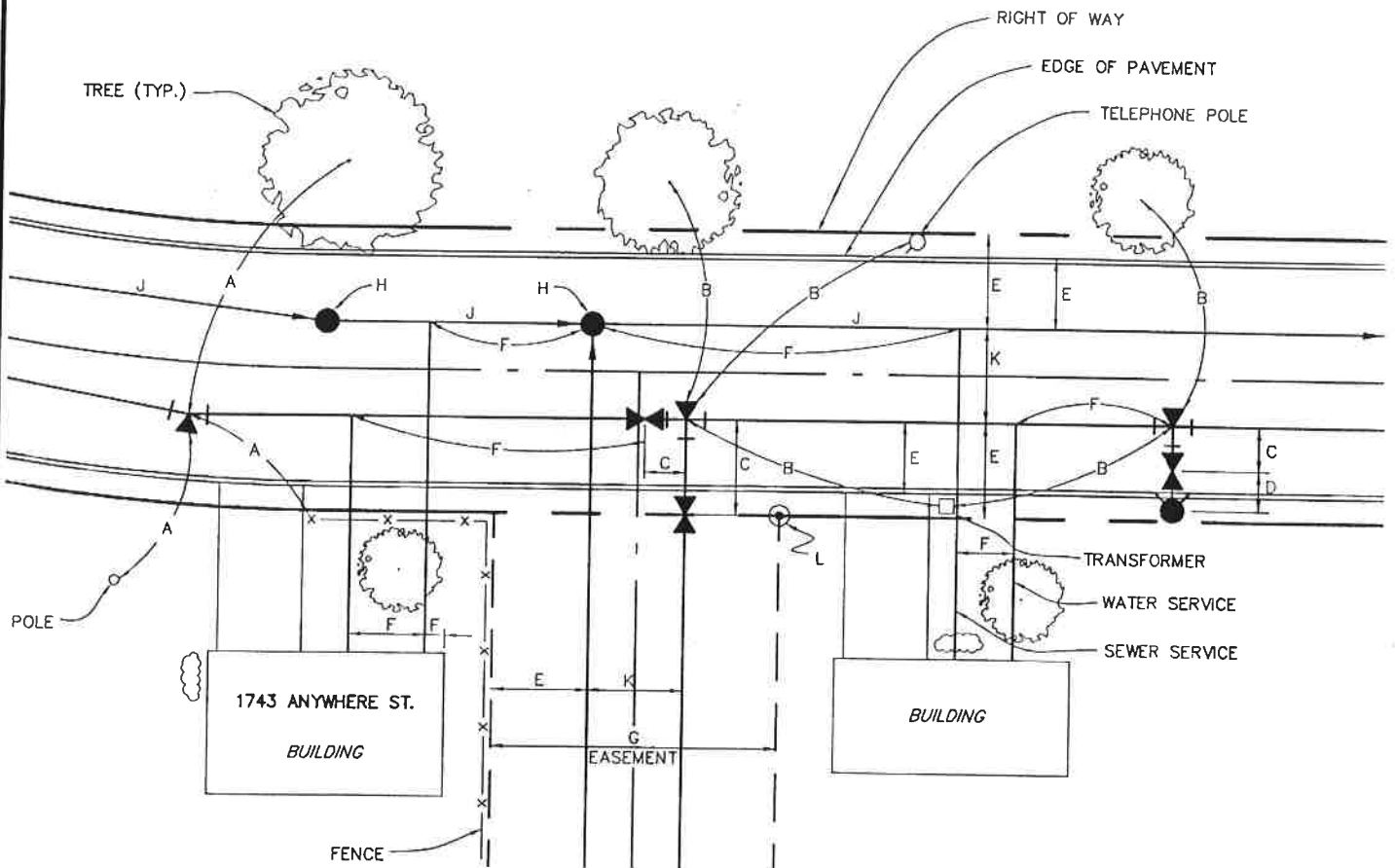
TABLE 1
SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP
FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015
 (min: sec)

1 Pipe Diameter (in.)	2 Minimum Time (min: Sec)	3 Length For Minimum Time (ft)	4 Time For Longer Length (sec)	Specification Time for Length (L) shown							
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450ft
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	7:36	10:08	11:24
10	9:36	239	2.374 L	9:36	9:36	9:36	9:53	11:52	11:52	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	17:05	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	26:42	35:36	40:40
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41

- e. Deflection. All PVC sewer pipelines shall be tested for vertical deflection after placement and compaction of backfill unless testing is specifically excepted by the Inspector. Method of testing shall be by deflectometer of the rigid GO/No-Go type device. An alternative method will permit only by written permission of the Inspector. Maximum

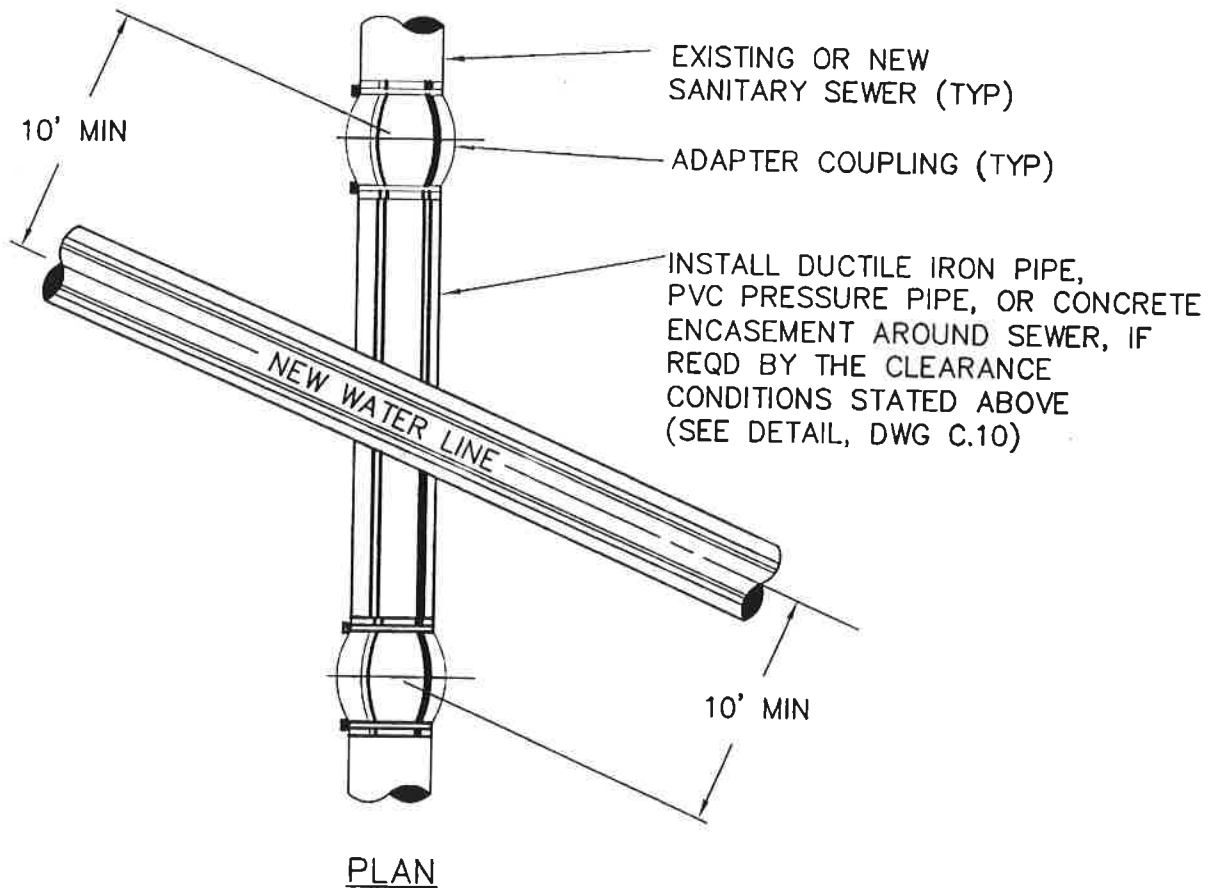
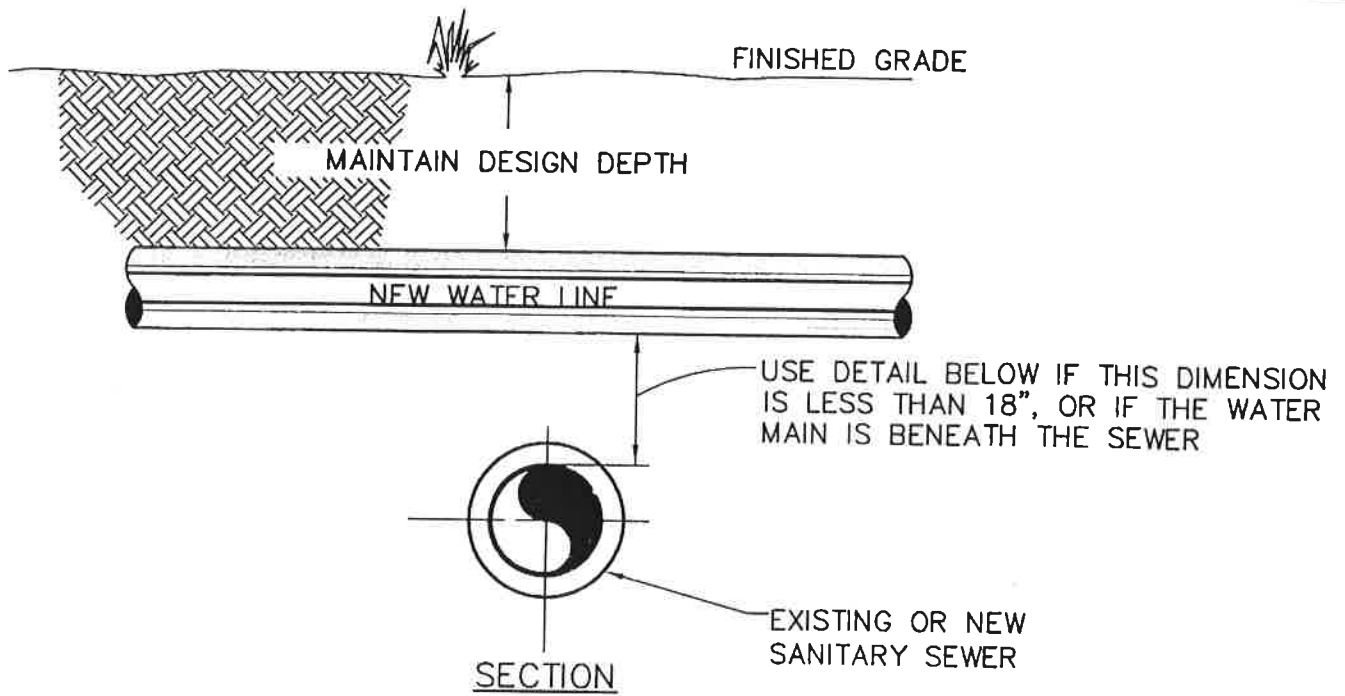
- Ⓐ LOCATE WATER LINE BENDS.
- Ⓑ LOCATE WATER LINE TEES & CROSSES.
- Ⓒ LOCATE ALL VALVES, SERVICES & MAINS.
- Ⓓ LOCATE ANY SPECIALTY ITEMS, (E.G. FIRE HYDRANTS, METER VAULTS, ARV VAULTS, PRV VAULTS, COUPLINGS, ETC...)
- Ⓔ NOTE ANY DISTANCES TO EDGE OF PAVEMENT AND TO R.O.W. OR EASEMENTS.
- Ⓕ LOCATE ALL SERVICE TAPS AND LINES.
- Ⓖ NOTE ANY KNOWN R.O.W. AND EASEMENT INFORMATION.
- Ⓗ NOTE FINAL INVERT ELEVATIONS w/ BENCHMARK ELEVATION REFERENCED.
- Ⓙ NOTE LENGTH, SIZE, MATERIAL AND SLOPE OF LINE AS INSTALLED.
- Ⓚ NOTE DISTANCES BETWEEN UNDERGROUND UTILITIES.
- Ⓛ NOTE PERMANENT EASEMENT MONUMENTS AND PROPERTY CORNERS (PC) WHERE USED FOR TIES.
- Ⓜ NOTE SERVICE STREET ADDRESSES.

DRAFT "AS-RECORDED" DRAWINGS TO SCALE



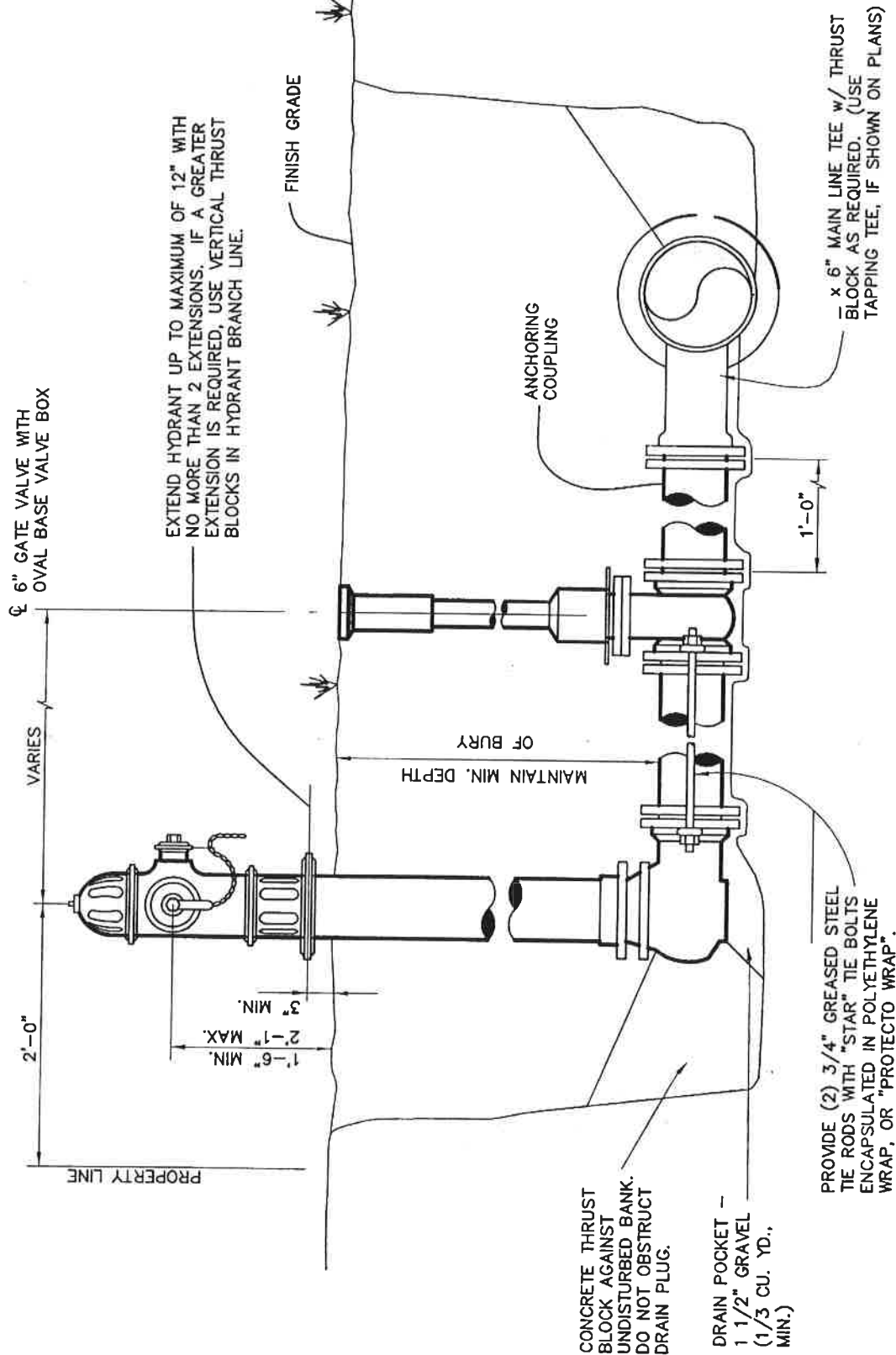
Typical Record Drawing Information

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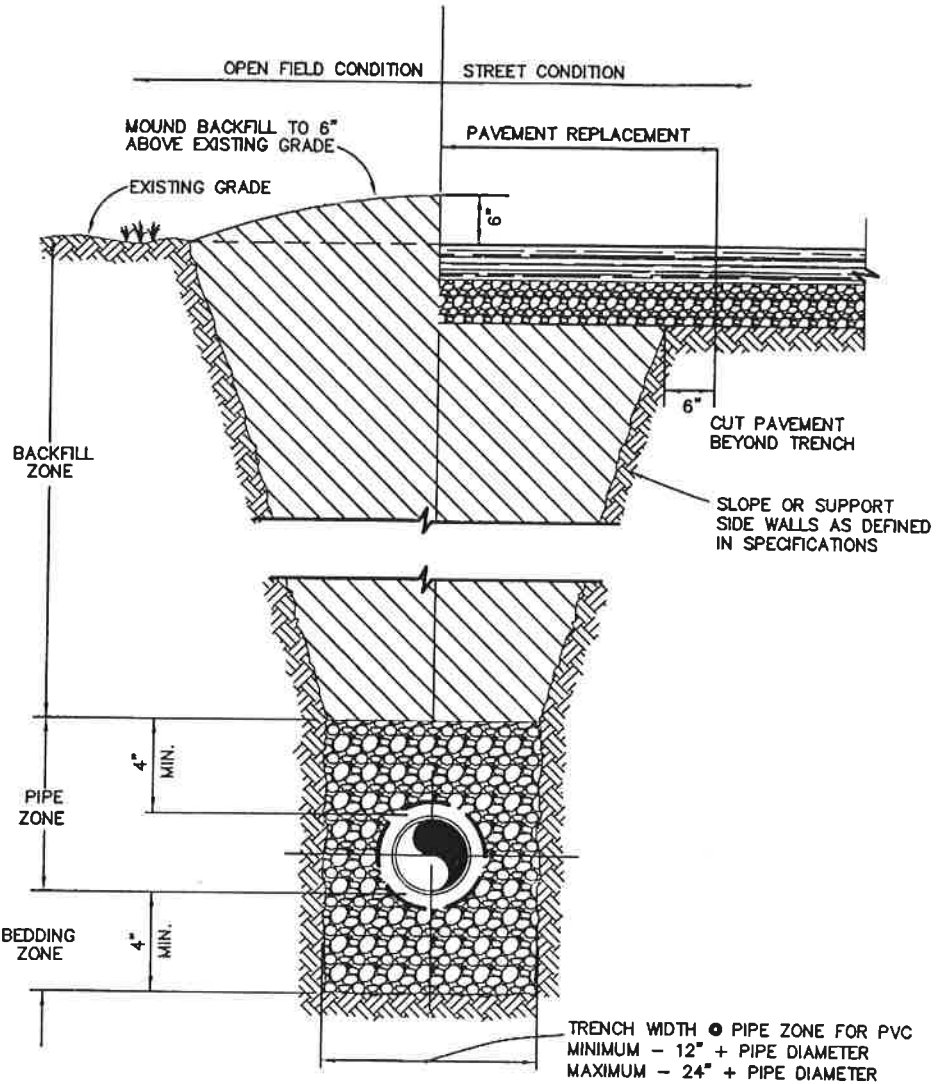
Sewer Crossing Water Line Detail

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Standard Hydrant Detail

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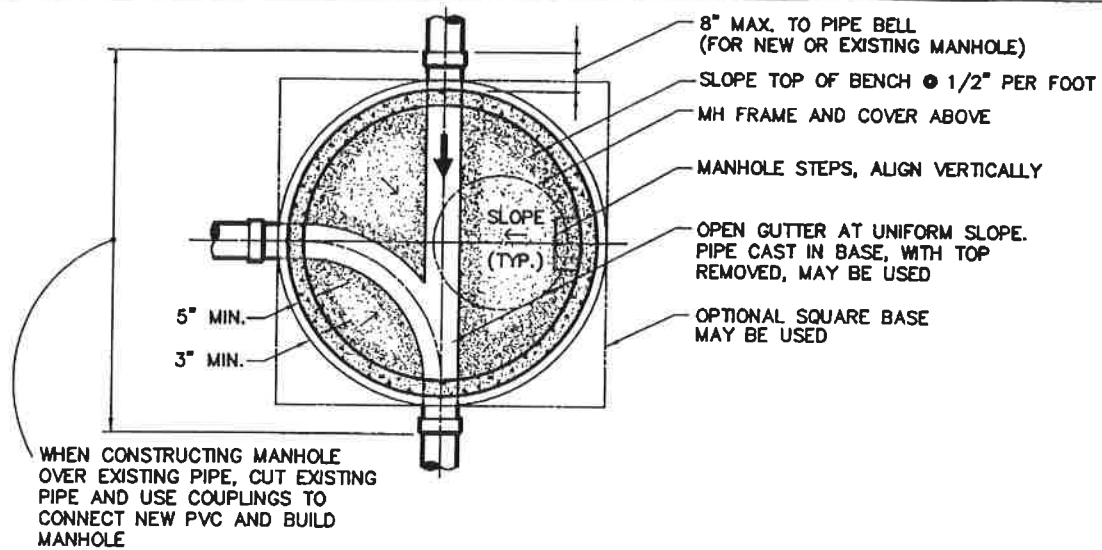


	MATERIAL REQUIREMENTS	MINIMUM COMPACTION REQUIREMENTS
BACKFILL ZONE	Select native w/6" max. diameter rock size	95% Maximum dry density (ASTM D698) 8" maximum lift
PIPE AND BEDDING ZONES	Squeeze sand or well graded sand w/100% passing 3/8" & less than 3% passing #200 sieve	70% relative density (ASTM D4254). Bedding compacted prior to laying pipe. Maximum first lift depth to pipe springline.

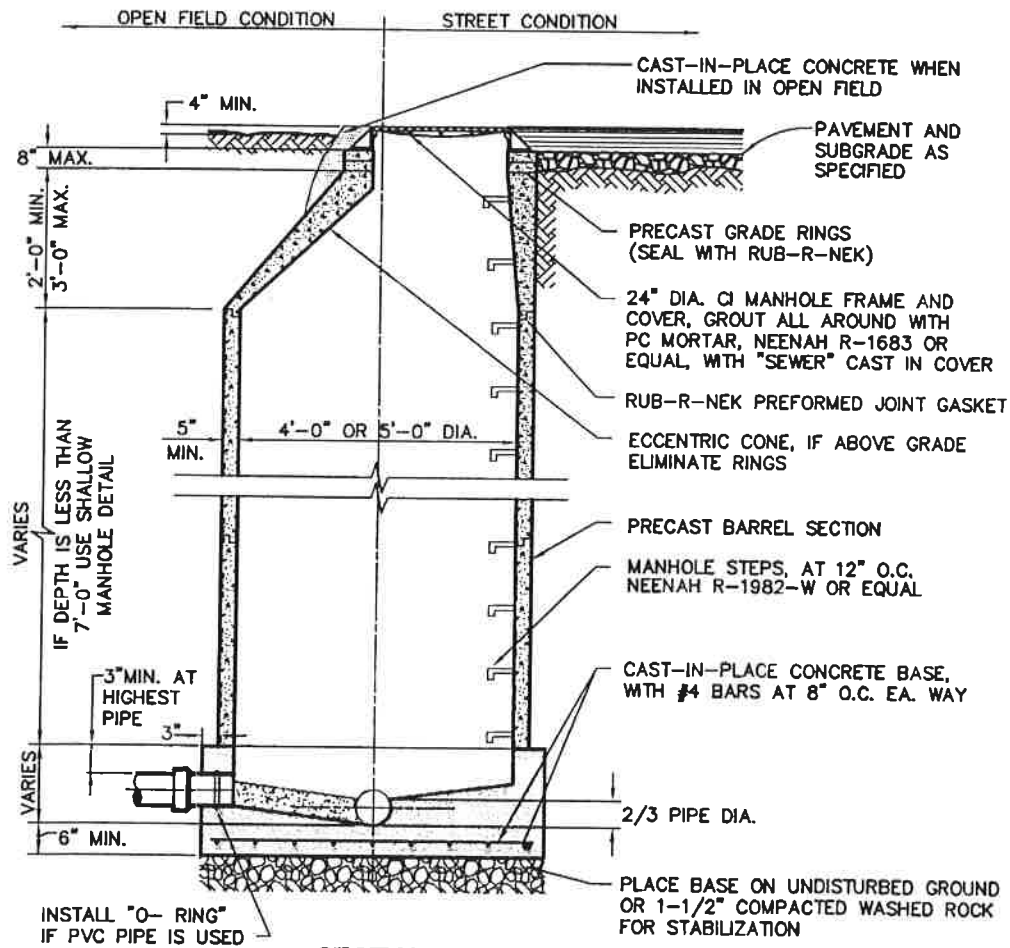
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Water Main & Service Bedding & Backfill Detail

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PLAN

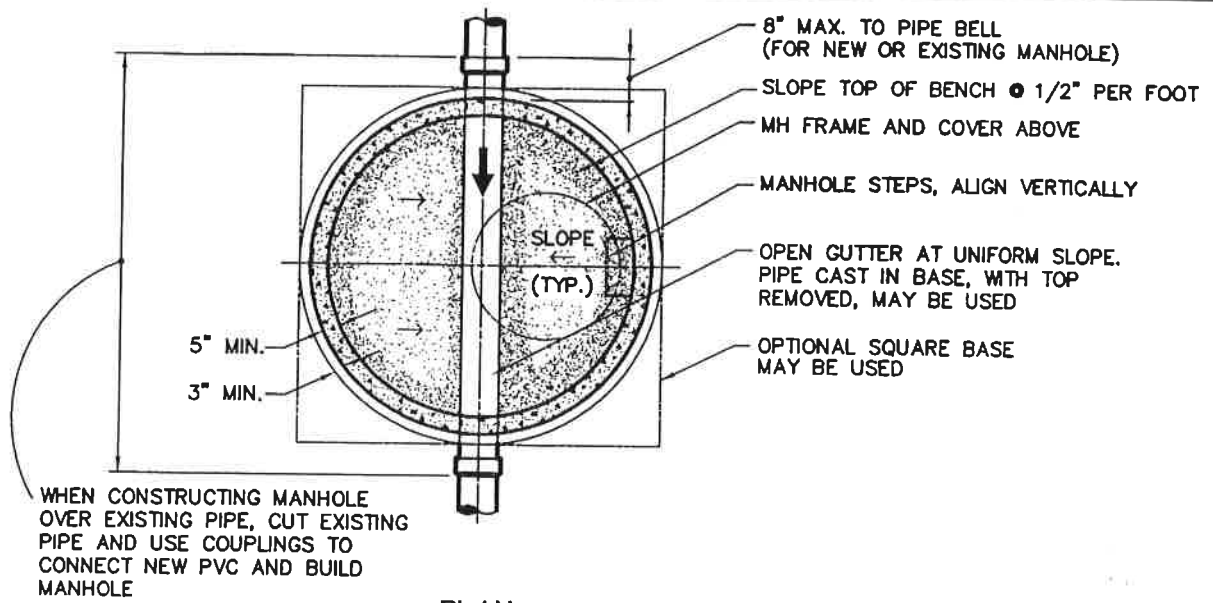


SECTION

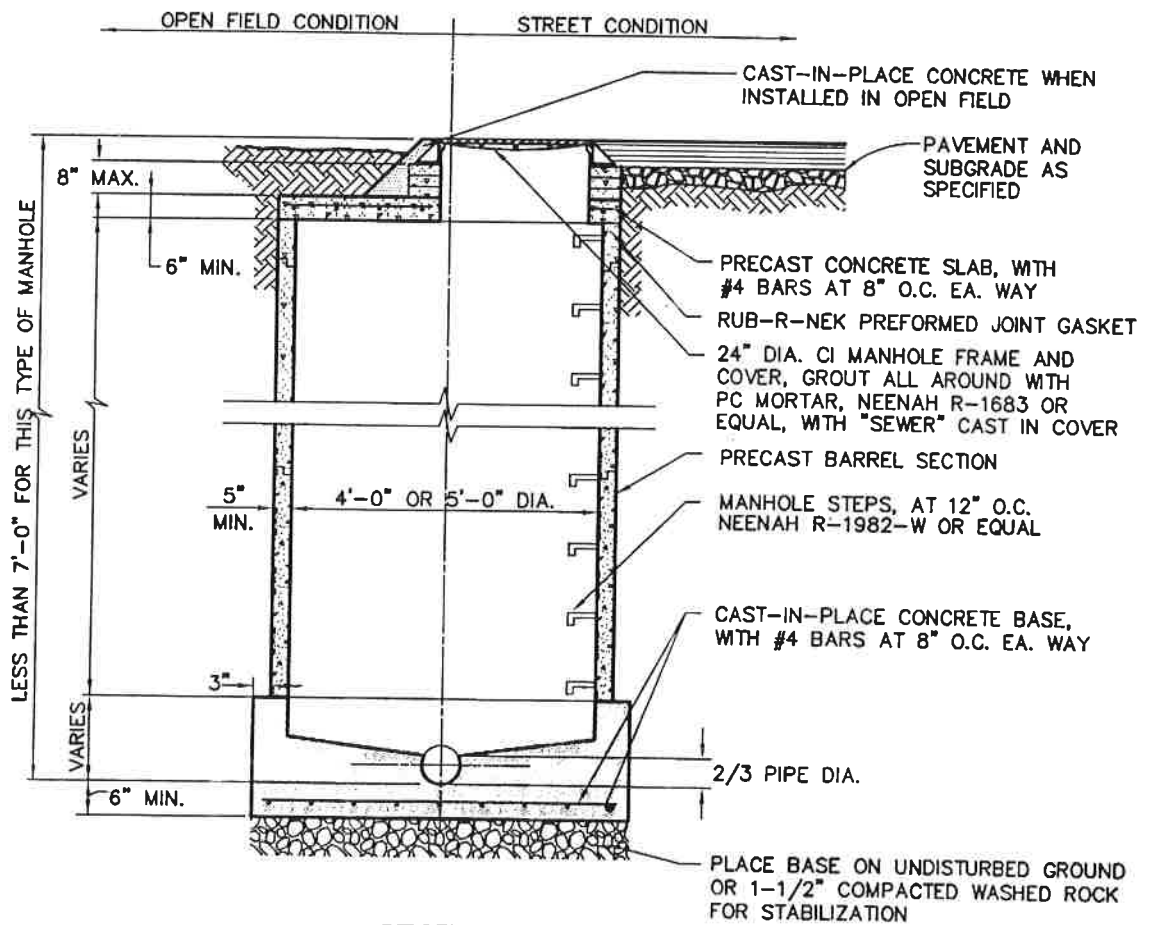
STANDARD MANHOLE

Standard Precast Concrete Manhole

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PLAN

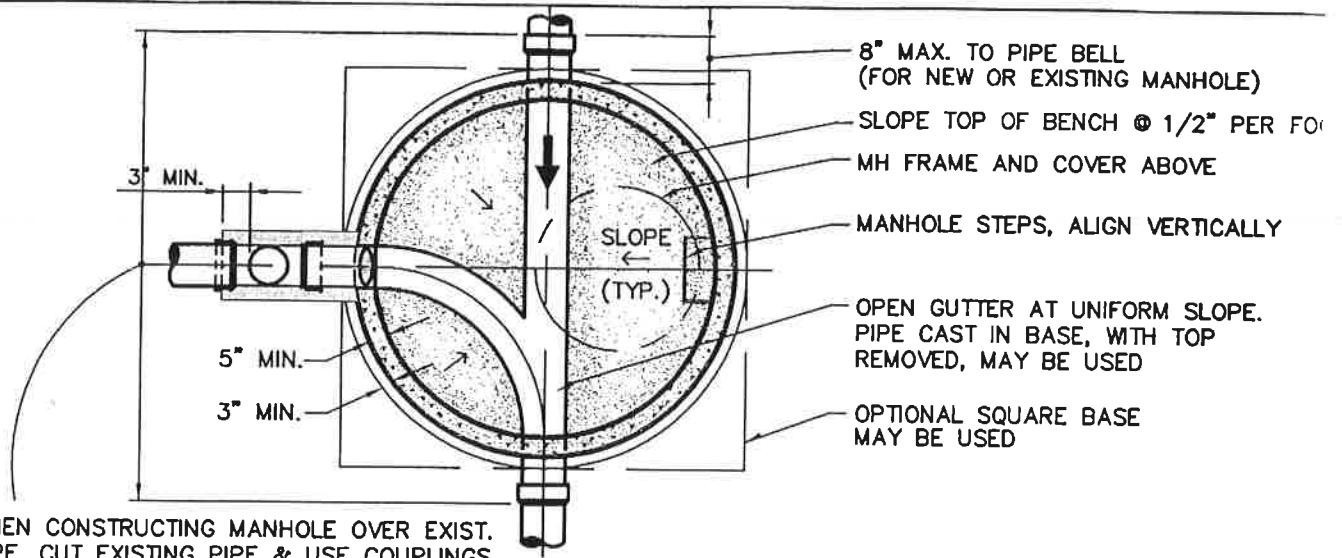


SECTION

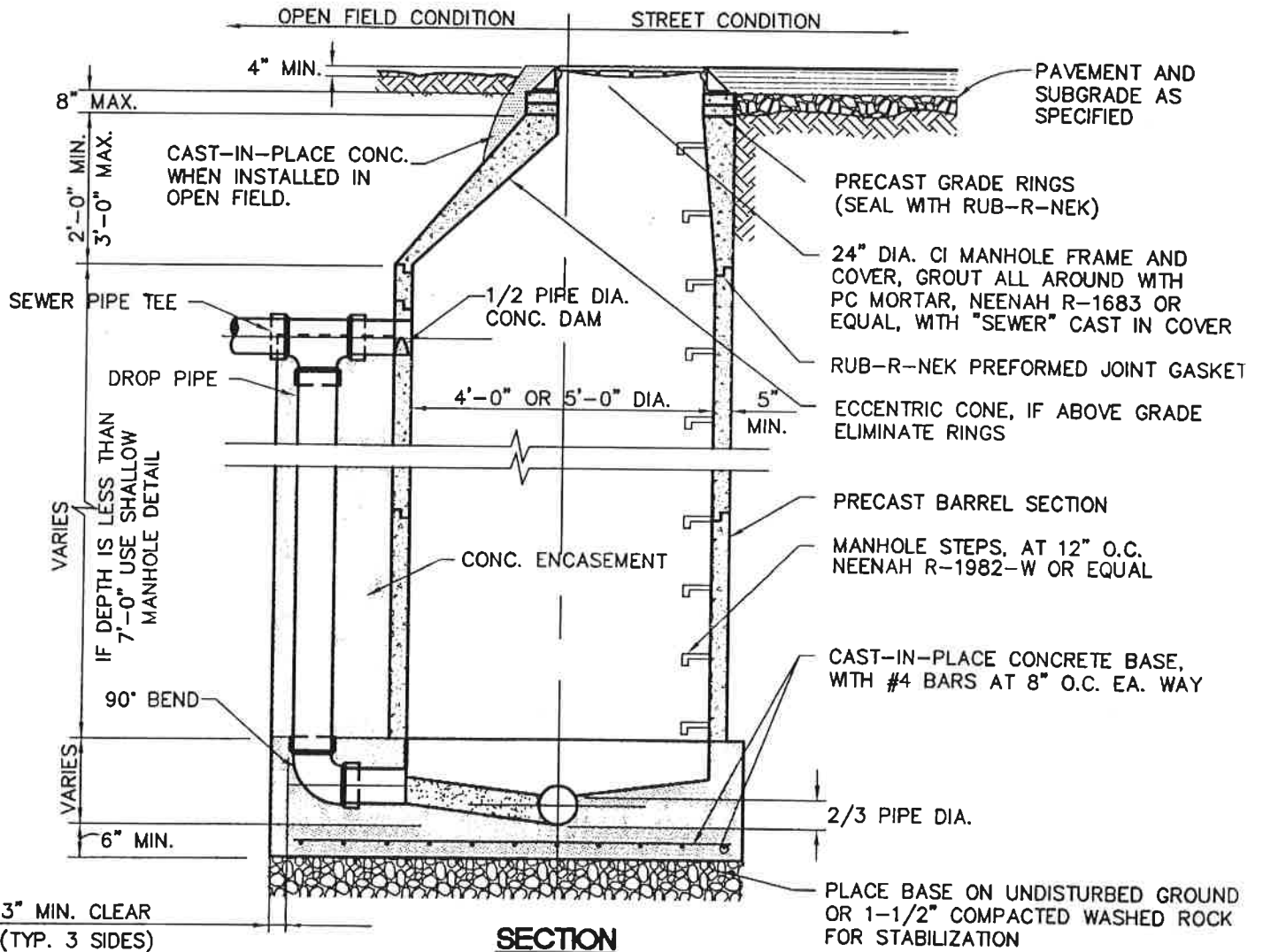
SHALLOW MANHOLE

Shallow Precast Concrete Manhole

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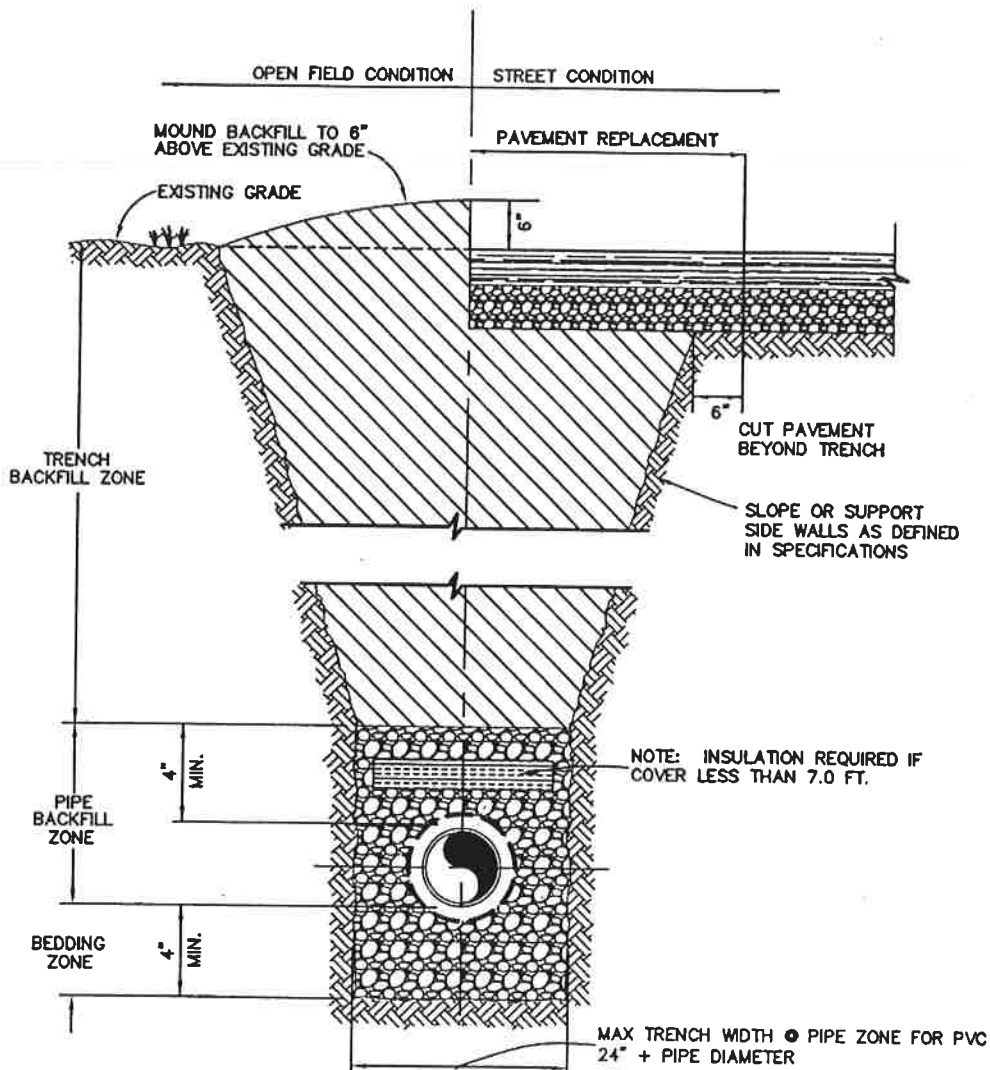
WHEN CONSTRUCTING MANHOLE OVER EXIST. PIPE, CUT EXISTING PIPE & USE COUPLINGS TO CONNECT NEW PVC & BUILD MANHOLE. **PLAN**



SECTION

Drop Manhole Detail

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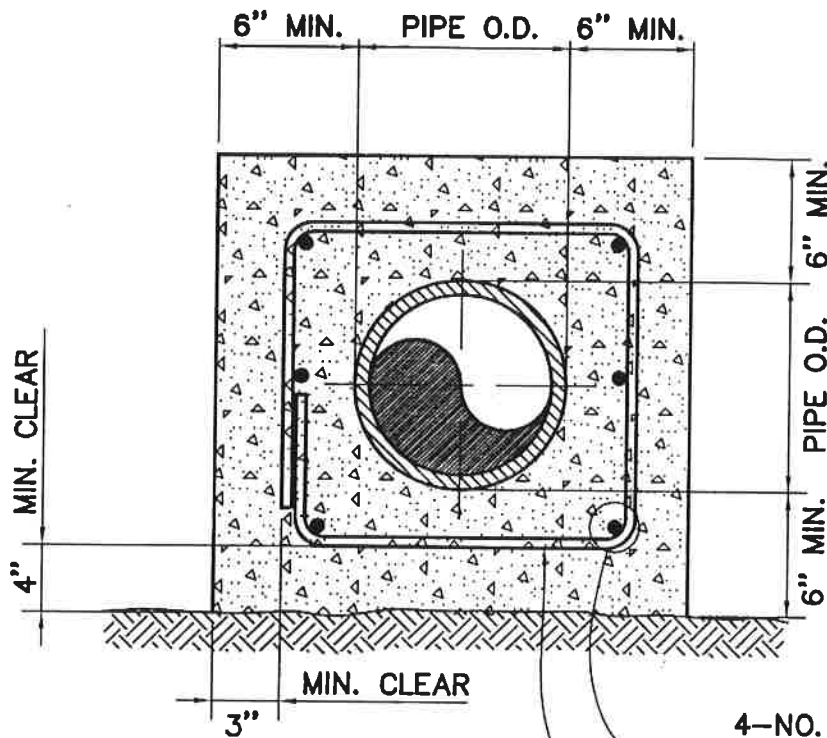


TRENCH REQUIREMENT	PIPE MATERIAL	
	PVC	DIP & RCP
Backfill Zone Material (compact to 95% maximum dry density, ASTM D698) 8" max. lift	Select native w/6" max. diameter rock size	Select native w/6" max. diameter rock size
Pipe Zone and Bedding Zone Material (compact to 70% relative dry density, ASTM D4254)	Granular (ASTM D448 No. 67)	COOT Class 6 Road base, sand or granular

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Sewer Main & Service Bedding & Backfill Detail

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PIPE ENCASEMENT DETAIL

4-NO. 5 BARS CONTINUOUS FOR 8" PIPE AND 6-NO. 5 BARS CONTINUOUS FOR 10" OR LARGER.

NO. 4 TIES AT 18" O.C.

NOTE:

1. CONCRETE SHALL NOT BE LEANER THAN 1 CEMENT; 2-1/2 SAND; 5 STONE AND SHALL NOT HAVE LESS THAN 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. PLACE CONCRETE AGAINST EITHER SOLID FORMWORK OR UNDISTURBED SOIL.
3. USE GR. 40 REINFORCING BARS.

Pipe Encasement Detail - Sewer

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