

**PROJECT MANUAL
SPRUCE CREEK ROAD IMPROVEMENTS
FOR THE
TOWN OF BLUE RIVER
APRIL 2024**

Prepared by:



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Project No. 11-008.20

**SPRUCE CREEK ROAD IMPROVEMENTS
TOWN OF BLUE RIVER**

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DIVISION 0
BIDDING AND CONTRACT REQUIREMENTS

(TOWN OF BLUE RIVER)
(SPRUCE CREEK ROAD IMPROVEMENTS)

**SECTION 00 11 16
INVITATION TO BID**

Date: April 30, 2024

Electronic Bids will be received by the Town of Blue River, Colorado (OWNER) until 3:00 PM., local time, June 5, 2024, for the project entitled Spruce Creek Road Improvements. Bids may be emailed to WGuerin@mullereng.com.

At said place and time, and promptly thereafter, all Bids that have been duly received will be publicly opened and read aloud.

Spruce Creek Road is a soft surface roadway located within the Town of Blue River, Colorado. The project generally consists of profile grade alterations and paving about 600 lineal feet of Spruce Creek Road with an asphalt surface roadway. The project also includes the grading, resurfacing, and adjusting the intersection of Spruce Creek Road with State Highway 9 with an asphalt surface roadway as well as the intersection with Gold Nugget. To accommodate the roadway improvements, the project will include the addition of two access road culverts, roadside swales and riprap, relocation of select utilities by others. Miscellaneous items include erosion control, seeding and mulching.

All bids must be in accordance with the Contract Documents on file with the Owner, Town of Blue River, Colorado, 0110 Whispering Pines Drive, Blue River, CO 80424; and at the office of Muller Engineering Company, Inc., 7245 West Alaska Drive, Suite 300, Lakewood, Colorado 80226.

Copies of the Contract Documents for use in preparing Bids may be obtained electronically from Muller Engineering (WGuern@mullereng.com or 303-228-1596). Office hours are Monday - Friday, 8:00 a.m.-5:00 p.m. Bid documents will be available on May 22, 2024.

A pre-Bid Conference will be held virtually at 1:00 PM local time on Wednesday, May 29, 2024. Please email WGuerin@mullereng.com to receive a meeting link.

It is anticipated that the Contract Agreement will be signed and the Notice to Proceed will be issued in early July, 2024. Construction shall be substantially complete and ready for use and operation within forty-five (45) nonconsecutive days and finally complete within sixty (60) nonconsecutive days.

Bid Security in the amount of 5 percent of the total Bid must accompany each Bid.

The successful Bidder will be required to furnish a Construction Performance Bond and a Construction Payment Bond as security for the faithful performance and the payment of all bills and obligations arising from the performance of the contract.

The Bid and Bid Security will remain subject to acceptance for 30 calendar days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

The Town of Blue River, Colorado reserves the right to reject any and all Bids, to waive informalities, and to reject non-conforming, non-responsive, or conditional Bids.

By: _____
Nicholas Decicco, Mayor
Town of Blue River, Colorado

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders 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 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid may be obtained from the Issuing Office.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 The Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, Bidder shall be prepared to submit written evidence such as financial data, previous experience, present commitments, and such other data as may be requested by Owner within five days after the Bid Opening.
- 3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

- 4.01 *Subsurface and Physical Conditions*
- A. The Supplementary Conditions identify:
1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.
 2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- 4.02 *Underground Facilities*
- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 *Hazardous Environmental Condition*

- A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

B. Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;
- B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. consider 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 any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs;

- E. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its 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. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- G. promptly give the Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
- H. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given the Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions 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 performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A virtual pre-Bid conference will be held with a web meeting at 1:00 PM local time on Wednesday May 29, 2024. Representatives of the Owner and Engineer will be present to discuss the Project. Bidders are not required to attend and participate in the conference. The Engineer will transmit to all prospective Bidders of record such Addenda as the 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 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Engineer in writing. Interpretations or clarifications considered necessary by the Engineer in response to such questions will be issued by Addenda emailed 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 may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by the Owner or Engineer.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 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, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or at the conclusion of the acceptance period for the bids, as stated in the Bid Form, whereupon Bid security furnished by such Bidders will be returned.

- 8.03 Bid security of other Bidders whom Owner 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 The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “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 without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by Contractor if acceptable to the Engineer, application for such acceptance will not be considered by the Engineer until after the Effective Date of the Agreement.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

- 12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If the 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, in which case apparent Successful Bidder shall submit an acceptable substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest 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 the Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to the 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.

- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from the Engineer.
- 13.02 All blanks on the Bid Form shall be completed and the Bid Form signed electronically or 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 Bid item listed therein. In the case of optional alternatives, 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 shall be printed below the signatures.
- 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 Postal, e-mail addresses, and telephone number for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder’s state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

- 14.01 *Unit Price*
- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.
 - B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.
 - C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 With each copy of the Bidding Documents, a Bidder is furnished a copy of the Bid Form, Bid Schedule and the Bid Bond Form. The Bid Form, Bid Schedule and Bid Bond are to be completed and submitted with the Bid security.
- 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 electronically submitted in a zipped folder with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name of Bidder, and shall be accompanied by the Bid security and other required documents. Electronic bids may be emailed to WGuerin@mullereng.com or uploaded to a link provided by the Owner. If a Bid is sent by mail or other delivery system, the bid must be received no later than the day before the date and time prescribed and 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:

Town of Blue River
P. O. Box 1784
Breckenridge, Colorado 80424

ARTICLE 16 – MODIFICATION AND 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 Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner 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 Work is rebid, that Bidder will be disqualified from further bidding on the Work.

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 major alternates, 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 Owner 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 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.
- 19.02 More than one Bid for the same Work 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 Work may 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, Owner 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 prior to the Notice of Award.

- 19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.
- 19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.
- 19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

- 20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner’s requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

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

ARTICLE 22 – SALES AND USE TAXES

- 22.01 Owner is exempt from Colorado state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph 6.10 of the Supplementary Conditions for additional information.

ARTICLE 23 – RETAINAGE

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

**SECTION 00 41 00
BID FORM**

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

Town of Blue River, Colorado
P. O. Box 1784
Breckenridge, CO 80424

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 thirty (30) calendar 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.D 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 for the following price(s) included in the Bid Schedule.

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete within forty-five (45) non-consecutive calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within one (1) calendar year after the date when the Contract Times commence to run. No work shall be done between July 3, 2024 and July 7, 2024. These days will not be counted against time for the Contractor to substantially complete the Work or final payment. Additional Days will be added for delays due to utility relocations not done by the Contractor or other events not within the Contractor’s control with the approval of the Owner or Engineer. The Work shall be substantially complete by October 1, 2024.
- 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. List of Recently Completed Projects (Last two years);
- E. Evidence of authority to do business in the state of the Project.

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 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]*

**SECTION 00 41 01
 BID SCHEDULE**

TOWN OF BLUE RIVER
 SPRUCE CREEK ROAD IMPROVEMENTS

ITEM	DESCRIPTION OF BID ITEM	QUANTITY	UNIT	UNIT PRICE	ESTIMATED COST
1	CLEARING AND GRUBBING	1	L S		
2	REMOVAL OF PIPE	35	LF		
3	UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	1250	CY		
4	PROOF ROLLING	17	HOUR		
5	POTHOLING	20	HOUR		
6	TOPSOIL (REMOVE AND REPLACE)	222	CY		
7	EROSION LOG TYPE 1 (12 INCH)	350	LF		
8	ROCK CHECK DAM	6	EACH		
9	VEHICLE TRACKING PAD	1	EACH		
10	EROSION CONTROL MANAGEMENT	7	DAY		
11	SEEDING (NATIVE)	0.28	ACRE		
12	SOIL RETENTION BLANKET (STRAW/COCONUT)	1333	SY		
13	AGGREGATE BASE COURSE (CLASS 6)	106	TON		
14	HOT MIX ASPHALT (GRADING SX) (75) (PG 58-28)	585	TON		
15	EMULSIFIED ASPHALT (SLOW SETTING)	106	GAL		
16	RIPRAP (TYPE L) (WITH BEDDING TYPE I)	6	CY		
17	18 INCH EQUIVALENT REINFORCED CONCRETE END SECTION HORIZONTAL ELLIPTICAL	4	EACH		
18	18 INCH EQUIVALENT REINFORCED CONCRETE PIPE HORIZONTAL ELLIPTICAL	88	LF		
19	SANITARY FACILITY	1	EACH		
20	CONSTRUCTION SURVEYING	1	L S		
21	MOBILIZATION	1	L S		
22	FLAGGING	200	HOUR		
23	TRAFFIC CONTROL INSPECTION	8	DAY		
24	TRAFFIC CONTROL MANAGEMENT	20	DAY		
25	BARRICADE (TYPE 3 M-B) (TEMPORARY)	3	EA		
26	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	9	EA		

ITEM	DESCRIPTION OF BID ITEM	QUANTITY	UNIT	UNIT PRICE	ESTIMATED COST
27	CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	4	EA		
28	PORTABLE MESSAGE SIGN PANEL	2	EA		
29	DRUM CHANNELIZING DEVICE	40	EA		
30	DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)	5	EA		
31	TRAFFIC CONE	50.00	EA		
32	FENCE (PLASTIC)	100	LF		

TOTAL BASE BID \$ _____

TOTAL BASE BID FOR ALL ESTIMATED PRICES _____
(use words)

_____ \$ _____
(use figures)

Unit Prices have been computed in accordance with paragraph 11.03.B 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 provided, determined as provided in the Contract Documents.

**SECTION 00 43 13
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)*:

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 (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: 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 any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder who submitted a responsive Bid as determined by Owner for the work required by the Contract Documents, provided that:
 - 1.1 If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the penal sum set forth on the face of this Bond, and
 - 1.2 In no event shall Bidder's and Surety's obligation hereunder exceed the penal sum set forth on the face of this Bond.
 - 1.3 Recovery 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.

**SECTION 00 51 00
NOTICE OF AWARD**

Date:

Project:	Spruce Creek Road Improvements
Owner:	Town of Blue River
Bidder:	
Bidder's Address:	

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 provision and installation of all items as described in the contract documents.

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

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

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

You must comply with the following conditions precedent within 10 days of the date you receive this Notice of Award.

1. Deliver to the Owner four fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract Security and Insurance 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.

TOWN OF BLUE RIVER

By: _____
Mayor

**SECTION 00 52 00
AGREEMENT**

THIS AGREEMENT is by and between the _____ Town of Blue River _____ (Owner) and _____ (Contractor).

Owner and Contractor agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Spruce Creek Road is a soft surface roadway located within the Town of Blue River, Colorado. The project generally consists of profile grade alterations and paving about 600 lineal feet of Spruce Creek Road with an asphalt surface roadway. The project also includes the grading, resurfacing, and adjusting the intersection of Spruce Creek Road with State Highway 9 with an asphalt surface roadway as well as the intersection with Gold Nugget. To accommodate the roadway improvements, the project will include the addition of roadside swales and riprap, relocation of select utilities by others. Miscellaneous items include resetting an existing culvert, erosion control, seeding and mulching.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

SPRUCE CREEK ROAD IMPROVEMENTS

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by: Muller Engineering Company, Inc.
7245 West Alaska Drive, Suite 300
Lakewood, Colorado 80226-4355

Jeff Wulliman, which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – TOWN MANAGER

4.01 Michelle Eddy, Town Manager, or other person appointed by the Board of Trustees, will act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned thereto in the Contract Documents in connection with the completion of the Work.

ARTICLE 5 – CONTRACT TIMES

5.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

5.02 *Days to Achieve Substantial Completion and Final Payment*

A. The Work will be substantially completed within forty-five (45) days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within one (1) calendar year after the date when the Contract Times commence to run. No work shall be done between July 3, 2024 and July 7, 2024. These days will not be counted against time for the Contractor to

substantially complete the Work or final payment. The Work must be substantially complete by October 1, 2024.

5.03 *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 5.02 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 \$ 750 for each day that expires after the time specified in Paragraph 5.02 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 \$ 750 each day that expires after the time specified in Paragraph 5.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 6 – CONTRACT PRICE

6.01 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 the following:

- A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the quantity of that item actually constructed, which are estimated (prior to commencement of construction as shown in Exhibit A at the end of this section).

The Bid prices for Unit Price Work set forth as of the Effective Date of the Agreement are based on estimated quantities. As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions.

ARTICLE 7 – PAYMENT PROCEDURES

7.01 *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.

7.02 *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 25th day of each month during performance of the Work as provided in Paragraph 7.02.1.a 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 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. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

- b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- 2. Final 5% retainage will not be released until seed has been established, which may be the following spring depending on construction schedule as approved by the Engineer.

7.03 *Final Payment*

- A. Upon 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 following advertisement of notice of final payment in accordance with C.R.S. §38-26-107.

ARTICLE 8 – DELETED.

ARTICLE 9 – CONTRACTOR’S REPRESENTATIONS

9.01 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 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.
- E. Based on the information and observations referred to in Paragraph 9.01.D 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.
- F. 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.
- G. 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.
- H. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 10 – CONTRACT DOCUMENTS

10.01 *Contents*

- A. The Contract Documents consist of the following:

1. This Agreement (pages 00 52 00-1 to 00 52 00-6, inclusive).
 2. Performance bond (pages 00 61 13.13-1 to 00 61 13.13-3, inclusive).
 3. Payment bond (pages 00 61 13.16-1 to 00 61 13.16-3, inclusive).
 4. General Conditions (pages 00 72 00-1 to 00 72 00-51, inclusive).
 5. Supplementary Conditions (pages 00 73 00-1 to 00 73 00-9, inclusive).
 6. Specifications as listed in the table of contents of the Project Manual.
 7. Drawings consisting of ___ sheets with each sheet bearing the following general title: Spruce Creek Road Improvements
 8. Addenda (numbers _____ to _____, inclusive).
 9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 00 41 01-16, inclusive).
 - b. _____.
 10. 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 (page 00 55 00-1, inclusive).
 - b. Final Receipt and Guarantee (page 00 65 00-1, inclusive).
 - c. Substantial Completion (page 00 65 16-1 to 00 65 16-2, inclusive).
 - d. Application for Payment (page 00 62 00-1, inclusive).
 - e. Field Order(s) (page 00 63 36-1, inclusive).
 - f. Work Change Directives (page 00 63 49-1, inclusive).
 - g. Change Order(s) (pages 00 63 63-1 to 00 63 63-2, inclusive).
- B. The documents listed in Paragraph 10.01.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 10.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 11 – MISCELLANEOUS

11.01 Terms

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

11.02 *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.

11.03 *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.

11.04 *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.

11.05 *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 11.05:
 - 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.

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.

This Agreement will be effective on _____, 20____ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR

TOWN OF BLUE RIVER _____

By: _____

By: _____

Title: Mayor _____

Title: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

Town of Blue River _____

P. O. Box 1784 _____

Breckenridge, Colorado 80424 _____

Approved to as Form

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

Attorney for Owner

**SECTION 00 55 00
NOTICE TO PROCEED**

Date:

Project:	Spruce Creek Road Improvements
Owner:	Town of Blue River
Contractor:	
Contractor's Address:	

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 5 of the Agreement, the date of 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 insurers and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

TOWN OF BLUE RIVER

By: _____
Mayor

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*):

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.

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.

1. 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.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 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
 - 2.2 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
 - 2.3 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.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 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
 - 3.4 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.
4. 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.
5. 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:
 - 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
 - 5.2 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
 - 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. 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.

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

8. 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.

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

10. 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.

11. Definitions.

11.1 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.

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

11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

11.4 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)*:

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*):

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

Contractor'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: 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. Reserved.
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*):

SECTION 00 62 00
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

The undersigned Contractor certifies that: (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.

By:	Date:
-----	-------

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

**SECTION 00 63 63
CHANGE ORDER**

NO. _____

Date of Issuance: _____ Effective Date: _____

Project: Spruce Creek Road Improvements	Owner: Town of Blue River
Date of Contract:	Contractor:

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: <input type="checkbox"/> Working days <input type="checkbox"/> 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): _____
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): _____

If additional compensation is determined to be due to the Contractor under this Change Order, it shall be in full payment of all extra work and/or materials as set forth in the Change Order to the date of the Change Order, including compensation for all claims, direct or indirect, for extended overhead and profit, and damages of any type whatsoever, including delay and impact damages.

Any additional costs to the Contractor resulting from delays caused by the Owner shall be presumed to be included in this Change Order adjustment for time and price.

APPROVALS REQUIRED:

To be effective, this Change Order must be approved by the Owner if it changes the scope or objective of the Contract, or as may otherwise be required by the General and Supplementary Conditions.

Recommended by: _____ Date: _____
Muller Engineering Company, Inc.

Accepted by: _____ Date: _____
CONTRACTOR

Approved by: _____ Date: _____
Town of Blue River

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 and sends all copies to the Engineer.

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.

SECTION 00 65 00
FINAL RECEIPT AND GUARANTEE

Received this date from the Town of Blue River (Owner), as full and final payment of the cost of the improvements, provided for change orders, and additions thereto, the sum of _____ (\$ _____), by check, being the remainder of the full amount accruing to the undersigned by virtue of said Contract and extra work performed thereunder, said payment covering and including full payment for the cost of all work and material furnished by the undersigned in the construction of the Spruce Creek Road Improvements, and all incidentals thereto, for which the payments have totaled _____ (\$ _____). The undersigned releases the Town of Blue River from any and all additional claims whatsoever resulting from said Contract and all work performed thereunder.

The undersigned certifies that all persons doing work upon or furnishing materials for said improvements under the Contract and all additions thereto have been paid in full, and the undersigned further certifies that all work has been completed in a workmanlike manner in conformity with the plans and specifications.

The undersigned agrees that, if any portion of said work or material proves defective within Two Years from the final acceptance of the entire project by the Owner, _____, shall replace any such defective material and remedy any such defective work to the satisfaction of the Owner and shall defend, indemnify and save harmless the Owner from all damages, claims, demands, expenses and charges of every kind which may arise as a result of any such defective material and workmanship during said period.

_____ Contractor

By: _____

Title: _____

**SECTION 00 65 16
CERTIFICATE OF SUBSTANTIAL COMPLETION**

Project: Spruce Creek Road Improvements Project	
Owner: Town of Blue River	Owner's Contract No.:
Contract:	Engineer's Project No.: 11-008.20

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, Engineer, 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:

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



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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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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 therefor.
 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor. 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 therefor 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 therefor, 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor 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 therefor.
- 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 therefor. 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 therefor. 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 therefor 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.

**SECTION 00 73 00
SUPPLEMENTARY CONDITIONS**

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC C-700 (2007 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

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

SC-2.03 COMMENCEMENT OF CONTRACT TIMES; NOTICE TO PROCEED

Delete the last sentence of paragraph 2.03.A of the General Conditions in its entirety.

SC-3.03 REPORTING DISCREPANCIES

Add the following language at the end of paragraph 3.03.A of the General Conditions:

4. Contractor may not Claim damages for any delay or impact for Work performed under what Contractor considers to be inadequate or improper Specifications. It shall be the duty of the Contractor to call all items in the Specifications that the Contractor deems to be inadequate or improper to the attention of the Engineer prior to commencing Work thereon.

SC-4.02 SUBSURFACE AND PHYSICAL CONDITIONS

Delete Paragraphs 4.02.A and 4.02.B in their entirety and insert the following:

- A. No reports of explorations or tests of subsurface conditions at or contiguous to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to Owner.

SC-4.03 DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS

Add the following language at the end of paragraph 4.03.A of the General Conditions:

Contractor shall notify Owner and Engineer in writing within ten calendar days of any differing condition of which he becomes aware that fits the characteristics described herein. Failure on the part of Contractor to give such written notice shall constitute a waiver by Contractor to make any Claim for any such condition at any subsequent time.

SC-4.06 HAZARDOUS ENVIRONMENTAL CONDITIONS

Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

SC-5 BONDS AND INSURANCE

Owner will not purchase any insurance policies with respect to this project, as described in Article 5 or the General Conditions, unless otherwise specified in the Supplementary Conditions, hereafter.

SC-5.02 LICENSED SURETIES AND INSURERS

Add the following language at the end of paragraph 5.02.A of the General Conditions:

All insurance shall be placed with insurance companies with a current Best's Insurance Guide Rating of B and Class X, or better.

SC-5.04 CONTRACTOR'S LIABILITY INSURANCE

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: \$100,000 Each Occurrence

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
(Except Products – Completed Operations) \$2,000,000
- b. Each Occurrence
(Bodily Injury and Property Damage) \$1,000,000
- c. Property Damage liability insurance will provide Explosion, Collapse, and Under-ground coverages where applicable.

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

- a. Bodily Injury:
 - Each person \$1,000,000
 - Each Accident \$1,000,000
- b. Property Damage:
 - Each Accident \$1,000,000

4. Additional Insureds under paragraph 5.04.B.1 of the General Conditions to be named in the Contractor's comprehensive General Liability and Umbrella Liability policies are as follows:

- Town of Blue River, CO,
- Muller Engineering Company, Inc.,
and each of their agents, representatives, and employees.
- See SC-6.08 below for additional information regarding CDOT.

5. 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	\$1,000,000
	Each Accident	\$2,000,000
b.	Property Damage:	
	Each Accident	\$1,000,000
	Annual Aggregate	\$2,000,000

SC-5.05 OWNER'S LIABILITY INSURANCE

Add the following language at the end of paragraph 5.05 of the General Conditions:

Owner will not purchase or maintain Owner's Liability Insurance against claims that may arise from operations under the Contract Documents. Attention is directed to SC-2.01 and SC-5.03. Notwithstanding any other provision in these Contract Documents to the contrary, nothing herein shall be deemed or construed as a waiver of any of the protections to which Owner may be entitled under the Constitution of the State of Colorado or pursuant to the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, et seq., as amended.

SC-5.06 PROPERTY INSURANCE

Paragraph 5.06.A of the General Conditions shall be deleted in its entirety. Owner will not purchase and maintain property insurance for the project.

Paragraph 5.06.B of the General Conditions shall be deleted in its entirety. Owner will not purchase equipment breakdown insurance or additional property insurance.

Paragraph 5.06.E of the General Conditions shall be deleted in its entirety.

SC-5.07 WAIVER OF RIGHTS

Losses insured under policies that include Owner as a named insured shall be adjusted with Owner and made payable to Owner as trustee for the insureds, as their interests may appear.

Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance, except such rights as they may have to insurance proceeds held by Owner as trustee. Contractor shall require similar waivers by Subcontractors as provided in General Conditions.

SC-5.08 RECEIPT AND APPLICATION OF INSURANCE PROCEEDS

Paragraph 5.08 of the General Conditions shall be deleted in its entirety.

SC-6.02 LABOR; WORKING HOURS

Delete paragraph 6.02.B of the General Conditions in its entirety and insert the following:

Except otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the Site shall be performed during regular working hours. No Work shall be done between 6:00 p.m. and 7:00 a.m. nor on Saturdays, Sundays or legal holidays without permission of Owner. However, emergency work may be done without prior permission.

Night work may be undertaken as a regular procedure with the permission of Owner; such permission, however, may be revoked at any time by Owner if Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work at night.

SC-6.06 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS

Add a new paragraph immediately after Paragraph 6.06.G:

- H. 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

Add a new paragraph immediately after Paragraph 6.10.A:

- B. This Project is being undertaken directly by the Town of Blue River. Pursuant to CRS 39-26-708(1) and other laws, no sales or use tax shall be due on construction materials used in this Project. After execution of the Contract, the Town will work with the Contractor to obtain the appropriate exemption form from the state (Department of Revenue Form Number 172) to obtain an exemption for the state and other state collected sales and use taxes. The Contractor shall make the same requirement, as contained above, of any subcontractors on the Project. All applicable taxes are to be paid by the Contractor and are to be included in appropriate bid items, except that, the Contractor will not be reimbursed for any state or other sales and use taxes incurred as a result of failure to obtain an exemption certificate prior to issuance of the Notice to Proceed.

SC-6.17 SHOP DRAWINGS AND SAMPLES

Amend paragraph 6.17 of the General Conditions by deleting the terms "approve," "approved," and "approval," and inserting respectively the terms "instruct to Furnish as Submitted," "instructed to Furnish as Submitted," and "instruction to Furnish as Submitted."

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-7.02 COORDINATION

Delete Paragraph 7.02.B in its entirety and replace with the following:

- B. Unless otherwise provided, ENGINEER shall have authority and responsibility for such coordination.

SC-7.04 CLAIMS BETWEEN CONTRACTORS

Add the following new paragraph immediately after paragraph GC-7.03:

SC-7.04 CLAIMS BETWEEN CONTRACTORS

- A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other

contractor against Contractor, Owner, Engineer, or the construction coordinator, then Contractor (without involving Owner, Engineer, or construction coordinator) shall either (1) remedy the damage, (2) agree to compensate the other contractor for remedy of the damage, or (3) remedy the damage and attempt to settle with such other contractor by agreement, or otherwise resolve the dispute by arbitration or at law.

- B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the construction coordinator and the officers, directors, partners, employees, agents and other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, consultants, or the construction coordinator to the extent said claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the construction coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the construction coordinator on account of any such damage or Claim.
- C. If Contractor is delayed at any time in performing or furnishing the Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and construction coordinator for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, Engineer, or construction coordinator for activities that are their respective responsibilities.

SC-9.03 PROJECT REPRESENTATIVE

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 meetings, 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 and transmit to Contractor clarifications and interpretations as issued by Engineer.
5. *Shop Drawings 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 in 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 to 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 not 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 systems start-ups.
9. *Records:*
 - a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials 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 the 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 in 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 or Sample submittals from anyone other than Contractor.
 8. Authorize Owner to occupy the Project in whole or in part.

SC-11.03 UNIT PRICE WORK

Delete Paragraph 11.03.D in its entirety and insert the following in its place:

(TOWN OF BLUE RIVER)

00 73 00-7

(SPRUCE CREEK ROAD IMPROVEMENTS)

- D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
1. if the Bid price of a particular item of Unit Price Work amounts to 10 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
 2. if there is no corresponding adjustment with respect to any other item of Work; and
 3. if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

SC-12.01 CHANGE OF CONTRACT PRICE

SC-12.01.C *Contractor's Fee.* Delete the semicolon at the end of GC 12.01.C.2.c, and add the following language:

, provided, however, that on any subcontracted work the total maximum fee to be paid by Owner under this subparagraph shall be no greater than 27 percent of the costs incurred by the Subcontractor who actually performs the work;

SC-12.02 CHANGE OF CONTRACT TIMES

Add the following paragraph immediately following paragraph 12.02.B of the General Conditions:

C. Time of completion is an essential element of this Contract. Every effort shall be made by the Contractor to complete the Project within the "Contract Time" as described in Article 5 of the Agreement. The "Contract Time" anticipates "normal" weather and climate conditions in and around the vicinity of the Project Site during the times of year that the construction will be carried out. Extensions of time based upon weather conditions shall be granted only if the Contractor demonstrates clearly that such conditions were "abnormal" or "unusually severe," would not have been reasonably anticipated, and that such conditions adversely affected the Contractor's Work and thus required additional time to complete the Work.

While extensions of time may be granted for "abnormal" weather or climate conditions, no monetary compensation shall be made by the Owner for any costs to the Contractor arising out of such delays."

SC-13.07 CORRECTION PERIOD

The Correction Period for this project shall be two years after the date of final acceptance of the entire project by the Owner.

Add the following paragraph immediately following paragraph 13.07.E of the General Conditions:

F. Nothing in paragraph 13.07 of the General Conditions concerning the correction period shall establish a period of limitation with respect to any other obligation that Contractor has under the Contract Documents. The establishment of time periods relates only to the specific obligations of Contractor to correct his Work, and has no relationship to the time within which his obligations under the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish his liability with respect to his obligations other than to specifically correct the Work.

SC-14.02 PROGRESS PAYMENTS

Delete paragraph 14.02.B.1 of the General Conditions and insert the following:

Thirty days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.07) become due and when due will be paid by Owner to Contractor.

SC-14.06 FINAL REVIEW AND ACCEPTANCE

Delete paragraph 14.06 of the General Conditions and insert the following:

Upon written notice that Contractor considers all Work complete, Engineer shall make a final review with Owner and Contractor and shall notify Contractor in writing of incomplete or defective Work revealed by the review. Contractor shall promptly remedy such deficiencies.

After Contractor has remedied all deficiencies to the satisfaction of Engineer and delivered all construction records, maintenance and operation instruction, schedules, guarantees, Bonds, certificates of inspection, and other documents (all as required by the Contract Documents), Owner and Contractor shall be promptly notified in writing by Engineer that the Work is acceptable.

SC-14.07 FINAL PAYMENT

Replace paragraph 14.07.C.1 of the General Conditions and insert the following:

Upon Owner's receipt of the final Application for Payment and accompanying documents from Contractor, Owner will set a date for final payment and advertise notice thereof in accordance with CRS 38-26-107. If no claims are submitted, Owner will make final payment within seven business days thereafter of the amount recommend by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.

SC-14.09.2 WAIVER OF CLAIMS

Delete paragraph 14.09.2 of the General Conditions and insert the following:

2. A waiver of all Claims by Contractor against Owner.

SC-16.01 Delete paragraph 16.01 of the General Conditions in its entirety.

The following Supplementary Conditions apply to the Spruce Creek Road Improvements Project Only.

SC-6.08 PERMITS

Add the following new paragraphs immediately after Paragraph 6.08.A:

2. A State Highway Access Permit (Form#101) has been obtained by the Town of Blue River from the Colorado Department of Transportation for the Spruce Creek Road Improvements Project: CDOT Permit No 324012 dated 2/28/2024. Contractor shall obtain a copy of the permit from Owner and adhere to all conditions of the Access Permit including but not limited to:
 - a. Contractor shall name CDOT on the face of the Insurance for Liability certificate as "an additional insured for general liability".

- b. Each access shall be constructed in a manner that shall not cause water to enter onto the roadway or shoulder, and shall not interfere with the existing drainage system on the right-of-way or any adopted municipal system and drainage plan.
- c. Immediately upon completion of earthwork the access shall be hard-surfaced a minimum distance of 50 feet from the traveled way, or to the CDOT right-of-way, whichever is greater. Where the hard surface ties into the existing pavement, the existing pavement shall be saw cut and removed to a minimum of the full depth asphalt section or until an acceptable existing cross slope is achieved. The saw cut shall not be located in the wheel path. Surfacing shall meet CDOT's specifications with minimum surfacing to be equal to, or greater than, existing highway conditions in conformance with section 4 of the Access Code.
- d. Unless the Applicant has approval from the Access Manager who may state otherwise, the following are minimum requirements for driveway construction:
 - i. Hot Mix Asphalt Option (HMA): compaction of the subgrade, embankments and backfill shall comply with sections 203 & 304 of the Colorado Highway Standard Specifications for Road and Bridge Construction.
- e. No drainage from this site shall enter onto the state highway travel lanes. The Permittee is required to maintain all drainage in excess of historical flows and time of concentration on site.
- f. Open cuts, which are at least 3 inches in depth, within 30 feet of the edge of the state highway traveled way, will not be left open at night, on weekends, or on holidays, or shall be protected with a suitable barrier per state and federal standards.
- g. Backing maneuvers within and onto the state highway right-of-way are strictly prohibited. All vehicles shall enter and exit the highway right-of-way in a forward movement. Backing into the right-of-way shall be considered a violation of the Terms and Conditions of the Access Permit and may result in the revocation of the permit by CDOT and/or Issuing Authority.
- h. All workers within the state highway right-of-way shall comply with their employer's safety and health policies/procedures, and all applicable U.S. Occupational Safety and Health Administration (OSHA) regulations - including, but not limited to the applicable sections of 29 CFR Part 1910 - Occupational Safety and Health Standards and 29 CFR Part 1926 - Safety and Health Regulations for Construction. Personal protective equipment (e.g. head protection, footwear, high visibility apparel, safety glasses, hearing protection, respirators, gloves, etc.) shall be worn as appropriate for the work being performed, and as specified in regulation.
- i. CDOT will determine the extent of inspection services for the work. A daily inspection may be done by CDOT from the time work begins inside the highway right-of way until the job is completed and right-of-way restored to its original condition.
- j. The CDOT inspector may suspend work due to: 1) Noncompliance with the provisions of this permit; 2) Adverse weather or traffic conditions; 3) Concurrent highway construction or maintenance in conflict with permit work; 4) Any condition deemed unsafe for workers or the general public. The work may be resumed upon notice from the CDOT Inspector.
- k. Any damage to present highway facilities including traffic control devices shall be repaired immediately at no cost to CDOT and prior to continuing other work.
- l. During access construction, no construction-related or personal vehicles will be permitted to park in the state highway right-of-way.

- m. Any mud or other material tracked, or otherwise deposited, on the roadway shall be removed daily or as ordered by CDOT's inspector. If mud is an obvious condition during site construction, it is recommended that the contractor build a stabilized construction entrance or scrubber pad at the intended construction access to aid in the removal of mud and debris from vehicle tires. Details of the stabilized construction entrance can be found in the M & S Standards Plan No. M-208-1.
- n. A fully executed, complete copy of this permit and the Notice to Proceed must be on the job site with the contractor at all times during the construction. Failure to comply with this or any other construction requirement may result in the immediate suspension of work by order of the CDOT inspector or the issuing authority.
- o. No work will be allowed at night, Saturdays, Sundays and legal holidays without prior authorization. CDOT may also restrict work within the state highway right-of-way during adverse weather conditions, seasonal changes and if safety and operational issues occur.
- p. The access shall be completed in an expeditious and safe manner and shall be completed within 45 days from initiation of construction within the state highway right-of-way or in accordance with written concurrence of the Access Manager. All construction shall be completed in a single season.
- q. Areas of roadway and/or right-of-way disturbed during this installation shall be restored to their original conditions to insure proper strength and stability, drainage and erosion control. Restoration shall meet CDOT's standard specifications for topsoil, fertilization, mulching, and re-seeding.

DIVISION 1
GENERAL REQUIREMENTS

**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 GENERAL

1.01 SECTION INCLUDES

The major elements of the PROJECT are described as follows:

- A. Profile grade alterations and paving about 600 lineal feet of Spruce Creek Road with an asphalt surface roadway.
- B. Grading, resurfacing, and adjusting the intersection of Spruce Creek Road with State Highway 9 and the intersection of Spruce Creek Road with Gold Nugget with an asphalt surface roadway.
- C. Installation of two (2) access road culverts.
- D. Roadside ditches/swales to convey stormwater flows.
- E. Erosion control, seeding and mulching within disturbance limits

1.02 WORK SEQUENCE

- A. CONTRACTOR shall submit the WORK Sequence as part of the construction schedule required in Section 013200. Construction may begin immediately on the date of Notice to Proceed.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 14 00
CONTRACTOR'S USE OF PREMISES**

PART 1 GENERAL

1.01 SECTION INCLUDES

CONTRACTOR may use OWNER's property designated within the construction limits shown on the PLANS for equipment and materials provided CONTRACTOR confines operations to those permitted by local laws, ordinances, and permits. CONTRACTOR shall:

- A. Not unreasonably encumber site with materials or equipment.
- B. Assume full responsibility for protection and safekeeping of products stored on premises.
- C. Move any stored products that interfere with operations of OWNER.
- D. Obtain and pay for use of additional storage or work areas needed for operations.

1.02 LIMITS OF CONSTRUCTION

CONTRACTOR shall maintain all construction activities within OWNER's property and construction limits, unless CONTRACTOR obtains a permit or written permission from the owner(s) of property outside of these areas. Said permit or written permission will be secured and paid for by CONTRACTOR at no extra cost to OWNER and a copy will be provided to ENGINEER.

1.03 SECURITY

CONTRACTOR shall at all times be responsible for the security of CONTRACTOR's facilities and equipment. OWNER will not take responsibility for missing or damaged equipment, tools, or personal belongings of CONTRACTOR.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 18 00
UTILITY SOURCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

The size and location of existing underground utilities, if noted on the drawings, is from the best information available as established from actual field observations and study of existing records. These are noted for informational purposes only and are believed to be correct. However, CONTRACTOR shall take sole responsibility for damage to any utility line encountered, whether or not shown on the DRAWINGS and whether or not actually located in the field as shown on the DRAWINGS. CONTRACTOR shall contact all utilities 48 hours prior to beginning excavation and/or grading. CONTRACTOR shall contact the Utility Notification Center of Colorado at 811.

If the exact location and depth of existing underground utilities are unknown, CONTRACTOR, prior to beginning construction, shall perform all necessary exploratory excavation to locate these facilities which may affect the WORK. CONTRACTOR shall notify ENGINEER immediately of any utility discrepancies.

CONTRACTOR shall inform ENGINEER of existing utility installations that need relocation.

If CONTRACTOR requests that utility companies relocate their utilities for CONTRACTOR's convenience in construction of any portion of the WORK, the cost of such will be at CONTRACTOR's expense.

CONTRACTOR shall determine the actual location of all existing utilities prior to starting any WORK that may cause damage to such utilities. CONTRACTOR shall be liable for all damages done to existing utilities in the performance of the WORK.

CONTRACT TIME will not be extended to account for repair of utilities damaged by CONTRACTOR's negligence.

Full compensation for compliance and cooperation, as required by this section, is considered to be subsidiary to other WORK items and no additional compensation will be allowed.

Names and telephone numbers of affected agencies and utilities in the area are listed below for CONTRACTOR's convenience. CONTRACTOR assumes all responsibility of contacting these agencies and verification of telephone numbers.

UTILITY TYPE	AGENCY	PHONE NUMBER
Gas -	Colorado Natural Gas	719-836-0696
Cable TV -	Comcast	970-619-0752
Electric -	Xcel Energy	1-800-628-2121
Telephone -	Centurylink	970-468-6860
Sanitary -	Upper Blue Sanitation District	970-453-2723
One-Call Utility Locates		1-800-922-1987

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 22 00
MEASUREMENT AND PAYMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

For each BID item, the WORK will be measured and paid for on either a unit price basis or on a lump sum basis. The quantities provided on the BID are estimates of the actual quantities of WORK only, and are included solely for the purpose of determining the probable cost of WORK. The actual quantities of WORK may differ from the BID quantities. The basis of measurement and payment for all unit price BID items will be the actual amount of WORK completed and accepted. All labor, equipment, materials, and any incidentals required to complete the WORK will be considered subsidiary to that BID item and will not be measured or paid for separately. CONTRACTOR agrees to make no claim for damages, loss of anticipated profits, or otherwise, due to differences between the actual WORK quantities and the estimated BID quantities.

Payment will be made only for those items included in the BID. No WORK will be paid for which is not completed in accordance with the DRAWINGS and SPECIFICATIONS, and accepted by ENGINEER. Except as may be otherwise stipulated, no labor, equipment, materials, or any incidentals required to complete the WORK will be furnished by OWNER. The basis of measurement and payment for each BID item is described below. A general listing of BID items, accompanied by a brief summary of the WORK, is provided below. It is not intended to completely describe all WORK. Refer to the DRAWINGS and SPECIFICATIONS for detailed information on each BID item.

1.02 BASE BID ITEMS

BID ITEM 1. CLEARING & GRUBBING

No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The lump sum price will include all of the CONTRACTOR's costs. This BID item includes completing the clearing and grubbing; disposing of materials off-site in accordance with the DRAWINGS and SPECIFICATIONS; and providing all other related and necessary labor, equipment, and materials to complete the WORK.

Payment will be based on the percentage of completed and accepted WORK.

<u>Bid Item</u>	<u>Pay Unit</u>
CLEARING & GRUBBING	LS

BID ITEM 2. REMOVAL OF PIPE

The measurement for payment for this item will be the actual number of linear feet of pipe removed, measured along the center line of the pipe from end of pipe to end of pipe (along a horizontal plane). The linear foot price will include all of the CONTRACTOR's costs which are not specifically measured and paid for under other BID items. This BID item includes removing, hauling, and disposing of structures and obstructions including, but not limited to, existing pipe/culverts and any structures and obstructions which interfere with the WORK; backfilling of excavations for removal of structures and obstructions with suitable material; compacting; and providing all other related and necessary labor, equipment, and materials to complete the WORK.

Payment will be based on the percentage of completed and accepted WORK.

<u>Bid Item</u>	<u>Pay Unit</u>
REMOVAL OF PIPE	LF

BID ITEM 3. UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)

The measurement for payment for this item will be the total number of cubic yards of material excavated and placed within the project limits, completed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. No measurement of this item will be made unless changes to the Contract Documents are made, in which case the ENGINEER will perform measurement of the modified area. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Stockpiling of excess material
- Loading and hauling of excess material to a site to be determined by the CONTRACTOR.
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
UNCLASSIFIED EXCAVATION (COMPLETE IN PLACE)	CY

BID ITEM 4. PROOF ROLLING

The measurement for payment for this item will be the actual number actual number of hours of equipment and labor required to complete the WORK with the DRAWINGS and SPECIFICATIONS or as otherwise directed by the ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Furnishing all labor and equipment required to complete the WORK
- Ripping, scarifying, drying or wetting, and recompacting soft spots in subgrade where deflection is not uniform or excessive as determined by ENGINEER.
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
PROOF ROLLING	HOURL

BID ITEM 5. POTHOLING

The quantity to be paid for this item will be the total number of hours of potholing required to locate underground utilities and shall conform to CDOT Standard Specifications for Road and Bridge Construction, Current Edition, Section 203 (Excavation and Embankment). The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Providing all related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
POTHOLING	HOURL

BID ITEM 6. TOPSOIL (REMOVE AND REPLACE)

The measurement for payment for this item will be the total number of cubic yards of topsoil excavated, properly stockpiled, and replaced along the finished lines and grades in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. Topsoil placed will be measured in the field and the volume calculated by the area multiplied by the depth, as determined by ENGINEER, with no allowance for

shrinkage or swell. The unit price will include all of the CONTRACTOR's costs. This BID item includes excavating; stockpiling; replacing; and providing all other related and necessary labor, equipment, and materials required to complete the WORK.

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
TOPSOIL (REMOVE AND REPLACE)	CY

BID ITEM 7. EROSION LOG TYPE 1 (12 INCH)

The measurement for payment for this item will be the actual number of linear feet of erosion control log placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by the ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes, but is not limited to:

- Providing and installing erosion control log and stakes
- Removing, upon approval
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
EROSION LOG TYPE 1 (12 INCH)	LF

BID ITEM 8. ROCK CHECK DAM

The measurement for payment for this item will be per each rock check dam placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by the ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes, but is not limited to:

- Excavating and removing material
- Providing and placing riprap
- Removing check dam, including haul off and disposal, upon approval
- Restoring area to pre-project or final grades and conditions
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
ROCK CHECK DAM	EA

BID ITEM 9. VEHICLE TRACKING PAD

The measurement for payment for this item will be per each vehicle tracking pad placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by the ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes, but is not limited to:

- Providing and placing geotextile fabric, construction mat, TRM, crushed rock, and riprap, as shown on the DRAWINGS
- Excavating and removing material
- Removing vehicle tracking control, upon approval
- Restoring area to pre-project or final grades and conditions, including revegetation
- Providing and installing metal rack and sediment trap as shown on the DRAWINGS
- Providing and installing power washing equipment

- Power washing the equipment and vehicles
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
VEHICLE TRACKING PAD	EA

BID ITEM 10. EROSION CONTROL MANAGEMENT

The measurement for payment for this item will be the actual number of hours of equipment and labor required to maintain all BMPs in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. Prior to performing maintenance on any BMP, the CONTRACTOR shall meet with the ENGINEER to determine what maintenance is required and to estimate the number of hours required to perform the maintenance. The unit price will include all of CONTRACTOR'S costs. This BID will include but is not limited to:

- Furnishing and installing all materials required to maintain BMPs
- Furnishing all labor and equipment required to maintain BMPs
- Implementing and adjusting as necessary the approved Erosion and Sediment Control Plan in accordance with the DRAWINGS and SPECIFICATIONS
- Performing sediment removal
- Sweeping public right-of-way along the project limits and haul routes as necessary
- Replacing BMPs if necessary
- Inspecting and maintaining all erosion and sediment control measures and replacing as necessary
- Providing all other related and necessary labor, equipment, and materials to complete the WORK
- Providing all other related and necessary labor, equipment, and materials to complete the WORK.

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
EROSION CONTROL MANAGEMENT	DAY

BID ITEM 11. SEEDING (NATIVE)

The measurement for payment for each of these items will be the total number of acres installed as directed by ENGINEER. The unit price for each item will include all of the CONTRACTOR's costs. No additional payment will be made for areas disturbed outside of construction limits or areas within construction limits that are not identified on the DRAWINGS to be disturbed, unless approved by the ENGINEER. These BID items include:

- Soil preparation including tilling and/or scarifying
- Furnishing and installing seed
- Furnishing and installing mulch
- Spraying or mowing for weed control
- Spraying for insect and disease control
- Installing temporary fence and barriers as required
- Maintaining all seeded areas
- Watering
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted. Final payment will not be provided until seed has established.

<u>Bid Item</u>	<u>Pay Unit</u>
SEEDING (NATIVE)	AC

BID ITEM 12. SOIL RETENTION BLANKET (STRAW/COCONUT)

The measurement for payment for this item will be the actual number of square yards of soil retention blanket placed as measured in plan view from the DRAWINGS, but will not include the material buried in the anchor trenches or required lapping of the blanket or slope variability, in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by the ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes, but is not limited to:

- Furnishing and installing all materials, including but not limited to the erosion control blanket, anchors, wood stakes, and hand-shaken straw (if required).
- Preparing subgrade
- Placing the blanket per manufacturer's specifications
- Excavating, trenching, backfilling, and compacting for anchoring
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
SOIL RETENTION BLANKET (STRAW/COCONUT)	SY

BID ITEM 13. AGGREGATE BASE COURSE (CLASS 6)

The measurement for payment for this item will be the total number of cubic yards of base course placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. No measurement of this item will be made unless changes to the Contract Documents are made, in which case the ENGINEER will perform measurement of the modified volume. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Stockpiling of onsite aggregate materials
 - Furnishing, transporting, and placing all base course materials
- Saw cut of existing asphalt and removal of any asphalt
- Fine grading the pavement subgrade, compacting, proof rolling, sterilizing the subgrade soil and prepping saw cut edges with tack coat.
- Subgrade preparation, backfilling, and placing base course to the lines and grades shown on the DRAWINGS
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
AGGREGATE BASE COURSE (CLASS 6)	TON

BID ITEM 14. HOT MIX ASPHALT (GRADING SX) (75) (PG 58-28)

The measurement for payment for this item will be the total number of tons of asphalt pavement placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. No measurement of this item will be made unless changes to the Contract Documents are made, in which case the ENGINEER will perform measurement of the modified volume. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- All labor and materials required for the installation of hot bituminous asphalt.

- Including subgrade stabilization, saw cut of existing asphalt, removal of any asphalt, asphalt placement and asphalt compaction and providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
HOT MIX ASPHALT (GRADING SX) (75) (PG 58-28)	TON

BID ITEM 15. EMULSIFIED ASPHALT (SLOW SETTING)

The measurement for payment for this item will be the total number of gallons placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Furnishing, transporting, and placing all base course materials
- Saw cut of existing asphalt and removal of any asphalt
- Fine grading the pavement subgrade, compacting, proof rolling, sterilizing the subgrade soil and prepping saw cut edges with tack coat.
- Subgrade preparation, backfilling, and placing base course to the lines and grades shown on the DRAWINGS
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
EMULSIFIED ASPHALT (SLOW SETTING)	GAL

BID ITEM 16. RIPRAP (TYPE L) (WITH BEDDING TYPE I)

The measurement for payment for this item will be the total number of cubic yards of riprap placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. Measurement does not include the thickness of the bedding. The unit price will include all of the CONTRACTOR's costs. This BID item will include:

- Furnishing, transporting, and placing all riprap
- Excavating, backfilling, and compacting
- Removing and disposing excavations and debris
- Providing bedding material as described within the DRAWINGS and SPECIFICATIONS
- Protecting and/or relocating aboveground and underground utilities and service connections
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
RIPRAP (TYPE L) (WITH BEDDING TYPE I)	CY

BID ITEM 17. 18 INCH EQUIV REINFORCED CONCRETE END SECTION ELLIPTICAL

The measurement for payment for this item will be on a per-each basis, complete in place, in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Preparing / stabilizing subgrade foundation

- Furnishing, transporting, and installing precast end sections
- Connecting end sections to pipe
- Furnishing, transporting, and installing jointing materials including: O-rings, gaskets, bolts, joint restraints, concrete collars, connecting bands and other miscellaneous items
- Excavating, including exploratory excavation
- Backfilling including furnishing, transporting, and placing bedding and backfill material; and compacting
- Supporting trenches
- Disposing of debris, excess excavated material, and damaged materials offsite
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
18 INCH EQUIV REINFORCED CONCRETE END SECTION ELLIPTICAL	EA

BID ITEM 18. 18 INCH EQUIV REINFORCED CONCRETE PIPE HORIZONTAL ELLIPTICAL

The measurement for payment for this item will be the actual number of linear feet of pipe installed, complete in place, measured along the center line of the pipe from end of pipe to end of pipe, not including flared end sections, along a horizontal plane. The unit price does not include the cost of the flared end section. The unit price will include all of the CONTRACTOR's costs. These BID items include:

- Locating and protecting all existing utilities in and along the pipe length
- Furnishing, transporting, and installing all pipe and materials
- Connecting to pipes or structures
- Furnishing, transporting, and installing jointing materials including: O-rings, gaskets, bolts, concrete collars, connecting bands and other miscellaneous items
- Excavating, including exploratory excavation
- Furnishing and placing bedding
- Furnishing and installing protective coatings or wrapping; pipe encasements
- Backfilling including furnishing, transporting, and placing material; and compacting
- Supporting trenches
- Protecting aboveground and underground utilities and service connections
- Disposing debris, pipe, excess excavated material, and damaged materials offsite
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
18 INCH EQUIV REINFORCED CONCRETE PIPE HORIZONTAL ELLIPTICAL	LF

BID ITEM 19. SANITARY FACILITY

The quantity to be paid for this item will be the total number of portable chemical toilets that are well ventilated, conform to State law, have a vented chemical tank, and a separate urinal. The unit price will include all of the CONTRACTOR's costs. This BID item includes:

- Providing all related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
SANITARY FACILITY	EACH

BID ITEM 20. CONSTRUCTION SURVEYING

No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The lump sum price will include all of the CONTRACTOR's costs. This BID item includes staking horizontal and vertical alignments, grading, subgrade elevations, and off-sets; setting temporary control points; re-establishing land monuments; per Section 01 71 23 (Field Engineering and Surveying) and providing all other related and necessary labor, equipment, and materials to complete the WORK.

Payment will be based on the percentage of completed and accepted WORK.

<u>Bid Item</u>	<u>Pay Unit</u>
CONSTRUCTION SURVEYING	LS

BID ITEM 21. MOBILIZATION

No separate measurement for payment will be made for any labor, equipment, and materials required for this item. The lump sum price will include all of the CONTRACTOR's costs. This BID item includes:

- Installing temporary fencing around PROJECT work areas and any other fencing/security items as deemed necessary by CONTRACTOR
- Obtaining permits
- Providing required bonds and insurance
- Preparing the PROJECT schedule
- Removing CONTRACTOR's equipment, supplies, excess materials, and cleaning up the site
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on the percentage of completed and accepted WORK. Fifty percent (50%) of the lump sum price will be paid at the time of the first monthly progress payment; an additional forty percent (40%) will be paid when one-half the original CONTRACT amount is earned. The remaining ten percent (10%) will be paid upon final acceptance of the PROJECT. The total amount for mobilization will not exceed five percent (5%) of the total bid.

<u>Bid Item</u>	<u>Pay Unit</u>
MOBILIZATION	LS

- BID ITEM 22. **FLAGGING**
- BID ITEM 23. **TRAFFIC CONTROL INSPECTION**
- BID ITEM 24. **TRAFFIC CONTROL MANAGEMENT**
- BID ITEM 25. **BARRICADE (TYPE 3 M-B) (TEMPORARY)**
- BID ITEM 26. **CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)**
- BID ITEM 27. **CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)**
- BID ITEM 28. **PORTABLE MESSAGE SIGN PANEL**
- BID ITEM 29. **DRUM CHANNELIZING DEVICE**
- BID ITEM 30. **DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)**
- BID ITEM 31. **TRAFFIC CONE**

Refer to CDOT Standard Specifications, current edition, Section 630.17 and 630.18 (attached to these specifications) for measurement and payment of these items.

<u>Bid Item</u>	<u>Pay Unit</u>
FLAGGING	HOUR
TRAFFIC CONTROL INSPECTION	DAY
TRAFFIC CONTROL MANAGEMENT	DAY
BARRICADE (TYPE 3 M-B) (TEMPORARY)	EA
CONSTRUCTION TRAFFIC SIGN (PANEL SIZE A)	EA
CONSTRUCTION TRAFFIC SIGN (PANEL SIZE B)	EA
PORTABLE MESSAGE SIGN PANEL	EA
DRUM CHANNELIZING DEVICE	EA
DRUM CHANNELIZING DEVICE (WITH LIGHT) (STEADY BURN)	EA
TRAFFIC CONE	EA

BID ITEM 32. **FENCE (PLASTIC)**

The measurement for payment for this item will be the actual number of linear feet of orange plastic construction fence placed in accordance with the DRAWINGS and SPECIFICATIONS or as otherwise directed by the ENGINEER. The unit price will include all of the CONTRACTOR's costs. This BID item includes, but is not limited to:

- Providing and installing plastic construction fence
- Removing, upon approval
- Providing all other related and necessary labor, equipment, and materials to complete the WORK

Payment will be based on units completed and accepted.

<u>Bid Item</u>	<u>Pay Unit</u>
FENCE (PLASTIC)	LF

SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

DESCRIPTION

630.01 This work consists of furnishing, installing, moving, maintaining, and removing temporary traffic signs, advance warning arrow panels, flashing beacon (portable), barricades, channelizing devices, delineators, temporary traffic signals, temporary portable rumble strips, mobile pavement marking zones, temporary emergency pull-off areas, masking and unmasking existing signs in construction zones, concrete barriers, and Automated Flagging Assistance Devices (AFAD) as required by the Manual on Uniform Traffic Control Devices for Streets and Highways and the Colorado Supplement thereto, per the Contract. Devices shall comply with the performance criteria contained in NCHRP Report 350 (only applicable for devices developed before 2011) or Manual for Assessing Safety Hardware (MASH) (acceptable for all devices). Devices temporarily not in use shall, as a minimum, be removed from the shoulder area. Moving will include devices removed from the project and later returned to use.

This work also includes Traffic Control Management, flagging, and pilot car operation.

This work consists of providing traffic pacing operation to motorists within the project area, as shown on the plans. It includes locating traffic related incidents, providing roadside assistance, and clearing the traffic related incidents. The use of law enforcement officers shall be integrated into the Rolling Roadblock operations.

MATERIALS

630.02 Signs and Barricades. Construction traffic sign and barricade materials shall conform to the applicable portions of Section 614 with the following exception: Sign panels may be fabricated from plywood, aluminum, steel, or other suitable materials provided they are stable and durable enough to meet the other requirements of Section 614. Traffic control devices deemed inadequate by the Engineer shall not be used and shall be removed from the project site.

Temporary sign support assembly shall be timber, perforated square metal tubing inserted into a larger base post or slip base, or perforated metal U-channel with a slip base. The temporary sign support assembly shall conform to NCHRP (only applicable for sign support assemblies developed before 2011) or MASH (acceptable for all sign support assemblies), and AASHTO requirements regarding temporary sign supports during construction.

If U-Channel posts with a slip base are selected, they shall be used only in multi-post applications, as shown on Standard Plan S-630-4.

Retro-reflective sheeting shall conform to the requirements of subsection 713.04.

Retro-reflective sheeting types shall be as defined in the *CDOT Retroreflective Sheeting Materials Guide*.

Retro-reflective sheeting shall be one of the types specified for the particular application in Table 630-1.

Retro-reflective sheeting for all signs requiring an orange background shall be Fluorescent.

The TCS shall be present throughout the rolling roadblock operation. Two-way radios shall be provided for constant communication between the Engineer, the TCS, and law enforcement personnel.

METHOD OF MEASUREMENT

630.17 Quantities to be measured for construction traffic control devices shall be the number of units of the various sizes and descriptions listed below.

**Table 630-7
SIZING FOR CONSTRUCTION TRAFFIC SIGNS**

Panel Size A	Up to 9 Square Feet including Type 1 and Type 2 Barricades
Panel Size B	Over 9 to 16 Square Feet
Panel Size C	Over 16 Square Feet
Special	As shown on the plans

The total number of traffic control devices of each type on the schedule and approved subsequent modified schedules shall be the maximum number approved for payment. Traffic channelizing devices consisting of vertical panels, traffic cones, or drums will be measured by the unit.

Traffic channelizing devices consisting of vertical panels, traffic cones, or drums will be measured by the unit. Barrier (Temporary) will be measured by the linear foot. Barricades will be measured by the number used. Barricade warning lights shall be furnished as a part of this item when required by the Traffic Control Plan (TCP). Advance Warning Flashing or Sequencing Arrow Panels will be measured by the unit according to size.

Temporary Portable Rumble Strips will be measured by the actual number of strips that are used on the project.

The Flashing Beacon (Portable) will be measured as a unit complete in place. Each sign panel will be paid for under the appropriate item. The solar power system for Flashing Beacon (Portable), poles, and lockable container will not be measured and paid for separately but shall be included in the work.

The quantity to be measured for Traffic Control Management will be the number of authorized 24-hour days of active TCM performed by the TCS/TCS Trainee (Flagger) pair or another representative certified as a work site traffic control supervisor. Payment will be made for one day of Traffic Control Management regardless of the number of TCSs required to adequately control the work. An authorized 24-hour day of TCM is each calendar day active traffic control occurs per an approved MHT. This includes activities such as flagging operations, pilot car operations, and setting up or removal of construction zones, shoulder closures, lane closures or detours.

Traffic control devices that are left in place during non-working hours, including configurations such as lane closures, temporary channelization or detours, are not considered active traffic control.

The quantity to be measured for Traffic Control Inspection will be the number of authorized 24-hour days of traffic control inspection (TCI) performed by the TCS/TCS

Trainee (Flagger) pair or another representative certified as a worksite traffic control supervisor. An authorized 24- hour day of TCI is each calendar day that traffic control devices, as shown in the MHT are in use, masked, or turned away from traffic on the project, and the only traffic control activity is the inspection of traffic control devices.

Cleaning and maintaining of traffic control devices are not considered traffic control activities subsidiary to the TCM, TCI, or flagging pay items. Cleaning and maintaining devices are included in the Basis of Payment section.

Payment will be made for either Traffic Control Management or Traffic Control Inspection for each calendar day as defined above in 630.18. Payment will not be made for both pay items for the same calendar day.

Work on a night shift that begins before midnight and ends after midnight will be measured by the calendar day that the shift ends.

The quantity to be measured for flagging will be the total number of actual flagging hours that are used as authorized per an approved MHT. Payment will not be made for time spent by flaggers to set up and take down construction traffic control devices. Payment will not be made for additional flaggers necessary to cover flagger break times and shall be included in the cost of the work.

The quantity to be measured for pilot car operation will be the total number of hours that pilot car operation is used as authorized. Hours of flagging and hours of pilot car operation in excess of those authorized shall be at the Contractor's expense.

Emergency Pull-Off Area (Temporary) will be measured by the actual number of pull-off areas that are constructed, maintained, and removed.

When the Contract provides payment for Mobile Pavement Marking Zone on a lump sum basis, it will not be measured but will be paid for as a single lump sum upon satisfactory completion of the work associated with this item.

When the Contract provides payment for Mobile Pavement Marking Zone by the day, it will be measured as the actual number of days that Mobile Pavement Marking Zone is utilized in the project.

AFADs will be measured per device. While an AFAD is in operation, the operating flagger shall not perform other flagging duties except as outlined in Method 2 as defined in Subsection 630.14 and MUTCD Chapter 6. The operator flagger for the AFAD is not paid for separately but included in the cost of the work.

Rolling Roadblock Operation will be measured as the actual number of hours that this operation is used. If measured by the day, Rolling Roadblock Operation will be measured as the actual number of days, or part of, that this operation is used.

Temporary VMS signing will be measured and paid for per Section 630.02.

Emergency Pull-Off Area (Temporary) will be measured by the actual number of pull-off areas that are constructed, maintained, and removed.

When the Contract provides payment for Mobile Pavement Marking Zone on a lump sum basis, it will not be measured but will be paid for as a single lump sum upon satisfactory completion of

the work associated with this item. When the Contract provides payment for Mobile Pavement Marking Zone by the day, it will be measured as the actual number of days that Mobile Pavement Marking Zone is utilized in this project.

AFADs will be measured per device. While an AFAD is in operation, the operating Flagger shall not perform other flagging duties except as outlined in Method 1 as defined in Subsection 630.14 and MUTCD Chapter 6.

Rolling Roadblock Operation will be measured as the actual number of hours that this operation is used. If measured by the day, Rolling Roadblock Operation will be measured as the actual number of days, or part of, that this operation is used.

Temporary VMS signing will be measured and paid for per Section 630.

BASIS OF PAYMENT

630.18 Payment for the individual traffic control devices necessary to complete the work shall be full compensation for furnishing, erecting, cleaning, maintaining, resetting, repairing, replacing, moving, removing, and disposing of the construction traffic control devices. All construction traffic control devices that are not permanently incorporated into the project will remain the property of the Contractor.

Construction traffic control devices, as determined by the project Traffic Control Plan (TCP), will be paid for as follows: 50 percent of the accepted amount upon first utilization, an additional 40 percent of the accepted amount when 75 percent of the original contract amount has been earned, and the final 10 percent when the project has been completed per subsection 105.21, exclusive of any maintenance periods. The percent of original contract amount earned will be determined by comparing the amount earned for bid items, other than traffic control devices and mobilization, with the original contract amount minus the amounts bid for traffic control devices and mobilization.

The accepted quantities will be paid for at the contract unit price for each of the pay items listed below that appear in the bid schedule.

Payment will be made under:

Pay Item	Pay Unit
Construction Traffic Sign (Panel Size ___)	Each
Construction Traffic Sign (Special)	Square Foot
Vertical Panel	Each
Vertical Panel (With Light) (Flashing)	Each
Vertical Panel (With Light) (Steady Burn)	Each
Advance Warning Flashing or Sequencing	
Arrow Panel (___Type)	Each
Drum Channelizing Device	Each
Traffic Cone	Each
Tubular Marker	Each
Channelizing Device (Fixed)	Each
Barrier (Temporary)	Linear Foot
Delineator (Type___) (Temporary)	Each
Barricade (Type___) (Temporary)	Each
Traffic Control Management	Day
Traffic Control Inspection	Day
Flagging	Hour
Pilot Car Operation	Hour
Flashing Beacon (Portable)	Each
Traffic Signal (Temporary)	Lump Sum
Mobile Pavement Marking Zone	Lump Sum
Emergency Pull Off Area (Temporary)	Each
Mobile Pavement Marking Zone	Day
Stackable Vertical Panel	Each
Stackable Tubular Marker	Each
Temporary Portable Rumble Strips	Each
Automated Flagging Assistance Device	Each
Automated Flagging Assistance Device	Day
Rolling Roadblock	Day
Rolling Roadblock	Hour

Construction Traffic Sign (Special) is a project specific sign indicated on the Schedule of Construction Traffic Control Devices.

When Traffic Control Management and Traffic Control Inspection are not pay items, Traffic Control Management will not be paid for separately, but shall be included in the work.

Flagger hand devices will not be measured and paid for separately but shall be included in the work.

Cost of electrical power, including batteries, for all temporary lighting or warning devices shown on the TCP will not be paid for separately but will be considered subsidiary to the item.

Temporary masking signs, including the covering materials and fastening devices, will not be measured and paid for separately but shall be included in the work.

The Contractor may provide larger construction traffic signs than those shown on the plans, if approved; however, payment will be made for the panel size designated.

If the Contractor fails to complete construction within the approved contract time, Payment will not be made for the use of Section 630 pay items for the period of time after expiration of the approved contract time. These items shall be provided at the Contractor's expense.

Cleaning and patching of the roadway after removal of the Channelizing Device (Fixed) will not be paid for separately but shall be included in the work.

Placement, unmasking, removal and masking of reduced speed limit signs and double fines signs, will not be measured and paid for separately but shall be included in the work.

Preparation and implementation of the Traffic Management Plan will not be measured and paid for separately, but shall be included in the work, except for public information services that will be measured and paid for per Section 626 as revised for this project.

Traffic Control Management, vehicles, traffic control devices, and all other work, materials and equipment necessary for the mobile pavement marking zone will not be measured and paid for separately but shall be included in the work.

Flagging required for the mobile pavement marking zone will be measured and paid for separately.

Payment for Emergency Pull-off Area (Temporary) will be full compensation for all work, materials, and equipment necessary to construct, maintain and remove the emergency pull-off area including: HMA or PCCP required for constructing the temporary pull-off area; temporary concrete barriers, impact attenuators and other traffic control devices; construction signing; and maintaining the temporary pavement.

Payment for Temporary Portable Rumble Strips will be full compensation for all work and material required to complete the item including: cleaning the roadway surface, installing the rumble strip, maintaining the strip through the duration of each day's use (including cleaning and resetting of the strip if it slides), removal at the end of each workday, and final removal. Signing required for the rumble strip will be measured and paid for under the construction signing items.

Construction signing will be measured and paid for under the appropriate construction signing items.

Portable Variable Message Signs (VMS) will be measured and paid for per the project special provision, Revision of Section 630, Portable Message Sign Panel.

Traffic control officers and vehicles will be paid for per the project special provision, Revision of Section 630, Uniformed Traffic Control.

Flaggers will be paid for under Pay Item 630, Flagging.

Two-way radios will not be measured and paid for separately but shall be included in the work.

Temporary concrete barrier walls, if required, will not be measured and paid for separately but shall be included in the work.

**SECTION 01 31 00
PROJECT MEETINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. **Pre-Construction Conference.** A Pre-Construction Conference will be held after Notice of Award and before the Notice to Proceed; the date, time and location will be determined after Notice of Award.

The conference will be attended by:

1. CONTRACTOR and CONTRACTOR's Superintendent
2. CONTRACTOR's Subcontractors
3. ENGINEER
4. OWNER
5. Others as requested by CONTRACTOR, OWNER, or the ENGINEER.

Unless previously submitted to OWNER, CONTRACTOR shall bring to the conference a tentative construction schedule, including delivery dates for SHOP DRAWINGS and other submittals.

The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda will include discussion on:

1. CONTRACTOR's tentative schedule
2. Permit applications and submittals, including 401 Permit, Erosion and Sediment Control Plan, and Traffic Control Plan
3. Transmittal, review, and distribution of CONTRACTOR's submittals
4. Processing applications for payment
5. Maintaining record documents
6. Critical work sequencing
7. Field decision and change orders
8. Use of premises, office and storage areas, staging area, security, housekeeping, and OWNER's needs
9. CONTRACTOR's assignment of safety and first aid

- B. **Construction Progress Meetings.** Progress meetings will be conducted weekly or at some other frequency, as approved by ENGINEER. These meetings will be attended by OWNER, ENGINEER, CONTRACTOR's representative and any others invited by these people.

ENGINEER shall conduct the meeting and arrange for keeping the minutes and distributing the minutes to all persons in attendance.

The agenda of these project meetings will include discussion on construction progress, schedule updates, the status of submittal reviews, the status of information requests, critical work sequencing, review of strategies for connections into existing facilities, status of field orders and change orders, and any general business.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 32 00
CONSTRUCTION SCHEDULES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. **Format and Submissions.** CONTRACTOR shall prepare a detailed construction schedule in a graphic format suitable for displaying scheduled and actual progress, and submit four (4) copies of each schedule to ENGINEER at the preconstruction conference for review and comment. ENGINEER shall return one copy to CONTRACTOR with revisions suggested or necessary for coordination of the WORK.

The construction schedule must show the complete WORK sequence by activity and location; the dates for the beginning and completion of major task items; and the projected percentage of completion for each item as of the first day of the month.

CONTRACTOR may be required to include a critical path schedule for SHOP DRAWINGS, tests, and other submittal requirements for equipment and materials and show the delivery status of critical and major items of equipment and materials.

- B. **Construction Schedule Revisions.** CONTRACTOR shall submit a revised construction schedule when changes occur, when requested by OWNER or ENGINEER, and with each application for partial payment. The revised construction schedule must show changes that occurred since the previous submission, including the actual progress of each item to date, and revised projections of progress and completion.

CONTRACTOR shall provide a narrative report, as needed, to define anticipated problems and their effects on the schedule, recommended corrective actions, and the effect of changes on schedules of others.

- C. **ENGINEER's Responsibility.** ENGINEER's review is only for the purpose of checking conformity with the CONTRACT DOCUMENTS. This review does not relieve CONTRACTOR from any responsibility to determine the means, methods, techniques, sequences and procedures of construction as provided in the CONTRACT DOCUMENTS.
- D. **ENGINEER's Responsibility.** ENGINEER's review is only for the purpose of checking conformity with the CONTRACT DOCUMENTS. This review does not relieve CONTRACTOR from any responsibility to determine the means, methods, techniques, sequences and procedures of construction as provided in the CONTRACT DOCUMENTS.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 33 00
SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements

1. Where required by the SPECIFICATIONS, CONTRACTOR shall submit descriptive information that will enable ENGINEER to determine whether CONTRACTOR's proposed materials, equipment, and work methods are in general conformance to the design concept and in accordance with the DRAWINGS and SPECIFICATIONS. The information submitted may consist of drawings, specifications, descriptive data, certificates, samples, test results, product data, and such other information, all as specifically required in the DRAWINGS and SPECIFICATIONS. In some instances, specified submittal information describes some, but not all features of the material, equipment, or work method.
2. CONTRACTOR shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment, or work method shall be as described in the submittal. CONTRACTOR shall verify that all features of all products conform to the requirements of the DRAWINGS and SPECIFICATIONS. CONTRACTOR shall ensure that there is no conflict with other submittals and notify ENGINEER in each case where its submittal may affect the work of another contractor or OWNER. CONTRACTOR shall ensure coordination of submittals among the SUBCONTRACTOR(s).
3. ENGINEER shall review submittals for overall design intent and return to CONTRACTOR with suggested or necessary revisions. It shall be the CONTRACTOR's responsibility to destroy documents that are superseded by a resubmittal.
4. It shall be CONTRACTOR's responsibility to ensure that required items are corrected and resubmitted. Any WORK done before approval shall be at CONTRACTOR's own risk.

B. Submittal Procedure

1. Electronic copies of each submittal and sample are required which will be retained by ENGINEER. CONTRACTOR shall receive electronic copies in return.
2. Submittals that are related to or affect each other must be forwarded simultaneously as a package to facilitate coordinated review. Uncoordinated submittals will be rejected.
3. If the items or system proposed are acceptable but the major part of the individual drawings or documents are incomplete or require revision, the submittal will be returned with requirements for completion.
4. The right is reserved for ENGINEER to require submittals in addition to those called for in individual sections.
5. Submittals regarding material and equipment must be presented directly to ENGINEER and be accompanied by a transmittal form. A separate form must be used for each specific item, class of material, equipment, and items specified in separate SPECIFICATIONS for which the submittal is required. Submittals for various items must be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

6. A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted.
7. If CONTRACTOR proposes to provide materials, equipments, or work methods that deviate from the DRAWINGS and SPECIFICATIONS, it must be so indicated under "deviations" on the transmittal form accompanying the submittal copies.
8. Submittals that do not have all the information required, including deviations, are not acceptable and will be returned without review.

C. Review Procedure

1. Submittals are required for those materials, equipment, and work methods that can be selected based on CONTRACTOR's judgment of their conformance to the DRAWINGS and SPECIFICATIONS. Other materials, equipment, and work methods are specified in a manner that enables CONTRACTOR to determine acceptable options without submittals. The review procedure is based on CONTRACTOR's guarantee that all materials, equipment and work methods not requiring submittals conform to the DRAWINGS and SPECIFICATIONS. Review will not extend to means, methods, techniques, sequences, or procedures of construction or to verifying quantities, dimensions, weights or gages, or fabrication processes (except where specifically indicated or required by the DRAWINGS and SPECIFICATIONS) of separate items, and as such, will not indicate approval of the assembly in which the item functions.
2. Unless otherwise specified, ENGINEER shall review the submittal and return copies with comments/required actions within fourteen (14) calendar days after receipt of the submittal. The returned submittal will indicate one of the following:
 - a. If the review determines that the material, equipment, or work method complies with the DRAWINGS and SPECIFICATIONS, submittal copies will be marked "NO EXCEPTIONS TAKEN." In this event, CONTRACTOR may begin to implement the work method or incorporate the material or equipment covered by the submittal.
 - b. If the review determines limited corrections are required, copies will be marked "FURNISH AS NOTED." CONTRACTOR may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. Where submittal information will be incorporated in Operation and Maintenance data, a corrected copy shall be provided.
 - c. If the review indicates that the submittal is insufficient or contains incorrect data, copies will be marked "REVISE AND RESUBMIT." Except at its own risk, CONTRACTOR shall not undertake WORK covered by this submittal until it has been revised, resubmitted, and returned marked either "NO EXCEPTIONS TAKEN" or "FURNISH AS NOTED."
 - d. If the review indicates that the material, equipment, or work method does not comply with the SPECIFICATIONS, copies of the submittal will be marked "REJECTED." Submittals with deviations that have not been identified clearly may be rejected. Except at its own risk, CONTRACTOR shall not undertake the WORK covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "FURNISH AS NOTED."

D. SHOP DRAWINGS

1. CONTRACTOR shall coordinate all SHOP DRAWINGS as defined in Sub-Section 702, and review them for legibility, accuracy, completeness, and compliance with CONTRACT requirements and shall indicate this approval thereon as evidence of such coordination and review.

SHOP DRAWINGS submitted to ENGINEER without evidence of CONTRACTOR's approval will be returned for resubmission.

2. SHOP DRAWINGS must be clearly identified with the PROJECT name and PROJECT number, and references to applicable DRAWINGS and SPECIFICATIONS. When catalog pages are submitted, applicable items must be clearly identified.
3. CONTRACTOR shall stamp approval on SHOP DRAWINGS prior to submission to ENGINEER as an indication that dimensions and coordination with interrelated items have been checked and verified. Stamp must read:

"(CONTRACTOR's Name) represents that we have determined and verified all field dimensions and measurements, field construction criteria, materials, catalog numbers and similar data, and that we have checked with the requirements of the DRAWINGS and SPECIFICATIONS, the CONTRACT DOCUMENTS, and GENERAL CONTRACT CONDITIONS".

CONTRACTOR's comments on SHOP DRAWINGS should not be in red ink. Any comments by CONTRACTOR must be duplicated on all copies submitted.

4. If SHOP DRAWINGS show variations from CONTRACT requirements, CONTRACTOR shall describe such variations in writing, separate from the SHOP DRAWINGS, at time of submission. **All such variations must be approved by ENGINEER.** If ENGINEER approves any such variations, an appropriate contract modification may be issued unless the variation is minor and does not involve a change in price or in time of performance.
 5. Should CONTRACTOR propose any item on the SHOP DRAWINGS or incorporate an item into the WORK which subsequently proves to be defective or otherwise unsatisfactory, (regardless of ENGINEER's preliminary review) CONTRACTOR shall, at CONTRACTOR's own expense, replace the item with another item that will perform satisfactorily.
- E. **Certificates.** For those items called for in individual sections, CONTRACTOR shall furnish four (4) certificates of compliance from manufacturers or suppliers certifying that materials or equipment being furnished comply with the requirements of these DRAWINGS and SPECIFICATIONS.
- F. **Samples.** Samples must be sufficient in size to clearly illustrate functional characteristics and full range of color, texture, and pattern.
- G. **Effect of Review of CONTRACTOR's Submittals.** Review of SHOP DRAWINGS, data, work methods, or information regarding materials or equipment CONTRACTOR proposes to provide will not relieve CONTRACTOR of the responsibility for errors therein and will not be regarded as an assumption of risks or liability by ENGINEER, ENGINEER or OWNER, or by any officer or employee thereof; and CONTRACTOR shall have no claim under the CONTRACT on account of the failure or partial failure of the work methods, materials, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "FURNISH AS NOTED" will mean that OWNER has no objection to CONTRACTOR, upon its own responsibility, using the work method proposed, or providing the materials or equipment proposed.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 42 00
STANDARD REFERENCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, will mean the latest standard specification, manual, code, or laws or regulations in effect at the time of opening of BID(s), except as may be otherwise specifically stated. However, no provision of any referenced standard, specification, manual, or code (whether or not specially incorporated by reference in the CONTACT DOCUMENTS) will be effective to change the duties and responsibilities of OWNER, CONTRACTOR, or ENGINEER, or any of their consultants, agents or employees from those set forth in the CONTRACT DOCUMENTS, nor will it be effective to assign to ENGINEER or any of ENGINEER's consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or performance of the WORK.

Whenever used in the CONTRACT DOCUMENTS, the following abbreviations will have the meanings listed:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AISC	American Iron and Steel Institute
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute, Inc.
AREMA	American Railway Engineering and Maintenance-of-Way Association
ASCE	American Society of Civil Engineers
ASTM	American Society of Testing and Materials
BOCA	Building Officials and Code Administrators
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DIPRA	Ductile Iron Pipe Research Associations
EPA	Environmental Protection Agency

FEDSPEC	Federal Specifications
FEDSTDS	Federal Standards (see FEDSPEC)
ICBO	International Conference of Building Officials
MILSPEC	Military Specifications
NIST	National Institute of Standards and Technology
NPC	National Plumbing Code
NSC	National Safety Council
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PS	Products Standards Section - U.S. Depart. of Commerce
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TCA	Title Council of America
UBC	Uniform Building Code
UL	Underwriter's Laboratory
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 45 00
INSPECTION AND MATERIALS TESTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. CONTRACTOR shall provide such equipment and facilities as are required for conducting field tests and for collecting and forwarding samples. No materials or equipment represented by samples are to be used until tests, if required, have been made and the materials or equipment are found to be acceptable. Any product which becomes unfit for use after approval thereof shall not be incorporated into the WORK.
- B. Tests will be made by an accredited testing laboratory selected by OWNER. Except as otherwise provided, sampling and testing of all materials and the laboratory methods and testing equipment will be in accordance with the latest standards and tentative methods of the ASTM and the AASHTO.
- C. Where additional or specific information concerning testing methods, sample sizes, etc., is required, such information is included under the applicable sections of the SPECIFICATIONS. Any modification of, or elaboration on, these test procedures which may be included for specific materials under their respective sections in the SPECIFICATIONS will take precedence over these procedures.

1.02 OWNER'S RESPONSIBILITIES

OWNER shall be responsible for and shall pay all costs in connection with the following testing:

- Materials delivered to the site, not otherwise required by the SPECIFICATIONS

1.03 CONTRACTOR'S RESPONSIBILITIES

In addition to those inspections and tests called for in the GENERAL CONTRACT CONDITIONS, CONTRACTOR shall also be responsible for and shall pay all costs in connection with testing required for the following:

- Soils compaction (3 Total Tests)
- Trench backfill (1 Test at roadway crossing)
- Pipe and structural bedding (1 Test)
- Gradation for embedment, fill, and backfill materials (2 Total Tests, 1 for backfill and 1 for base course)
- All performance and field testing specifically called for by the SPECIFICATIONS
- All retesting for WORK or materials found defective or unsatisfactory, including tests covered under 1.02 above

1.04 TRANSMITTAL OF TEST REPORTS

Written reports of tests and engineering data furnished by CONTRACTOR for ENGINEER'S review of materials and equipment proposed to be used in the WORK must be submitted as specified for SHOP DRAWINGS.

The testing laboratory retained by OWNER will furnish three (3) copies of a written report of each test performed by laboratory personnel in the field or laboratory. Two (2) copies of each test report will be transmitted to ENGINEER and one (1) copy to CONTRACTOR within ten (10) days after each test is completed.

1.05 INSPECTION

- A. **General.** OWNER, through its assigned ENGINEER shall inspect the WORK as the WORK progresses. The purpose of the inspection activity is to try to determine on an on-going basis whether or not CONTRACTOR's WORK is adequate to provide the product as well as the quality of product for which OWNER contracted. Whether or not the WORK or any part of the WORK is defective will be determined by comparing it to the DRAWINGS and SPECIFICATIONS, supplemental DRAWINGS and SPECIFICATIONS and further measuring it against the standard of quality implied by CONTRACTOR's warranty. Also, should the appearance and performance of any element of the WORK fail to conform to standards of the trade for such WORK, that WORK may be declared defective.

All materials and equipment used in the construction of the PROJECT will be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS. CONTRACTOR shall provide, at CONTRACTOR's expense, the testing and inspection services required by the CONTRACT DOCUMENTS.

Should the WORK fail to meet the requirements of any the SPECIFICATIONS, as determined by testing performed by OWNER, CONTRACTOR shall take steps to meet the requirements and OWNER shall then retest to determine compliance with the SPECIFICATIONS. CONTRACTOR shall be responsible for the cost of the retest and such cost shall be deducted from the next progress payment to CONTRACTOR.

If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any WORK specifically to be inspected, tested, or approved by someone other than CONTRACTOR, CONTRACTOR shall give OWNER timely notice of readiness. CONTRACTOR shall then furnish OWNER the required certificates of inspection, testing, or approval.

Inspections, tests, or approvals will not relieve CONTRACTOR from its obligation to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS and to also inspect CONTRACTOR's own WORK.

- B. **Access to WORK.** OWNER, ENGINEER, and their representatives shall at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal, State, or local agency shall be permitted to inspect all WORK, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. CONTRACTOR shall provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

If any WORK is covered contrary to the written instructions of ENGINEER or OWNER it must, if requested by ENGINEER or OWNER, be uncovered for observation and replaced at CONTRACTOR's expense.

If ENGINEER or OWNER considers it necessary or advisable that covered WORK be inspected or tested by others, CONTRACTOR, at ENGINEER's or OWNER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing, as ENGINEER or OWNER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing, and of satisfactory reconstruction. If, however, such WORK is not found to be defective, CONTRACTOR shall be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction; and an appropriate CHANGE ORDER shall be issued.

- C. **Observable Defects.** Observable defects are those that are discoverable by routine testing and inspection procedures or by implementing special tests as required or implied by the SPECIFICATIONS. Defects discovered by the inspection process must be repaired or removed by CONTRACTOR as these are identified.
- D. **Latent Defects.** Materials and equipment incorporated into the WORK may have or, as a result of the construction process, may develop hidden defects. Such defects will be known as latent defects; and CONTRACTOR shall guarantee that such latent defects, when discovered, will be remedied at no extra cost to OWNER.
- E. **Correction of WORK.** CONTRACTOR shall promptly remove from the premises all WORK rejected by ENGINEER or OWNER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to OWNER and shall bear the expense of making good all WORK of other contractors destroyed or damaged by such removal or replacement.

All removal and replacement WORK shall be done at CONTRACTOR's expense. If CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, OWNER may remove such WORK and store the materials at the expense of CONTRACTOR.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 55 26
TRAFFIC REGULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

CONTRACTOR shall:

- A. Conform to the Manual of Uniform Traffic Control Devices (U.S. Department of Transportation) or applicable statutory requirements of authority having jurisdiction. Summit County requirements take precedence over the Manual of Uniform Traffic Control Devices. Operations on or about traffic areas and provisions for regulating traffic will additionally be subject to the regulation of other governmental agencies having jurisdiction over the affected areas.
- B. Keep traffic areas free of excavated material, construction equipment, pipe, and other materials and equipment.
- C. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
- D. Conduct operations in a manner to avoid unnecessary interference with public and private roads and drives and provide and maintain temporary access for businesses and residences.

1.02 TRAFFIC CONTROL PLAN

If a Traffic Control Plan is provided in the DRAWINGS and SPECIFICATIONS it shall be used by CONTRACTOR or CONTRACTOR shall submit an alternate Traffic Control Plan for approval by OWNER. Adjustments to the approved plan may be required by OWNER based on actual traffic operations.

1.03 FLAGGERS

Flaggers may be required to provide for public safety or the regulation of traffic, or by jurisdictional authorities; and if used, shall be properly equipped and certified by ATSSA.

1.04 WARNING SIGNS AND BARRICADES

- A. Warning signs and barricades must be approved by ENGINEER and must be provided for the following:
 - 1. Open trenches and other excavations;
 - 2. Obstructions, such as material piles, equipment (moving or parked), and piled embankment;
 - 3. Protection of roads and driveways.
- B. Warning signs and barricades must be illuminated by means of warning lights from sunset to sunrise.

1.05 PARKING

CONTRACTOR, with the approval of OWNER, shall designate parking areas for the use of all construction workers and others performing work or furnishing services in connection with the PROJECT so as avoid interference with public traffic, OWNER's operations, or construction activities.

1.06 ROADWAY USAGE BETWEEN OPERATIONS

At all times, CONTRACTOR shall make passable and shall open to traffic such portions of the PROJECT and temporary roadways or portions thereof as may be agreed upon between CONTRACTOR and OWNER and all authorities having jurisdiction over any properties involved.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 65 00
MATERIAL DELIVERY, STORAGE, AND HANDLING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Equipment, materials, and supplies will be shipped, handled, stored, and installed in ways which will prevent damage to the items. All equipment, materials, and supplies to be incorporated in the WORK will be new, unless otherwise specified. All equipment, materials, and supplies will be produced in a good and workmanlike manner. When the quality of a material, process, or article is not specifically set forth in the PLANS and SPECIFICATIONS, the best available quality of the material, process, or article will be provided. Damaged items will not be permitted as part of the work except in cases of minor damage that have been satisfactorily repaired and are acceptable to the ENGINEER.

- B. Pipe and appurtenances will be handled, stored, and installed as recommended by the manufacturer. Pipes with paint, tape coatings, linings or the like will be stored to protect the coating or lining from physical damage or other deterioration. Pipe shipped with interior bracing will have the bracing removed only when recommended by the pipe manufacturer.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 71 00
SITE CONDITIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. CONTRACTOR acknowledges full understanding of the nature and location of the WORK; the general and local conditions; access to the site; handling, storage, and disposal of materials; availability of water, electricity and roads; uncertainties of weather, drainage, groundwater, flooding, river stages, or similar physical conditions at the site; the conformation and conditions of the ground; the equipment and facilities needed to execute the WORK; and all other matters which can in any way affect the WORK or the cost thereof under this CONTRACT.
- B. CONTRACTOR further acknowledges an understanding of the character, quality, and quantity of surface and subsurface materials to be encountered from inspection of the site and from reviewing any available records of exploratory work furnished by OWNER or included in these CONTRACT DOCUMENTS. Failure by CONTRACTOR to be familiar with the physical conditions of the site and all the available information will not relieve CONTRACTOR from the responsibility of properly estimating the difficulty or cost of successfully performing the WORK.
- C. CONTRACTOR warrants that, as a result of examination and investigation of all the aforesaid data, CONTRACTOR can perform the WORK to the satisfaction of OWNER. OWNER assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of this CONTRACT, unless (1) such representations are expressly stated in the CONTRACT, and (2) the CONTRACT expressly provides that the responsibility is assumed by OWNER.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 INFORMATION ON SITE CONDITIONS

Any information obtained by ENGINEER regarding site conditions, subsurface information, groundwater elevations, existing construction of site facilities, and similar data will be available for inspection, as applicable, at the office of ENGINEER upon request. Such information is offered as supplementary information only. Neither ENGINEER nor OWNER assumes any responsibility for the completeness or interpretation of such supplementary information.

A. Differing Subsurface Conditions

- 1. In the event that the subsurface or latent physical conditions are found materially different from those indicated in the CONTRACT DOCUMENTS and from those ordinarily encountered and generally recognized as inherent in the character of WORK covered in these CONTRACT DOCUMENTS, CONTRACTOR shall promptly, and before such conditions are disturbed, notify ENGINEER in writing of such changed conditions.
- 2. ENGINEER shall investigate such conditions promptly and, following this investigation, CONTRACTOR shall proceed with the work, unless otherwise instructed by ENGINEER. If ENGINEER finds that such conditions are materially different and cause an increase or decrease in the cost of or in the time required for performing the WORK, ENGINEER shall recommend to OWNER the amount of adjustment in cost and time ENGINEER considers reasonable. OWNER shall make the final decision on all CHANGE ORDERS to the CONTRACT regarding any adjustment in cost or time for completion.

- B. **Underground Utilities.** Known utilities and structures adjacent to or encountered in the WORK are shown on the DRAWINGS. The locations shown are taken from existing records and the best information available from existing utility plans; however, it is expected that there may be some discrepancies and omissions in the locations and quantities of utilities and structures shown. Those shown are for the convenience of CONTRACTOR only, and no responsibility is assumed by either OWNER or ENGINEER for their accuracy or completeness.

3.02 UTILITIES AND SERVICES

- A. Where CONTRACTOR's operations could cause damage or inconvenience to railway, communications, telephone, television, oil, gas, electricity, water, sewer, irrigation, or any other utilities or services, CONTRACTOR's operations shall be suspended until all arrangements necessary for the protection of these utilities and services have been made by CONTRACTOR.
- B. CONTRACTOR shall notify all utility and service providers that are affected by the construction operation at least 48 hours in advance. Under no circumstances shall CONTRACTOR expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, CONTRACTOR shall locate, expose, and provide temporary support for all existing underground utilities.
- C. CONTRACTOR shall protect all utility poles from damage. If interfering utility poles, guy wires, or anchors are encountered, CONTRACTOR shall notify ENGINEER and the appropriate utility provider at least 48 hours in advance of construction operations to permit the necessary arrangements for protection or relocation of the interfering structure.
- D. CONTRACTOR shall be solely and directly responsible to the providers of such utilities and services for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage which may result from the construction operations under this CONTRACT.
- E. Neither OWNER nor its officers or agents shall be responsible for damages as a result of CONTRACTOR's failure to protect utilities encountered in the WORK.
- F. If CONTRACTOR discovers utilities or services not identified in the DRAWINGS and SPECIFICATIONS, CONTRACTOR shall immediately notify OWNER, utility provider, and ENGINEER in writing.
- G. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, CONTRACTOR shall promptly notify the utility provider. CONTRACTOR shall cooperate with said provider in the restoration of service as promptly as possible and bear all costs of repair.
- H. CONTRACTOR shall replace, at CONTRACTOR's sole expense, any and all other existing utilities or structures removed or damaged during construction, unless otherwise provided for in these CONTRACT DOCUMENTS or ordered by ENGINEER.

3.03 EXISTING STRUCTURES

CONTRACTOR shall take necessary precautions to prevent damage to existing structures whether on the surface, above-ground, or underground. An attempt has been made to show major structures on the DRAWINGS. The completeness and accuracy cannot be guaranteed, and it is presented only as a guide to avoid known structures.

3.04 FIELD ADJUSTMENTS

Minor adjustments to the WORK may be necessary to accommodate unknown existing structures. Such adjustments shall be made only at the direction of ENGINEER. If existing structures are encountered that prevent construction, and that are not properly shown on the DRAWINGS, CONTRACTOR shall notify ENGINEER before continuing with construction in order that ENGINEER may make such field revision as necessary to avoid conflict with the existing structures. If CONTRACTOR fails to so notify ENGINEER when an existing structure is encountered, and then proceeds with the construction despite the interference, it is at CONTRACTOR's own risk.

3.05 EASEMENTS

- A. Portions of the WORK may be located on property where easements and permits have been obtained by OWNER. Copies of these easements and permits are available to CONTRACTOR upon request to OWNER. It shall be CONTRACTOR's responsibility to abide by all requirements and provisions of the easements and permits. CONTRACTOR shall confine construction operations to within the easement limits or make special arrangements with the property owners or appropriate public agency for any additional area required. Any damage to property, either inside or outside the limits of the easements provided by OWNER, shall be the responsibility of CONTRACTOR. CONTRACTOR shall remove, protect, and replace all fences or other items encountered on public or private property. Where side agreements or special easements have been made by CONTRACTOR or where CONTRACTOR's operations, for any reason, have not been kept within the construction easement obtained by OWNER, CONTRACTOR shall be required to furnish OWNER written releases from property owners or public agencies before final payment is authorized by ENGINEER.
- B. It is anticipated that the required easements and permits will be obtained before construction is started. However, should the procurement of any easement or permit be delayed, CONTRACTOR shall not enter these areas until the required easement or permit has been secured.

3.06 LAND MONUMENTS

CONTRACTOR shall notify ENGINEER of any existing federal, state, county, city, town, and private land monuments encountered. Private monuments shall be preserved or replaced by a licensed surveyor at CONTRACTOR's expense. When government monuments are encountered, CONTRACTOR shall notify ENGINEER at least two (2) weeks in advance of WORK affecting said monuments in order that ENGINEER may notify the proper authority and reference these monuments for later replacement.

END OF SECTION

**SECTION 01 71 13
MOBILIZATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

CONTRACTOR shall be responsible for all preparatory work and operations required prior to beginning WORK which include, but are not limited to, those necessary for the movement of personnel, tools, equipment, materials, supplies, and incidentals to the PROJECT site and for the establishment of all necessary facilities. Upon completion of the WORK, CONTRACTOR must remove tools, equipment, and unused materials and supplies from the PROJECT site.

1.02 QUALITY ASSURANCE

OWNER has the right to reject construction tools, equipment, materials, and supplies which are, in OWNER's opinion, unsafe, improper, or inadequate. CONTRACTOR shall bring rejected construction tools, equipment, materials, and supplies to acceptable condition or remove them from the PROJECT site.

1.03 SUBMITTALS

- A. Refer to Section 01 33 00 SUBMITTALS for submittal procedures.
- B. In accordance with Section 01 33 00 SUBMITTALS, CONTRACTOR must submit within seven (7) days after the effective date of the Notice to Proceed, a layout of the PROJECT site including fences, roads, parking, buildings, storage areas, drainage plans, temporary building layouts, and temporary utility locations.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

**SECTION 01 71 23
FIELD ENGINEERING AND SURVEYING**

PART 1 GENERAL

1.01 SECTION INCLUDES

It shall be the responsibility of the CONTRACTOR to provide construction staking for horizontal and vertical alignment of the centerline, grading, and all appurtenant features of the work, including offset lines necessary for construction. CONTRACTOR shall be responsible for staking the limits of construction.

All construction surveying provided by CONTRACTOR shall be completed under the supervision of a Colorado Registered Land Surveyor.

ENGINEER shall provide the elevations and descriptions of the original and temporary PROJECT benchmarks. Additionally the ENGINEER shall provide base files in the form of AutoCAD drawings for construction staking.

Requests by CONTRACTOR for survey reference points and benchmarks shall be made, in writing, to ENGINEER, allowing ENGINEER a minimum of 48 hours to commence such survey work as requested by CONTRACTOR. The 48-hour time period will commence from the time ENGINEER receives such written request from CONTRACTOR. The 48-hour period excludes weekend days, holidays, organized union holidays, and days where weather conditions are detrimental to ENGINEER's ability to accurately perform the requested surveys.

WORK that CONTRACTOR has done before reference points and benchmarks have been provided may be rejected. CONTRACTOR shall carefully preserve all construction stakes, reference points, and other survey points. In case of their loss or disturbance, CONTRACTOR shall be liable for the cost of their replacement by ENGINEER. Such cost will be deducted from the next progress payment to CONTRACTOR. Such cost will be reimbursed to ENGINEER by OWNER.

In addition to the construction staking necessary to perform all work within the contract, the CONTRACTOR will be responsible to provide the following staking items;

- Provide ENGINEER with as-built condition of the edge of roadway (50' spacing).

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 71 33
TREE, LANDSCAPE, VEGETATION, AND WETLAND PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

CONTRACTOR shall protect and avoid damaging existing trees, landscape, wetlands, and adjacent vegetation.

CONTRACTOR shall submit a plan for on-site haul of materials prior to construction. The plan should include points of access to and from the site and show a workable system of on-site haul routes that protect existing landscaped and wetland areas. This plan shall be submitted to ENGINEER for review and comment prior to the commencement of WORK. ENGINEER shall discuss the plan with CONTRACTOR to insure protection of existing vegetation, but shall not dictate haul routes or construction methods to CONTRACTOR.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. Protected areas shall be designated in the field, one time, by ENGINEER. Contractor shall adequately mark areas. No access of construction vehicles or workers on foot is permitted through protected areas. No material shall be stockpiled; no equipment shall be parked or repaired within these areas.
- B. Trees and vegetation to be saved that do not fall within the limits of protected areas shall be designated one time in the field by ENGINEER. CONTRACTOR shall erect fencing if there is risk of damage caused by construction operations. Vehicular and pedestrian traffic shall be limited to areas marked. Through traffic and stock piling of equipment and materials are not permitted within marked areas.
- C. No construction roads are to be created within the drip lines of any trees or other vegetation designated to be saved without approval of ENGINEER.
- D. All trees which will be preserved, but are within the limits of construction, must be protected from all damage associated with construction. A sturdy, physical barrier (florescent orange in color) must be fixed in place around each tree for the duration of construction. This barrier will be placed no closer than 6 feet from the trunk, or one-half of the drip line, whichever is greater. The barrier itself must be fixed so it cannot be moved easily; but the material can be flexible, such as orange snow fence attached to T-posts driven into the ground, and must act as an effective deterrent to deliberate or accidental damage of each tree. Actual materials and location of barrier must be approved by ENGINEER.
- E. The movement or storage of equipment, material, debris, or fill within these required protective barriers is completely prohibited.

3.02 DAMAGE TO EXISTING VEGETATION

- A. Any trees damaged during construction will be immediately repaired by an approved tree surgeon. Any tree judged by ENGINEER to be damaged beyond repair will be removed at CONTRACTOR's expense. For each tree erroneously removed or damaged beyond repair, an assessment shall be immediately withheld from CONTRACTOR's progress payments. This assessment will be equal to the value of the tree prior to damage. This assessment will be determined by a tree appraiser, selected by OWNER and paid for by CONTRACTOR. The cost for hiring the appraiser shall also be withheld from CONTRACTOR's progress payments.

- B. In addition to the paying of the assessment, CONTRACTOR shall replace each damaged tree with nursery-grown material of the same or approved species. Replacement trees shall be 2-inch caliper, balled and burlapped, and planted in accordance with the provisions outlined in these SPECIFICATIONS.
- C. CONTRACTOR shall pay an assessment if CONTRACTOR disturbs any grasses, shrubs and/or cattails located within the protected areas. The assessment will not exceed two dollars (\$2.00) per square foot of disturbance, and will be immediately withheld from CONTRACTOR's progress payments.
- D. In addition to the paying of the assessment, the damaged vegetation shall be replaced with an equal value per square foot of damage. Replacements shall be planted in accordance with the provisions outlined in these SPECIFICATIONS. Damaged cattail areas shall be replaced and then seeded with a wetland seed mix in accordance with these SPECIFICATIONS or directed by ENGINEER.

END OF SECTION

SECTION 01 74 00
ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

CONTRACTOR shall provide environmental controls consistent with regulatory requirements throughout the duration of the PROJECT as listed below. Full compensation for required compliance and cooperation is considered subsidiary to other items of WORK, and no additional compensation will be allowed.

- A. **Dust Control.** CONTRACTOR shall minimize dust from construction operations. During the performance of the WORK, whether on right-of-way provided by OWNER or elsewhere, CONTRACTOR shall furnish all the labor, equipment, and materials to control dust at all times, including evenings, holidays, and weekends. Dust control agents other than water must be approved by ENGINEER prior to use. CONTRACTOR shall prevent dust which has originated from CONTRACTOR's operations from damaging dwellings or causing a nuisance to persons. CONTRACTOR shall be liable for any damage resulting from dust originating from CONTRACTOR's operations.
- B. **Housekeeping.** CONTRACTOR shall keep the PROJECT neat, orderly, and in a safe condition at all times, and shall store and use equipment, tools, and materials in a manner that does not present a hazard. CONTRACTOR shall provide on-site containers for collection of rubbish and construction waste and dispose of it at frequent intervals during the progress of WORK, and whenever directed by ENGINEER.
- C. **Disposal**
1. All material determined by ENGINEER to be waste will be disposed of in an approved landfill in a manner meeting all regulations. CONTRACTOR shall legally dispose of waste materials at public or private dumping areas, and shall not bury wastes inside of the limits of construction. All costs for dump fees, permits, etc., will be borne by CONTRACTOR.
 2. Excess excavation will become the property of CONTRACTOR (unless otherwise specified) and must be legally disposed of by CONTRACTOR outside the limits of construction in an approved disposal site. Excess excavated material suitable for backfill will not be disposed of until all backfill operations are complete.
 3. CONTRACTOR shall immediately inform ENGINEER of any hazardous materials encountered during construction. CONTRACTOR shall legally dispose of such hazardous materials at private or public facilities.
 4. No burning will be permitted.
- D. **Water Control.** The PROJECT is subject to periodic flooding due to rainfall and snowmelt, flows from adjacent developed areas and storm water pipes, and groundwater flows from saturated soils or other groundwater sources. Refer to Section 02 24 00 for water control and dewatering requirements.

Until final acceptance of the PROJECT by OWNER, CONTRACTOR shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof from any cause, including all surface and subsurface water, whether arising from the execution or from non-execution of the WORK. CONTRACTOR shall rebuild, repair, restore, and make good all injuries or damages to any portion of the WORK due to causes beyond the control of and without the fault of negligence of CONTRACTOR, including but not restricted to high water; floods; or acts of God, of the public enemy, or of governmental authorities.

CONTRACTOR shall be responsible for the PROJECT and shall take such precautions as may be necessary to construct the PROJECT in a dry condition and provide for drainage, dewatering, and control of all surface and subsurface water and shall erect any necessary temporary structures or other facilities at CONTRACTOR's expense. CONTRACTOR is advised that the WORK is in a drainage channel subject to intermittent and extensive runoff conditions such that, unless the construction area is properly protected, localized flooding and/or extensive soil erosion may occur.

If requested, CONTRACTOR, prior to beginning any WORK, shall submit a plan for water control to ENGINEER and OWNER for review. OWNER, at OWNER's option, may require CONTRACTOR to update the water control plan.

CONTRACTOR, at CONTRACTOR's expense, shall furnish all necessary equipment and materials required to control the surface and subsurface water in all areas from start of WORK through the completion of the total PROJECT.

As part of water control, CONTRACTOR is responsible for furnishing; transporting; and installing all materials and equipment, well points, pumping, channelization, diversion, damming, or other means of controlling surface water, groundwater, runoff from other drainage tributaries, and pipe effluent as necessary to complete all of the WORK in accordance with the CONTRACT DOCUMENTS.

- E. **Water Quality Control.** CONTRACTOR shall comply with the "Colorado Water Quality Control Act", the "Protection of Fishing Streams", the "Clean Water Act", regulations promulgated, certifications issued, and the construction requirements listed below. In the event of conflicts between water quality control laws, rules, or regulations of either Federal or State government, the more restrictive laws, rules, or regulations will apply.

This WORK will consist of measures needed for the purpose of minimizing water pollution, erosion, and sedimentation during the length of the construction activity. All the practices listed below will be followed to minimize the pollution of any watercourse, wetland, or water impoundment area.

OWNER may have prepared a Stormwater Management Plan (SWMP) which has been incorporated into the CONTRACT DOCUMENTS. The SWMP includes measures for the control of erosion and sedimentation, and measures for stormwater quality management. All steps necessary will be taken by CONTRACTOR to comply with OWNER's SWMP, and other applicable standards, permit conditions, and regulations of appropriate agencies.

CONTRACTOR shall construct, operate, maintain, and remove in a safe manner all temporary erosion and sediment control features described in OWNER's SWMP. It is CONTRACTOR's responsibility to conduct the WORK in such a manner to prevent contamination of adjacent watercourses, wetlands, or any water impoundment areas.

Any diversion from, or bypass of, facilities necessary to maintain compliance with the terms and conditions contained in OWNER's SWMP is prohibited except, (1) where unavoidable to prevent loss of life or severe property damage, or (2) where excessive storm drainage or runoff would damage the facilities. If diversion or bypass of the facilities occurs, CONTRACTOR shall immediately notify OWNER of the occurrence. CONTRACTOR, at CONTRACTOR's cost, shall repair the breached or bypassed facilities.

If CONTRACTOR installs a portable concrete or asphalt plant, it is CONTRACTOR's responsibility to obtain all the necessary and required stormwater discharge and other discharge permits for such plants.

CONTRACTOR shall provide design and implementation methods for overall site stormwater quality management to prevent contaminated surface runoff from entering the waters of the State and of erosion and sediment control measures for the purpose of correcting conditions unforeseen during the design of the PROJECT, or for emergency situations that develop during construction. Measures and methods proposed by CONTRACTOR must be approved by ENGINEER prior to installation and prior to moving onto the construction site.

CONTRACTOR shall include temporary erosion and sediment control features for construction work outside the right-of-way that is necessary for borrow pits, haul roads, and equipment and material storage sites. Should the inclusion of these additional work areas cause the PROJECT to be subject to Stormwater Discharge Permit(s), it will be CONTRACTOR's responsibility to obtain all necessary permit(s).

CONTRACTOR shall prepare schedules to implement all required stormwater management features, including erosion and sediment control work, and submit them for acceptance at the preconstruction conference. The schedules for the implementation of the SWMP, including erosion and sediment control work, will include all construction activities within the PROJECT, haul roads, borrow pits, storage and plant sites, and the plan for disposal of waste material. WORK will not start until the ENGINEER has accepted these schedules.

CONTRACTOR shall continuously maintain all SWMP features so that they perform their intended function during the construction of the PROJECT and until the PROJECT is accepted. This includes the removal and storage and/or disposal of accumulated sediment.

Any construction waste or salvageable material, excavation excess material, fill material, construction equipment, toxins, fuels, lubricants, and other petroleum distillates must not be stored or stockpiled within 50 feet of the ordinary high water line of any watercourse, wetland, or water impoundment area. Equipment servicing must occur within the approved designated area. Spill prevention and containment measures must be used at all storage sites.

- F. **Noise Control.** All mechanical equipment must be equipped with the best available mufflers to reduce noise. CONTRACTOR shall be responsible for obtaining any necessary permits and shall limit noise to the permitted levels. CONTRACTOR shall perform noise level monitoring necessary to show that the permitted levels are not being exceeded. During the performance of the WORK, whether on right-of-way provided by OWNER or elsewhere, CONTRACTOR shall furnish all the labor, equipment, materials required to reduce the noise nuisance.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

DIVISION 2
SITE CONSTRUCTION

**SECTION 02 22 00
REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

This WORK consists of the removal and disposal of trees, slope and ditch protection, abandoned utility services, curbs, gutters, pipes, sidewalks, appurtenances, traffic control devices, guardrail, fences, foundations, pavements, pavement markings, and any other obstructions that are not designated or permitted to remain. It shall also include salvaging, stockpiling and loading salvable materials, sandblasting, plugging structures, cleaning culverts, and sawing and cutting to facilitate controlled breaking and removal of concrete and asphalt to a neat line. Except in areas to be excavated, the resulting trenches, holes, and pits shall be backfilled.

Materials removed and not designated to be salvaged or incorporated into the WORK shall become the property of CONTRACTOR.

1.02 RELATED SECTIONS

- A. Section 02 23 00 – Clearing and Grubbing
- B. Section 02 31 00 – Excavation and Embankment

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. **General.** CONTRACTOR shall raze, remove, and dispose of all structures and obstructions which are identified on the PROJECT, except utilities, structures and obstructions removed under other contractual agreements or as otherwise provided for in the CONTRACT DOCUMENTS, and salvable material designed to remain the property of OWNER.
- B. **Salvable Material.** All salvable material designated in the CONTRACT or by ENGINEER to remain the property of OWNER shall be removed without damage, in sections or pieces which may be readily transported, and shall be stockpiled by CONTRACTOR at specified locations within the project limits. CONTRACTOR shall safeguard salvable materials and shall be responsible for the expense of repairing or replacing damaged or missing material until it is incorporated into the work, or is loaded onto OWNER's equipment by CONTRACTOR.
- C. **Signs and Traffic Signals.** Removal of signs shall include removal of posts, footings, pedestals, sign panels, and brackets. Concrete adhering to salvageable sign posts shall be removed. Removal of sign panels shall include removal of the panel and its attachment hardware from the existing installation and adjusting the spacing of the remaining panels.

The removal of traffic signal items shall include poles, mast arms, signal heads, span wires, footings, all attachment hardware, and other incidental materials. Removal of signal poles or pedestal poles shall include pole, span wire, cable, signal heads, overhead sign support wire, footings, and pedestrian push buttons. Removal of traffic signal controller and cabinet shall include removal of the footing and all auxiliary equipment contained within the cabinet.

- D. **Pavements, Sidewalks, and Curbs.** All concrete pavements, sidewalks, structures, curbs, gutters, etc., designated for removal, shall be disposed of off-site by CONTRACTOR at CONTRACTOR's expense. Sawing of concrete and asphalt shall be done to a true line, with a vertical face, unless otherwise specified.

The minimum depth of a saw cut shall be two (2) inches. For reinforced concrete, the minimum depth shall be two (2) inches, or to the depth of the reinforcing steel, whichever occurs first.

- E. **Abandonment of Existing Sewer Facilities.** All existing sewer facilities to be plugged and abandoned in place are specifically shown on the DRAWINGS. Unless otherwise specified on the DRAWINGS, the procedures and methods for the abandonment of said facilities shall conform to the requirements set forth in the CONTRACT DOCUMENTS for that specific item. Abandonment of existing sewer facilities shall be included in this item of work unless otherwise provided for under other WORK items in the CONTRACT DOCUMENTS.

END OF SECTION

**SECTION 02 23 00
CLEARING AND GRUBBING**

PART 1 GENERAL

1.01 SECTION INCLUDES

This WORK consists of clearing, grubbing, removing, and disposing of vegetation and debris within the limits of the PROJECT site as shown on the DRAWINGS and as required by the WORK. Vegetation and objects designated to remain shall be preserved free from injury or defacement.

1.02 RELATED SECTIONS

Section 02 31 00 – Excavation and Embankment

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

OWNER shall designate all trees, shrubs, plants, and other objects to remain. Any object that is designated to remain and is damaged shall be repaired or replaced as directed by OWNER, at CONTRACTOR's expense. In general, a tree is defined as 4" diameter measured three (3) feet above the ground.

Clearing and grubbing shall extend to the toe of fill or the top of cut slopes or as designated on the DRAWINGS. All surface objects, trees, stumps, roots, and other protruding obstructions not designated to remain shall be cleared and grubbed, including mowing, as required. Undisturbed stumps, roots, and nonperishable solid objects located two feet or more below subgrade or embankment slope may remain in place. In areas to be rounded at the tops of backslopes, stumps shall be removed to at least two feet below the surface of the final slope line.

Except in areas to be excavated, all holes resulting from the removal of obstructions shall be backfilled with suitable material and compacted in accordance with Section 02 31 00.

No material or debris shall be disposed of within the project limits.

All cleared timber shall be removed from the project and shall become the property of CONTRACTOR. Branches on trees or shrubs shall be removed as directed. All trimming shall be done in accordance with good tree surgery practices.

CONTRACTOR shall scalp the areas within the excavation or embankment grading limits. Scalping shall include the removal from the ground surface of sawdust, and other vegetation matter.

END OF SECTION

**SECTION 02 23 05
TOPSOIL**

PART 1 GENERAL

1.01 SECTION INCLUDES

This WORK consists of salvaging and stockpiling topsoil, and excavating suitable topsoil from stockpiles, contractor sources, available sources, or from the approved natural ground cover to place on designated areas. It shall include the placing of topsoil upon constructed cut and fill slopes after grading operations are completed.

1.02 RELATED SECTIONS

- A. Section 02 23 00 – Clearing and Grubbing
- B. Section 02 31 00 – Excavation and Embankment

PART 2 PRODUCTS

2.01 MATERIALS

Topsoil shall consist of loose friable loam free of subsoil, refuse, stumps, roots, rocks, brush, weeds, heavy clay, hard clods, toxic substances, or other material which would be detrimental to its use on the project. Topsoil shall consist of natural on-site ground cover or hauled material from off-site sources.

Wetland topsoil material shall consist of moist organic soil, including any existing wetland vegetation and seeds, to be excavated from areas as shown on the DRAWINGS or as directed by ENGINEER.

PART 3 EXECUTION

- A. Topsoil within the limits of the PROJECT shall be salvaged prior to beginning hauling, excavating, or fill operations by excavating and stockpiling the material at designated locations in a manner that will facilitate measurement, minimize sediment damage, and not obstruct natural drainage. Imported topsoil shall be hauled to the site and stockpiled in locations designated by OWNER. Topsoil shall be placed directly upon completed cut and fill slopes whenever conditions and the progress of construction will permit.
- B. No soil stockpile shall exceed ten (10) feet in height. All soil stockpiles shall be protected from sediment transport by surface roughening, watering, and perimeter silt fencing. Any soil stockpile remaining after thirty (30) days shall be seeded and mulched.
- C. Topsoil shall be placed at locations and to the thickness provided in the CONTRACT DOCUMENTS and shall be keyed to the underlying material by the use of harrows, rollers, or other suitable equipment.

Water shall be applied to the topsoil as designated in the CONTRACT, in a fine spray by nozzles or spray bars so the topsoil areas will not be washed or eroded.

Salvaged topsoil exceeding the quantity required under the CONTRACT shall be disposed of at CONTRACTOR's expense.

Wetland topsoil material shall be excavated from designated areas to a minimum depth of eighteen (18) inches, or as otherwise designated, and placed within twenty four (24) hours in the specified area. CONTRACTOR shall prepare the relocation site to elevations specified and approved by ENGINEER prior to excavating the wetlands. If ENGINEER determines that this is not possible, then CONTRACTOR shall stockpile the material in an approved area, to remain undisturbed until the relocation site has been prepared. Storage time within the stockpile shall be as short as possible. If deemed necessary by ENGINEER, the stockpile will be protected in such a manner to preserve the wetland seed bank. Wetland topsoil material shall be placed over the prepared relocation areas to a depth of eighteen (18) inches, or as otherwise designated.

END OF SECTION

SECTION 02 24 00
WATER CONTROL AND DEWATERING

PART 1 GENERAL

1.01 SECTION INCLUDES

The WORK of this section consists of controlling groundwater, site drainage, and storm flows during construction. CONTRACTOR is cautioned that the WORK involves construction in and around drainage channels, local rivers, and areas of local drainage. These areas are subject to frequent periodic inundation.

1.02 RELATED SECTIONS

- A. Section 02 31 00 – Excavation and Embankment
- B. Section 02 32 00 – Trench Excavation and Backfill

PART 2 PRODUCTS

2.01 MATERIALS

On-site materials may be used within the limits of construction to construct temporary dams and berms. Materials such as plastic sheeting, sand bags, and storm sewer pipe may also be used if desired by CONTRACTOR.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. **General.** For all excavation, CONTRACTOR shall provide suitable equipment and labor to remove water, and shall keep the excavation dewatered so that construction can be carried on under dewatered conditions. Water control shall be accomplished such that no damage is done to adjacent channel banks or structures. CONTRACTOR is responsible for investigating and becoming familiar with all site conditions that may affect the work including surface water, potential flooding conditions, level of groundwater and the time of year the work is to be done. All excavations made as part of dewatering operations shall be backfilled with the same type material as was removed and compacted to ninety five percent (95%) of Maximum Standard Proctor Density (ASTM D698) except where replacement by other materials and/or methods are required.

CONTRACTOR shall conduct operations in such a manner that storm or other waters may proceed uninterrupted along their existing drainage courses. By submitting a bid, CONTRACTOR acknowledges that CONTRACTOR has investigated the risk arising from such waters and has prepared his bid accordingly, and assumes all of said risk.

At no time during construction shall CONTRACTOR affect existing surface or subsurface drainage patterns of adjacent property. Any damage to adjacent property resulting from CONTRACTOR's alteration of surface or subsurface drainage patterns shall be repaired by CONTRACTOR at no additional cost to OWNER.

CONTRACTOR shall remove all temporary water control facilities when they are no longer needed or at the completion of the PROJECT.

Pumps and generators used for dewatering and water control shall be quiet equipment enclosed in sound deadening devices.

- B. **Surface Water Control.** Surface water control generally falls into the following categories:
 - 1. Normal low flows along the channel
 - 2. Storm/flood flows along the channel

3. Flows from existing storm drain pipelines; and
4. Local surface inflows not conveyed by pipelines

CONTRACTOR shall coordinate, evaluate, design, construct, and maintain temporary water conveyance systems. These systems shall not worsen flooding, alter major flow paths, or worsen flow characteristics during construction. CONTRACTOR is responsible to ensure that any such worsening of flooding does not occur. CONTRACTOR is solely responsible for determining the methods and adequacy of water control measures.

At a minimum, CONTRACTOR shall be responsible for diverting the quantity of surface flow around the construction area so that the excavations will remain free of surface water for the time it takes to install these materials, and the time required for curing of any concrete or grout. CONTRACTOR is cautioned that the minimum quantity of water to be diverted is for erosion control and construction purposes and not for general protection of the construction-site. It shall be CONTRACTOR's responsibility to determine the quantity of water which shall be diverted to protect the WORK from damage caused by stormwater.

CONTRACTOR shall, at all times, maintain a flow path for all channels. Temporary structures such as berms, sandbags, pipeline diversions, etc., may be permitted for the control of channel flow, as long as such measures are not a major obstruction to flood flows, do not worsen flooding, or alter historic flow routes.

- C. **Groundwater Control.** CONTRACTOR shall install adequate measures to maintain the level of groundwater below the foundation subgrade elevation and maintain sufficient bearing capacity for all structures, pipelines, earthwork, and rock work. Such measures may include, but are not limited to, installation of perimeter subdrains, pumping from drilled holes or by pumping from sumps excavated below the subgrade elevation. Dewatering from within the foundation excavations shall not be allowed. The foundation bearing surfaces are to be kept dewatered and stable until the structures or other types of work are complete and backfilled. Disturbance of foundation subgrade by CONTRACTOR operations shall not be considered as originally unsuitable foundation subgrade and shall be repaired at CONTRACTOR's expense.

Any temporary dewatering trenches or well points shall be restored following dewatering operations to reduce permeability in those areas as approved by ENGINEER.

END OF SECTION

**SECTION 02 31 00
EXCAVATION AND EMBANKMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

This WORK shall consist of excavation, embankment fill, disposal of excess material, shaping, and compaction of all material encountered within the limits of work, including excavation and fill for structures. The excavation shall include, but is not limited to, the native soils which must be excavated for the PROJECT WORK. All WORK shall be completed in accordance with these SPECIFICATIONS and the lines and grades on the DRAWINGS.

1.02 DEFINITIONS

- A. Unclassified Excavation shall consist of the excavation of all materials of whatever character required of the WORK, obtained within the PROJECT limits.
- B. Muck Excavation shall consist of the removal of mixtures of soils and organic matter not suitable for foundation material and replacement with approved material.
- C. Rock Excavation shall consist of igneous, metamorphic and sedimentary rock which cannot be excavated without the use of rippers, and all boulders or other detached stones each having a volume of one-half (½) cubic yard or more, as determined by physical or visual measurement. It shall also include replacement with approved material as required.
- D. Embankment Material shall consist of approved material acquired from excavation or from outside sources, hauled and placed in embankments.

1.03 DESCRIPTION

This WORK shall consist of excavation, disposal, placement, and compaction of all material encountered within the limits of the WORK, and not being completed under some other item, necessary for the construction of the PROJECT in accordance with the SPECIFICATIONS and the lines, grades, and typical cross-sections shown on the DRAWINGS. All excavation will be classified, "unclassified excavation," or "muck excavation" or "rock excavation," as hereafter described. All embankment will be classified "embankment material" as hereafter described.

1.04 RELATED SECTIONS

- A. Section 02 23 00 – Clearing and Grubbing
- B. Section 02 24 00 – Water Control and Dewatering
- C. Section 02 32 00 – Trench Excavation and Backfill

1.05 QUALITY ASSURANCE

Final topography and/or cross-sections will be surveyed of areas that are to finished grade and compared to the design section for accuracy. Final grade shall match design grades within the tolerances discussed in PART 3 EXECUTION.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Embankment material may consist of approved material acquired from excavations or material hauled from outside the PROJECT limits. Suitable material identified on-site shall be used first for embankments and backfill. Excess excavated native soils which are not used as embankment or backfill shall become the property of CONTRACTOR and shall be disposed of off-site by CONTRACTOR, in a location acceptable to ENGINEER.
- B. Muck excavation shall also include the replacement of excavated muck with uniformly graded rock, riprap, on-site or imported soils, or other material, whichever is most suitable for the specific situation encountered. ENGINEER will determine which type of aggregate or other material shall be used after observing the specific site conditions.

PART 3 EXECUTION

3.01 GENERAL EXCAVATION/EMBANKMENT

- A. **General.** The excavation and embankment should be finished to reasonably smooth and uniform surfaces. Variation from the subgrade plane shall not be more than 0.08 foot in soil or more than 0.08 foot above or 0.50 foot below in rock. Where bituminous or concrete surfacing materials are to be placed directly on the subgrade, the subgrade plane shall not vary more than 0.04 foot. Materials shall not be wasted without permission of ENGINEER. Excavation operations shall be conducted so that material outside of the limits of slopes will not be disturbed. Prior to beginning grading operations in any area, all necessary clearing and grubbing in that area shall have been performed in accordance with Section 02230 of these SPECIFICATIONS.

CONTRACTOR shall notify ENGINEER in sufficient time before beginning excavation or embankment such that the necessary topography and/or cross-sections may be taken. CONTRACTOR shall not excavate beyond the dimensions and elevations established, and material shall not be removed prior to surveying the site.

When CONTRACTOR's excavating operations encounter remains of pre-historic people's dwelling sites or artifacts of historical or archaeological significance, the operations shall be temporarily discontinued. ENGINEER will contact archaeological authorities to determine the disposition thereof. When directed, CONTRACTOR shall excavate the site in such a manner as to preserve the artifacts encountered and shall remove them for delivery to the custody of the proper state authorities. Such excavation will be considered and paid for as extra WORK.

- B. **Excavation**

- 1. **Unclassified:** All excess suitable material excavated from the PROJECT site and not used for embankment shall be removed from the PROJECT site and become the property of CONTRACTOR. Where material encountered within the limits of the WORK is considered unsuitable for embankment (fills) on any portion of this PROJECT WORK, such material shall be excavated as directed by ENGINEER and replaced with suitable fill material. All unsuitable excavated material from excavation consisting of any type of debris (surface or buried), excavated rock, bedrock or rocks larger than six (6) inches in diameter, and boulders shall be hauled from the PROJECT site and disposed of by CONTRACTOR at CONTRACTOR's expense. Debris is defined as "anything that is not earth which exists at the job site."
- 2. **Muck:** Where excavation to the finished grade section results in a subgrade or slopes of unsuitable soil, ENGINEER may require CONTRACTOR to remove the unsuitable materials and backfill to the finished graded section with approved material. Disposal of the unsuitable material and replacement with suitable material shall be at CONTRACTOR's expense.

Good surface drainage shall be provided around all permanent cuts to direct surface runoff away from the cut face.

3. Rock: Unless otherwise specified, rock shall be excavated to a minimum depth of 0.5 foot below subgrade within the limits of the channel area, and the excavation shall be backfilled with material shown on the DRAWINGS or as designated by ENGINEER. Disposal of material and replacement with suitable approved material shall be at CONTRACTOR's expense.

- C. **Embankment Construction.** Embankment construction shall consist of constructing all fill areas, including preparation of the areas upon which they are to be placed, the placing and compacting of approved material within areas where unsuitable materials have been removed, and the placing and compacting of embankment material in holes, pits and other depressions within the PROJECT area. Only approved materials shall be used in the construction of embankments and backfills.

Approved materials shall consist of clean on-site cohesive soils or approved imported soils.

On-site cohesive soils or imported soils should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift and embankment height. On-site or imported cohesive soils should be compacted within a moisture content range of two percent (2%) below, to two percent (2%) above optimum moisture content and compacted to ninety-five percent (95%) of the Maximum Standard Proctor Density (ASTM D698).

When embankment is to be placed and compacted on hillsides, or when new embankment is to be compacted against existing embankments, or when embankment is built one-half (½) width at a time, the slopes that are steeper than four-to-one (4.1) when measured longitudinally or at right angles to the adjacent ground shall be continuously benched over those areas where it is required as the WORK is brought up in layers. Benching shall be well "keyed" and where practical a minimum of eight (8) feet. Each horizontal cut shall begin at the intersection of the original ground and the vertical sides of the previous cuts. Material thus cut out shall be recompacted along with the new embankment material at CONTRACTOR's expense.

The ground surface underlying all fills shall be carefully prepared by removing all organic matter, scarification to a depth of eight (8) inches and recompacting to ninety-five percent (95%) of the Maximum Standard Proctor Density (ASTM D698) at optimum moisture content + or - two percent (2%) prior to fill placement.

Embankment material shall be placed in horizontal layers not exceeding 8 inches (loose measurement) and shall be compacted to ninety five percent (95%) of the Maximum Standard Proctor Density (ASTM D698) at optimum moisture content + or - two percent (2%). Effective spreading equipment shall be used on each lift to obtain uniform thickness prior to compacting. As the compaction of each layer progresses, continuous leveling and manipulating will be required to assure uniform density.

For embankments which serve as berms, the downstream portion shall be keyed into the subsurface soils a minimum of three (3) feet to enhance the stability of the slope.

Materials which are removed from excavations beneath the water table may be over the optimum moisture content and will require that they be dried out prior to reusing them.

Cross hauling or other action as appropriate will be ordered when necessary to insure that the best available material is placed in critical areas of embankments, including the top two (2) feet of all embankments. No additional payment will be made for cross hauling ordered by ENGINEER.

Frozen materials shall not be used in construction of embankments.

During the construction of the channels, the channel bottom shall be maintained in such condition that it will be well drained at all times.

Excavation or embankment (fill), and structural backfill WORK either completed or in a stage of completion that is either eroded or washed away or becomes unstable due to either rains, snow, snow melt, channel flows, or lack of proper water control shall be either removed and replaced, recompacted, or reshaped as directed by ENGINEER and in accordance with the DRAWINGS and SPECIFICATIONS at CONTRACTOR's sole expense. Removed unsuitable materials shall be hauled away and disposed of at CONTRACTOR's expense. Placing of replacement materials for removed unsuitable materials shall be purchased, placed, and compacted at CONTRACTOR' expense.

- D. **Proof Rolling.** Proof rolling with a heavy rubber tired roller will be required, if designated on the DRAWINGS or when ordered by ENGINEER. Proof rolling shall be done after specified compaction has been obtained. Areas found to be weak and those areas which failed shall be ripped, scarified, wetted if necessary, and recompacted to the requirements for density and moisture at CONTRACTOR's expense.

Proof rolling shall be done with equipment and in a manner acceptable to ENGINEER. Proof rolling as shown on the DRAWINGS or as ordered by ENGINEER shall not be measured and paid for separately, but shall be included in the unit prices bid for the work.

3.02 EXCAVATION AND BACKFILL FOR STRUCTURES

Poor foundation material for any of the WORK shall be removed, by CONTRACTOR, as directed by ENGINEER. CONTRACTOR will be compensated for removal and replacement of such materials in accordance with Muck Excavation.

CONTRACTOR is cautioned that construction equipment may cause the natural soils to pump or deform while performing excavation WORK inside and on footings, structural floor slabs, or other structure foundation areas.

CONTRACTOR shall remove and replace at CONTRACTOR's expense any foundation materials which are: a) saturated by either surface or subsurface flows due to the lack of adequate water control or dewatering work by CONTRACTOR; b) frozen for any reason; or c) disturbed by CONTRACTOR's WORK or caused to become unacceptable for foundation material purposes by means of CONTRACTOR's equipment, manpower, or methods of WORK.

Dewatering should not be conducted by pumping from inside footings, structural floor slabs, or other structure foundation limits. This may decrease the supporting capacity of the soils.

Care should be taken when excavating the foundations to avoid disturbing the supporting materials. Excavation by either hand or careful backhoe soil removal, may be required in excavating the last few inches of material to obtain the subgrade of any item of the concrete WORK.

Any over-excavated subgrades that are due to CONTRACTOR's actions, shall be brought back to subgrade elevations by CONTRACTOR and at CONTRACTOR's expense in the following manner:

- A. For over-excavations of two (2) inches or less, either backfill and compact with approved granular materials; backfill with one-half (½) inch crushed rock; or fill within concrete at the time of the appurtenant structure concrete pour.
- B. For over-excavations greater than two (2) inches, backfill and compact with an approved granular material.

All granular footings, structural floor slabs, or other structure areas shall be compacted with a vibratory plate compactor prior to placement of concrete, reinforcing, or bedding materials.

Backfill, and fill within three (3) feet adjacent to all structures and for the full height of walls, shall be selected non-swelling material. It shall be granular, well graded, and free from stones larger than two (2) inches. Material may be job excavated, but selectivity will be required as determined by ENGINEER. Stockpiled material, other than topsoil from the excavation, shall be used for backfilling unless an

impervious structural backfill is specified. The backfill material shall consist of either clean on-site granular material free of stones larger than two (2) inches in diameter with no more than twenty percent (20%) passing the No. 200 sieve, or equivalent imported materials. All backfill around the structures shall be consolidated by mechanical tamping. The material shall be placed in six-inch (6") loose lifts within a range of two percent (2%) above to two percent (2%) below the optimum moisture content and compacted to ninety-five percent (95%) of Maximum Standard Proctor Density (ASTM D698) for cohesive soils, or to seventy-five percent (75%) relative density for pervious material as determined by the relative density of cohesionless soils test, ASTM D4253.

When specified on the DRAWINGS or as required by ENGINEER, Class I structural backfill shall meet the following gradation requirements.:

<u>Sieve Size</u>	<u>% By Weight Passing Square Mesh Sieves</u>
2-inch	100
No. 4	30 - 100
No. 50	10 - 60
No. 200	5 - 20

In addition, this material shall have a liquid limit not exceeding thirty five (35) and a plasticity index of not over six (6).

Impervious structural backfill, where shown or specified, shall consist of material having one hundred percent (100%) finer than two (2) inches in diameter and a minimum of thirty five percent (35%) passing a No. 200 U.S. Standard Sieve. The material shall be placed in six-inch (6") loose lifts within a range of two percent (2%) above to two percent (2%) below the optimum moisture content and compacted to ninety five percent (95%) of Maximum Standard Proctor Density for cohesive soils as determined by ASTM D698.

END OF SECTION

SECTION 02 32 00
TRENCH EXCAVATION AND BACKFILL

PART 1 GENERAL

1.01 SECTION INCLUDES

This WORK shall consist of all labor, equipment and materials necessary for excavation, trenching, and backfilling for utility lines and other related WORK.

1.02 RELATED WORK

- A. Section 02 24 00 – Water Control and Dewatering
- B. Section 02 31 00 – Excavation and Embankment

1.03 QUALITY ASSURANCE

- A. In-place moisture density tests will be performed to ensure trench backfill complies with specified requirements. The following minimum tests should be expected to be performed.
 - 1. Trench bedding – one per two hundred (1 per 200) feet
 - 2. Backfill - 1 per 200 feet
- B. Backfill compaction tests will be performed until compaction meets or exceeds requirements. The cost of "passing" tests shall be paid by OWNER. Costs associated with "failing" tests shall be paid by CONTRACTOR.

Pipe bedding shall be tested prior to placement of backfill.

Testing of all bedding and backfill material shall be done in compliance with Occupational Safety & Health Administration (OSHA) - Excavations.

1.04 PROTECTION

- A. **Sheeting and Shoring.** CONTRACTOR shall protect excavations by shoring, bracing, sheet piling, underpinning, or other methods required to prevent any excessive widening or sloughing of the trench which may be detrimental to human safety, to the pipe or appurtenances being installed, or to existing facilities or structures. The latest requirements of OSHA shall be complied with at all times including trenching and confined space entry requirements.

CONTRACTOR shall be responsible for underpinning adjacent structures which may be damaged by excavation WORK, including service utilities and pipe chases.
- B. **Weather and Frost.** CONTRACTOR shall protect bottom of excavations and soil adjacent to and beneath foundations from frost.
 - 1. Do not place backfill, fill, or embankment on frozen surfaces.
 - 2. Do not place frozen materials, snow, or ice in backfill, fill, or embankments.
 - 3. Do not deposit, tamp, roll, or otherwise mechanically compact backfill in water.

C. **Drainage and Groundwater.** The excavation shall be graded to prevent surface water runoff into trench or excavation.

1. Maintain excavations and trenches free from water during construction.
2. Remove water encountered in trenches to the extent necessary to provide a firm subgrade, to permit joints to be made in the dry, and to prevent the entrance of water into the pipeline.
3. Divert surface runoff and use sumps, gravel blankets, well points, drain lines, or other means necessary to accomplish the above.
4. Maintain the excavation or trench free from water until the structure, or pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.
5. Prevent water from entering into previously constructed pipe.
6. Do not use the pipe under construction for dewatering.

PART 2 PRODUCTS

2.01 MATERIALS

A. **Muck Excavation.** Muck excavation shall also include the replacement of excavated muck with uniformly graded rock ranging from three-quarter (¾) inch to one-and-one-half (1½) inches or as required by ENGINEER. ENGINEER shall determine which type of aggregate or other material shall be used after observing the specific site conditions.

B. **Bedding and Pipe Zone Materials**

Well-Graded Sand

<u>Sieve Size</u>	<u>Total Percent Passing by Weight</u>
¾ inch	100
No. 4	95 – 100
No. 8	80 – 100
No. 16	50 – 85
No. 30	25 – 60
No. 50	10 – 30
No. 100	2 – 10

Squeegee Sand

<u>Sieve Size</u>	<u>Total Percent Passing by Weight</u>
¾ inch	100
No. 200	0 – 5

CDOT #67

<u>Sieve Size</u>	<u>Total Percent Passing by Weight</u>
1-inch	100
¾-inch	90 – 100
⅜-inch	20 – 55
No. 4	0 – 10
No. 8	0 – 5

Note: It shall be the responsibility of CONTRACTOR to locate material meeting the SPECIFICATIONS, to test its ability to consolidate to at least seventy five percent (75%) relative density, and to secure approval of ENGINEER before such material is delivered to the PROJECT. Relative density shall be determined as stipulated in ASTM D4253.

- C. **Backfill.** Use only backfill for trenches which is free from rocks, large roots, other vegetation or organic matter, and frozen material. No rocks greater than three (3) inches in diameter shall be allowed.
- D. **Cut-Off Walls**
 - 1. Clay Cut-Off Walls: More than fifty percent (50%) shall pass a No. 200 Sieve. The plasticity index shall be greater than twelve (12).
 - 2. Controlled Low Strength Material Backfill: (Flo-Fill - See Section 02321).

PART 3 EXECUTION

3.01 GENERAL

The following procedures shall be followed by CONTRACTOR in sequencing the WORK:

- A. No more than one hundred fifty (150) feet of trench shall be left open at any time. The entire trench shall be backfilled to within fifty (50) feet of the open trench upon conclusion of each day's WORK. The trench shall not be backfilled until the pipe installation is reviewed by ENGINEER.
- B. Trench shall be backfilled within one hundred (100) feet of the pipe installation at all times.
- C. Clean-up shall be maintained within four hundred (400) feet of the trench excavation.

Prior to placement in the trench, all pipes, fittings, and appurtenances shall be cleaned and examined for defects by CONTRACTOR. If found defective, CONTRACTOR shall reject the defective pipe, fitting, or appurtenance. CONTRACTOR shall advise ENGINEER of all defective materials.

All surplus excavation shall be placed, in an orderly manner. If material is stockpiled on private property, written permission must be obtained from the property owner and provided to ENGINEER.

All muck excavation, bedding, and pipe zone material shall be imported unless otherwise designated by OWNER's geotechnical engineer.

Upon completion of the WORK, all plants, rubbish, unused materials, concrete forms, and other like material shall be removed from the job site. The site shall be left in a state of order and cleanliness.

3.02 MAINTENANCE AND CORRECTION

- A. Scarify surface, reshape, and compact to required density completed or partially completed areas of WORK disturbed by subsequent construction operations or by adverse weather.
- B. Maintain and correct backfill, fill, and embankment settlement and make necessary repairs to pavement structures, seeding, and sodding which may be damaged as a result of settlement for the guarantee period.
- C. Such maintenance and correction may be performed by subcontract.

3.03 OBSTRUCTIONS AND DISPOSAL OF WASTE MATERIAL

CONTRACTOR shall remove obstructions that do not require replacement from within the trench or adjacent areas such as tree roots, stumps, abandoned piling, buildings and concrete structures, frozen material, logs, and debris of all types without additional compensation. ENGINEER may, if requested, make changes in the trench alignment to avoid major obstructions, if such alignment changes can be made within the WORK limits without adversely affecting the intended function of the facility. Excavated materials unsuitable for backfill or not required for backfill shall be disposed of in accordance with local regulations.

3.04 TRENCH EXCAVATION

All existing asphalt or concrete surfacing shall be saw cut vertically in a straight line, and removed from the job site prior to starting the trench excavation. This material shall not be used in any fill or backfill.

The trench shall be excavated so that a minimum clearance of six (6) inches is maintained on each side of the pipe for proper placement and densification of the bedding or backfill material. The maximum clearance measured at the spring line of the pipe shall be eighteen (18) inches regardless of the type of pipe, type of soil, depth of excavation, or the method of densifying the bedding and backfill.

Except as otherwise dictated by construction conditions, the excavation shall be of such dimensions as to allow for the proper pipe installation and to permit the construction of the necessary pipe connections. Care shall be taken to insure that the excavation does not extend below established grades. If the excavation is made below such grades, the excess excavation shall be filled in with sand or graded gravel deposited in horizontal layers not more than six (6) inches in thickness after being compacted and shall be moistened as required to within two percent (2%) of the optimum moisture content required for compaction of that soil. After being conditioned to have the required moisture content, the layers shall be compacted to the required density.

CONTRACTOR shall stockpile excavated materials in a safe manner. Stockpiles shall be graded for proper drainage.

CONTRACTOR shall place and grade the trench base to the proper grade ahead of pipe laying. The invert of the trench shall be compacted to provide a firm unyielding support along entire pipe length.

3.05 SURPLUS EXCAVATION MATERIAL

Surplus excavation shall be disposed of by CONTRACTOR at CONTRACTOR's expense.

3.06 FOUNDATIONS ON UNSTABLE SOILS

If the bottom of the excavation is soft or unstable, and in the opinion of ENGINEER, cannot satisfactorily support the pipe or structure, a further depth and width shall be excavated and refilled to six (6) inches below grade with rock uniformly graded between three-quarter ($\frac{3}{4}$) inch and one and one-half ($1\frac{1}{2}$) inches or other approved material to provide a firm foundation for the pipe or structure. From six (6) inches below grade to grade, the appropriate bedding material shall be placed to provide support for the pipe or structure.

3.07 PIPE BEDDING

After completion of the trench excavation and proper preparation of the foundation, six (6) inches of bedding material shall be placed on the trench bottom for support under the pipe. Bell holes shall be dug deep enough to provide a minimum of two (2) inches of clearance between the bell and the bedding material. All pipe shall be installed in such a manner as to insure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade and the joint is made, the bedding material shall be carefully placed and tamped under the haunches of the pipe.

For all types of pipe, the limits of bedding shall be as shown on the trench section details on the DRAWINGS.

Bedding shall be compacted to seventy five percent (75%) relative density in accordance with ASTM D4253. Care shall be exercised to assure sufficient tamping under the pipe to achieve uniform support.

3.08 BACKFILL AND COMPACTION

- A. **Pipes.** The pipe trench shall be backfilled to the limits as shown on the DRAWINGS. The backfill in all areas shall be compacted by vibrating, tamping, or a combination thereof to seventy five percent (75%) relative density for sand material as determined by the relative density of cohesionless soils test, ASTM D4253, or to ninety five percent (95%) of the Maximum Standard Proctor Density for cohesive soils as determined by ASTM D698.

All backfill shall be brought up to equal height along each side of the pipe in such a manner as to avoid displacement. Bedding shall be distributed in 6-inch (6") maximum lifts over the full width of the trench. Wet, soft or frozen material, asphalt chunks, or other deleterious substances shall not be used for backfill. If the excavated material is not suitable for backfill, as determined by ENGINEER, suitable material shall be hauled in and utilized and the rejected material hauled away and disposed of.

Backfilling shall be conducted at all times in a manner to prevent damage to the pipe or its coating and shall be kept as close to the pipe laying operation as practical.

Backfilling procedures shall conform to the additional requirements, if any, of appropriate agencies or private right-of-way agreements.

- B. **Unsurfaced Areas.** All surface cuts shall be, as a minimum, restored to a condition equal to that prior to construction.
- C. **Surfaced Areas.** All surface cuts shall be, as a minimum, restored to a condition equal to that prior to construction. All gravel or paved streets shall be restored in accordance with the regulations and requirements of the agency having control or jurisdiction over the street, roadway, or right-of-way.
- D. **Grassed or Landscaped Areas.** In landscaped or agricultural areas, topsoil, to a depth of twelve (12) inches, shall be removed from the area of general disturbance and stockpiled. After installation of all pipelines, appurtenances and structures and completion of all backfill and compaction, the stockpiled topsoil shall be redistributed evenly over all disturbed areas. Care should be taken to conform to the original ground contour or final grading plans.

END OF SECTION

SECTION 02 37 00
EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This WORK shall consist of temporary measures needed to control erosion and water pollution. These temporary measures shall include, but not be limited to, berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods. These temporary measures shall be installed at the locations where needed to control erosion and water pollution during the construction of the PROJECT, and as directed by ENGINEER, and as shown on the DRAWINGS.
- B. The Erosion Control Plan presented in the DRAWINGS serves as a minimum for the requirements of erosion control during construction. CONTRACTOR has the ultimate responsibility for providing adequate erosion control and water quality throughout the duration of the PROJECT. Therefore, if the provided plan is not working sufficiently to protect the PROJECT areas, then CONTRACTOR shall provide additional measures as required to obtain the required protection. CONTRACTOR shall include in the BID price for erosion control a minimum of all items shown on the Erosion Control Plan and any additional items that may be needed to control erosion and water pollution.

1.02 RELATED SECTIONS

Section 02 24 00 – Water Control and Dewatering

1.03 SUBMITTALS

- A. Construction schedule for Erosion Control per Paragraph 3.01
- B. Sequencing Plan per Paragraph 3.12

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials may include hay bales, straw, fiber mats, fiber netting, wood cellulose, fiber fabric, gravel, and other suitable materials, and shall be reasonably clean, free of deleterious materials, and certified weed free. All materials shall be submitted for approval prior to installation.
- B. Temporary grass cover (if required) shall be a quick growing species suitable to the area, which will provide temporary cover and will not later compete with the grasses sown for permanent cover. All grass seed shall be approved by ENGINEER prior to installation.
- C. Fertilizer and soil conditioners shall be approved by ENGINEER prior to installation.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

- A. When so indicated in the CONTRACT DOCUMENTS, or when directed by ENGINEER, CONTRACTOR shall prepare construction schedules for accomplishing temporary erosion control WORK. These schedules shall be applicable to clearing and grubbing, grading, structural WORK, construction, etc. CONTRACTOR shall also submit for acceptance the proposed method of erosion control on haul roads and

borrow pits and a plan for disposal of waste material. WORK shall not be started until the erosion control schedules and methods of operations have been accepted.

- B. CONTRACTOR shall be required to incorporate all permanent erosion control features into the PROJECT at the earliest practicable time as outlined in the accepted schedule. Temporary erosion control measures will then be used to correct conditions that develop during construction.
- C. The erosion control features installed by CONTRACTOR shall be adequately maintained by CONTRACTOR until the PROJECT is accepted.
- D. In the event of conflict between these requirements and erosion and pollution control laws, rules, or regulations of other Federal, State or local agencies, the more restrictive laws, rules, or regulations shall apply.

3.02 PERMITS AND COMPLIANCE

CONTRACTOR must apply for and obtain a Construction Dewatering Permit 401 (Colorado Wastewater Discharge Permit) from the Colorado Department of Health. All costs for this permit shall be the responsibility of CONTRACTOR. This permit requires that specific actions be performed at designated times. CONTRACTOR is legally obligated to comply with all terms and conditions of the permit including testing for effluent limitations.

CONTRACTOR shall allow the Colorado Department of Health or other representatives to enter the site to test for compliance with the permit. Non-compliance with the permit can result in stoppage of all WORK.

In addition to permit requirements, OWNER shall also monitor CONTRACTOR's erosion control and WORK methods. If the overall function and intent of erosion control is not being met, then OWNER shall require CONTRACTOR to provide additional measures as required to obtain the desired results. Costs for any additional erosion control measures shall be the responsibility of CONTRACTOR, since he has the ultimate responsibility for providing adequate erosion control and water quality for the duration of the PROJECT.

3.03 STABILIZATION OF DISTURBED AREAS

Temporary sediment control measures shall be established within five (5) days from time of exposure/disturbance. Permanent erosion protection measures shall be established within five (5) days after final grading of areas.

3.04 PROTECTION OF ADJACENT PROPERTIES

Properties adjacent to the site of a land disturbance shall be protected from sediment deposition. In addition to the erosion control measures required on the DRAWINGS, perimeter controls may be required if damage to adjacent properties is likely. Perimeter controls include, but are not limited to, a vegetated buffer strip around the lower perimeter of the land disturbance, sediment barriers such as straw bales and silt fences; sediment basins; or a combination of such measures. Vegetated buffer strips may be used only where runoff in sheet flow is expected and should be at least twenty (20) feet in width.

3.05 TIMING AND STABILIZATION OF SEDIMENT AND EROSION CONTROL MEASURES

Sediment barriers, perimeter dikes, and other measures intended to either trap sediment or prevent runoff from flowing over disturbed areas must be constructed as a first step in grading and be made functional before land disturbance takes place. Earthen structures such as dams, dikes, and diversions must be stabilized within five (5) days of installation. Stormwater outlets must also be stabilized prior to any upstream land disturbing activities.

3.06 STABILIZATION OF WATERWAYS AND OUTLETS

All on-site stormwater conveyance channels used by CONTRACTOR for temporary erosion control purposes shall be designed and constructed with adequate capacity and protection to prevent erosion during storm and runoff events. Stabilization adequate to prevent erosion shall also be provided at the outlets of all pipes and channels.

3.07 STORM SEWER INLET PROTECTION

All storm sewer inlets which are made operable during construction or which drain stormwater runoff from a construction site shall be protected from sediment deposition by the use of filters.

3.08 WORKING IN OR CROSSING WATERCOURSES AND WETLANDS

- A. Construction vehicles should be kept out of watercourses to the extent possible. Where in-channel WORK is necessary, precautions must be taken to stabilize the WORK area during construction to minimize erosion. The channel (including bed and banks) must always be restabilized immediately after in-channel WORK is completed.
- B. Where a live (wet) watercourse must be crossed by construction vehicles during construction, a Temporary Stream Crossing must be provided for this purpose.

3.09 CONSTRUCTION ACCESS ROUTES

Wherever construction vehicles enter or leave a construction site, a Stabilized Construction Entrance is required. Where sediment is transported onto a public road surface, the roads shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by shoveling or sweeping and be transported to a sediment controlled disposal area. Street washing shall be allowed only after sediment is removed in this manner.

3.10 DISPOSITION OF TEMPORARY MEASURES

All temporary erosion and sediment control measures shall be disposed of within thirty (30) days after final site stabilization is achieved or after the temporary measures are no longer needed as determined by OWNER. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures shall be permanently stabilized to prevent further erosion.

3.11 MAINTENANCE

All temporary and permanent erosion and sediment control practices must be maintained and repaired as needed to assure continued performance of their intended function.

3.12 SEQUENCING

CONTRACTOR shall submit a sequencing plan for approval for erosion control in conformance with CONTRACTOR's overall Construction Plan for approval by OWNER. Changes to the Erosion Control Sequencing Plan may be considered by OWNER only if presented in writing by CONTRACTOR.

3.13 SUBSTANTIAL COMPLETION OF EROSION CONTROL MEASURES

At the time specified in the CONTRACT DOCUMENTS, and subject to compliance with specified materials and installation requirements, CONTRACTOR shall receive a Substantial Completion Certificate for temporary erosion control measures.

3.14 MAINTENANCE OF EROSION CONTROL MEASURES AFTER SUBSTANTIAL COMPLETION

CONTRACTOR shall be responsible for maintaining temporary erosion control measures as specified in the DRAWINGS and CONTRACT DOCUMENTS until such time as the disturbed drainage area has stabilized as determined by ENGINEER and OWNER.

3.15 FINAL COMPLETION AND ACCEPTANCE OF EROSION CONTROL MEASURES

After ENGINEER and OWNER have determined that the drainage area has stabilized, CONTRACTOR shall remove all remaining temporary erosion control measures. Any damage to the site shall be repaired to the satisfaction of ENGINEER and at no cost to OWNER.

END OF SECTION

**SECTION 02 37 05
RIPRAP, SOIL RIPRAP, BEDDING AND BOULDERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

The WORK includes excavation, grading, and installation of riprap, soil riprap, and bedding shown on the DRAWINGS. The materials to be used and the construction of such structures shall be as specified herein.

1.02 RELATED SECTIONS

- A. Section 02 24 00 – Water Control and Dewatering
- B. Section 02 31 00 – Excavation and Embankment
- C. Section 02 32 00 – Trench Excavation and Backfill

1.03 SUBMITTALS

CONTRACTOR shall cooperate with ENGINEER in obtaining and providing samples of all specified materials. CONTRACTOR shall submit certified laboratory test certificates for all items required in this Section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. **Riprap.** Riprap used shall be the type designated on the DRAWINGS and shall conform to the following:

Riprap Designation	% Smaller Than Given Size By Weight	Intermediate Rock Dimension (inches)	d ₅₀ * (inches)
Type VL	70 - 100	12	6
	50 - 70	9	
	35 - 50	6	
	2 - 10	2	
Type L	70 - 100	15	9
	50 - 70	12	
	35 - 50	9	
	2 - 10	3	
Type M	70 - 100	21	12
	50 - 70	18	
	35 - 50	12	
	2 - 10	4	
Type H	70 - 100	30	18
	50 - 70	24	
	35 - 50	18	
	2 - 10	6	
Type VH	70 - 100	41	24
	50 - 70	33	
	35 - 50	24	
	2 - 10	9	

* d₅₀ = Mean Particle Size

- 1. The riprap designation and total thickness of riprap shall be as shown on the DRAWINGS. The maximum stone size shall not be larger than the thickness of the riprap.

2. The specific gravity of the riprap shall be two and one-half (2.5) or greater.
3. Neither width nor thickness of a single stone of riprap shall be less than one-third ($\frac{1}{3}$) of its length.
4. Broken concrete or asphalt pavement shall not be acceptable for use in the WORK. Rounded riprap (river rock) is not acceptable unless specifically designated on the DRAWINGS.
5. The color of the riprap shall be gray with gray/blue hues or other acceptable colors approved by ENGINEER prior to delivery to the PROJECT site. Color shall be consistent on the entire PROJECT and shall match the color of rock to be used for all other portions of the WORK.
6. Minimum density for acceptable riprap shall be one hundred sixty five (165) pounds per cubic foot. The specific gravity shall be according to the bulk-saturated, surface-dry basis, AASHTO T85.
7. The riprap shall have a percentage loss of not more than forty percent (40%) after five hundred (500) revolutions when tested in the Los Angeles machine in accordance with AASHTO Test T96.
8. The riprap shall have a percentage loss of not more than ten percent (10%) after five (5) cycles when tested in accordance with AASHTO Test T104 for ledge rock using sodium sulfate.
9. The riprap shall have a percentage loss of not more than ten percent (10%) after twelve (12) cycles of freezing and thawing when tested in accordance with AASHTO Test T103 for ledge rock, procedure A.
10. Rock shall be free of calcite intrusions.
11. Each load of riprap shall be reasonably well graded from the smallest to the largest size specified. Stones smaller than the two-to-ten percent (2-10%) size will not be permitted in an amount exceeding ten percent (10%) by weight of each load.

Control of gradation shall be by visual inspection. However in the event ENGINEER determines the riprap to be unacceptable, ENGINEER shall pick two (2) random truckloads to be dumped and checked for gradation. Mechanical equipment and labor needed to assist in checking gradation shall be provided by CONTRACTOR at no additional cost.

B. Soil Riprap. Rock requirements are to comply with riprap as specified in the above Paragraph A. The soil material shall be native or topsoil and mixed with sixty five percent (65%) riprap and thirty five percent (35%) soil by volume. Soil riprap shall consist of a uniform mixture of soil and riprap without voids.

C. **Bedding.** Gradation for Granular Bedding:

U.S. Standard <u>Sieve Size</u>	Percent by Weight Passing <u>Type I</u>	Square Mesh Sieves <u>Type II</u>
3 inch		90 - 100
1-½ inch		
¾ inch		20 - 90
⅜ inch	100	
No. 4	95 - 100	0 - 20
No. 16	45 - 80	
No. 50	10 - 30	
No. 100	2 - 10	
No. 200	0 - 2	0 - 3

Granular bedding designation and total thickness of bedding shall be as shown on the DRAWINGS. Granular bedding shall meet the same requirements for specific gravity, absorption, abrasion, sodium sulfate soundness, and freeze-thaw durability as required for riprap and specified above and as follows:

1. Broken concrete asphalt pavement or sledge, shall not be acceptable for use in the WORK. Rounded river rock is not acceptable unless specifically designated on the DRAWINGS.
 2. Shall conform to the quality requirements of AASHTO M197.
 3. The requirements for the wear test in AASHTO T96 shall not apply.
- D. **Boulders.** Boulders shall consist of the same material as riprap, differing only by size. Boulders shall conform to the following:
1. Shall meet the same requirements for specific gravity, color, absorption, abrasion, sodium sulfate soundness, and freeze-thaw durability as required for riprap.
 2. Boulder minimum dimension (laying height) range shall be as follows:
 - 24-Inch Boulders = 24 – 26 inches
 - 30-Inch Boulders = 30 – 34 inches
 - 36-Inch Boulders = 36 – 40 inches
 - 42-Inch Boulders = 42 – 46 inches
 The maximum ratio of the largest to smallest rock dimension shall be 1.75.
 3. Control of gradation shall be by visual inspection. However in the event ENGINEER determines the boulders to be unacceptable, ENGINEER shall pick two (2) random truckloads to be dumped and checked for gradation. Mechanical equipment and labor needed to assist in checking gradation shall be provided by CONTRACTOR at no additional cost.
- E. **Geotextile Fabric.** Geotextile fabric shall be Mirafi Geolon HP570 or approved equivalent.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

Channel slopes, bottoms, or other areas that are to be protected with riprap or soil riprap shall be free of brush, trees, stumps, and other objectionable material and be graded to a smooth compacted surface. CONTRACTOR shall excavate areas to receive riprap to the subgrade for granular bedding or for soil riprap to the specified depth (bedding material is not required for soil riprap). The subgrade materials shall be stable. If unsuitable materials are encountered, they shall be removed and replaced as Muck Excavation in accordance with Section 02315 of the SPECIFICATIONS for subgrade that has been excavated in undisturbed soil. Additional compaction shall not be required unless specified by ENGINEER. When subgrade is built up with embankment material it shall be compacted to ninety five percent (95%) maximum density (ASTM D698). After an acceptable subgrade is established, the soil riprap or bedding shall be immediately placed and leveled to the specified elevation. Immediately following the placement of the bedding material, the riprap shall be placed. If bedding material is disturbed for any reason, it shall be replaced and graded at CONTRACTOR's expense. In-place bedding materials shall not be contaminated with soils, debris or vegetation before the riprap is placed. If contaminated, the bedding material shall be removed and replaced at CONTRACTOR's expense.

3.02 PLACEMENT

Following acceptable placement of granular bedding, riprap placement shall commence as follows:

- A. **Machine Placed Riprap.** Riprap shall be placed on the prepared slope or channel bottom areas in a manner which will produce a reasonably well-graded mass of stone with the minimum practicable percentage of voids. Riprap shall be machine placed, unless otherwise stipulated in the DRAWINGS or SPECIFICATIONS.

When riprap is placed on slopes, placement shall commence at the bottom of the slopes working up the slope. Place the riprap in a stepped fashion with the bottom of the uphill riprap below the top of the downhill riprap by one half (½) of the height of the riprap minimum.

The entire mass of riprap shall be placed on either channel slopes or bottoms so as to be in conformance with the required gradation mixtures and to lines, grades, and thickness shown on the DRAWINGS. Riprap shall be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying bedding material. Placing of riprap in layers, or by dumping into chutes, or by similar methods shall not be permitted.

All material going into riprap protection for channel slopes or bottoms shall be so placed and distributed that there shall be no large accumulations of either the larger or smaller sizes of stone. Some hand placement may be required to achieve this distribution.

It is the intent of these SPECIFICATIONS to produce a fairly compact riprap protection in which all sizes of material are placed in their proper proportions. Unless otherwise authorized by ENGINEER, the riprap protection shall be placed in conjunction with the construction of embankments or channel bottoms with only sufficient delay in construction of the riprap protection, as may be necessary, to allow for proper construction of the portion of the embankment and channel bottom which is to be protected. CONTRACTOR shall maintain the riprap protection until accepted. Any material displaced for any reason shall be replaced to the lines and grades shown on the DRAWINGS at no additional cost to OWNER. If the bedding materials are removed or disturbed, such material shall be replaced prior to replacing the displaced riprap.

The basic procedure shall result in larger materials flush to the top surface with faces and shapes arranged to minimize voids, and smaller material below and between larger materials. Surface grades shall be a plane or as indicated, but projections above or depressions under the finished design grade more than ten percent (10%) of the rock layer thickness shall not be allowed. Smaller rock shall be securely locked between the larger stone. It is essential that the material between the larger stones not be loose or easily displaced by flow or by vandalism. The stone shall be consolidated by the bucket of the backhoe or other means that will cause interlocking of the material. All rock is to be placed in a dewatered condition beginning at the toe of the slope or other lowest point.

- B. **Hand Placed Riprap.** Hand placed riprap shall be performed during machine placement of riprap and shall conform to all the requirements of Section 02375 PART 2, above. Hand placed riprap shall also be required when the depth of riprap is less than two (2) times the nominal stone size, or when required by the DRAWINGS or SPECIFICATIONS.

After the riprap has been placed, hand placing or rearranging of individual stones by mechanical equipment shall be required to the extent necessary to secure a flat uniform surface and the specified depth of riprap, to the lines and grades as shown on the DRAWINGS.

- C. **Soil Replacement Over Riprap.** Where riprap is designated to be buried, place onsite excavated material that is free from trash and organic matter in riprap voids by washing and rodding. Prevent excessive washing of material into stream. When voids are filled and the surface accepted by ENGINEER, place a nominal six (6) inches of soil over the area, or as designated on the DRAWINGS. Fine grade, seed, and mulch per the SPECIFICATIONS.
- D. **Soil Riprap.** Adjacent stockpiles of riprap and soil shall be created and mixing done at the stockpile location, not at the location where soil riprap is to be placed. Mix thirty five percent (35%) soil by volume with stockpiled riprap, using additional moisture and control procedures that assure a homogenous mixture, where the soil fills the inherent voids in the riprap without displacing riprap.

Place a first layer of smaller soil riprap of approximate d_{50} thickness. Then place the top layer with surface rocks that are largely d_{50} or greater, filling voids as necessary with smaller planted riprap. Create a smooth plane as described in Paragraph A. The mixture shall be consolidated by large vibratory equipment or backhoe bucket to create a tight, dense interlocking mass. The soil shall be further wetted to encourage

void filling with soil. Any large voids shall be filled with rock and small voids filled with soil. Excessively thick zones of soil prone to washing away shall not be created (e.g., no thicknesses greater than six (6) inches). For buried soil riprap, the top surface shall be covered with four (4) inches of topsoil such that no rock points are protruding. The final surface shall be thoroughly wetted for good compaction, smoothed and compacted by vibrating equipment; the surface shall then be hand raked to receive planting or seeding. With prior approval of ENGINEER, layering the riprap and soil instead of premixing may be allowed if the native soil is granular.

- E. **Stacked Boulder Walls.** Boulders shall be placed as specified on the DRAWINGS and shall be carefully selected and arranged so that they fit as tightly as possible and voids/gaps are minimized. Top elevations of boulders shall match the design top elevations within 2-inches. All boulder placement shall be reviewed and approved by the ENGINEER during construction and prior to backfilling or burying of boulders. The Class A geotextile fabric that is to be placed on the subgrade below and behind stacked boulders shall be anchored with securing pins to prevent displacement.
- F. **Rejection of Work and Materials.** ENGINEER shall reject placed riprap which does not conform to this section and CONTRACTOR shall immediately remove and relay the riprap to conform with said sections.

Riprap shall be rejected, which is either delivered to the job site or placed, that does not conform to this section. Rejected riprap shall be removed from the PROJECT site by CONTRACTOR and at CONTRACTOR's expense.

END OF SECTION

**SECTION 02 51 03
HOT MIX ASPHALT PAVING**

PART 1 - GENERAL

1.01 DESCRIPTION

This section covers materials and methods to be used for the construction, overlaying, sealcoating and pavement rejuvenating of streets, parking lots, walks, drainways and other miscellaneous work requiring the use of asphalts. The Work covered shall include general requirements that are applicable to hot mix asphalt pavements of the plant mix type, bituminous prime coat, bituminous tack coat, and asphalt concrete overlay including soil sterilization of the base or sub-base material. All workmanship and materials shall be in accordance with the requirements of the Contract Documents, and in conformity with the lines, grades, depths, quantity requirements, and the typical cross sections shown on the Plans, or as directed by the ENGINEER.

1.02 QUALITY INSURANCE

A. **Hot Mix Asphalt Mix Design:**

1. Minimum Hveem stability of the Hot Mix Asphalt mix shall be 30 when tested in accordance with AASHTO T 190.
2. A gyratory compaction level of N_{design} 75 gyrations shall be used to determine the optimum asphalt content and volumetric properties of the mix following AASHTO T 312.
3. Minimum index of retained strength of eighty (80) percent when tested in accordance with AASHTO T 165, T 166, and T 167.
4. Job-mix formula shall establish:
 - a. A single percentage of aggregate passing each required sieve size.
 - b. A single percentage of bituminous material to be added to the aggregate.
 - c. A single temperature at which the mixture shall be mixed.
5. Each job-mix formula shall be within the master range specified in subsection 2.01 B of this section.

1.03 SUBMITTALS

A. **Hot Mix Asphalt Paving:**

1. CONTRACTOR shall submit to ENGINEER for approval the proposed job-mix formula for each grading required by the Contract Documents.
2. CONTRACTOR shall include the test results of all tests referenced in subsection 1.02 A of this section as well as any other test results which have been performed on the proposed job-mix design.

PART 2 - MATERIALS

2.01 PLANT MIX BITUMINOUS CONCRETE PAVING

A. Composition of Mixtures:

1. Hot Mix Asphalt:
 - a. Shall be composed of a mixture of aggregate, filler, if required, and bituminous material.
 - b. Aggregates fractions shall be sized, uniformly graded and combined in such proportions that the resulting mixture meets the grading requirements of each job-mix formula.
2. Job-Mix Formula:
 - a. Shall be submitted to ENGINEER for approval.
 - b. Shall not deviate from allowable tolerances set forth in subsection 2.01 B of this section.
3. Actual Mixtures Furnished:
 - a. Shall conform to the job-mix formula established within the following tolerances.
 - i. Passing 3/8 inch and larger sieves exclusive of maximum size specified $\pm 6\%$
 - j. Passing No. 4 and No. 8 sieves exclusive of maximum size specified $\pm 5\%$
 - k. Passing No. 30 and sieve exclusive of maximum size specified $\pm 4\%$.
 - l. Passing No. 200 sieve $\pm 2\%$.
 - m. Bitumen $\pm 0.3\%$.
 - n. Temperature of mixture at discharge point of the plant $\pm 20^\circ\text{F}$.

B. Aggregate for Bituminous Plant Mix:

1. Aggregates shall:
 - a. Be of uniform quality.
 - b. Be composed of clean, hard durable particles of crushed stone, crushed gravel, natural gravel or crushed slag.
 - c. Have a percentage wear of not more than 45 when tested in accordance with AASHTO T 96.
 - d. Not contain clay balls, vegetable matter or other deleterious substances.
 - e. Not contain an excess of fine material.
 - f. Be tested for cleanliness, abrasion loss and fractured faces at the discretion of ENGINEER.
 - g. Be graded and combined in such proportions that the resulting composite blend meets the requirements of each job-mix formula for the project.
2. Not less than 60% by weight of the particles retained on the No. 4 sieve shall have at least one fractured face when tested in accordance with CDOT Procedure 45.
3. Each job-mix formula shall be within the master range set forth in the following table.

MASTER RANGE TABLE FOR HOT PLANT MIX BITUMINOUS PAVEMENT <i>Percentage by Weight Passing Square Mesh Sieves</i>		
<i>Sieve Designation</i>	<i>Grading S</i>	<i>Grading SX</i>
1½"		
1"	100	
¾"	90-100	100
½"	*	90-100
3/8"	*	*
#4	*	*
#8	23-49	28-58
#30	*	*
#200	2-8	2-10

Note: *Limits for these additional screens will be initially established using values from the as-used gradation shown on the job mix formula.

4. **Grading SX** shall be used for all hot plant mix bituminous pavement unless specifically shown otherwise on the plans.

C. Mineral Filter: (if used)

1. Shall conform to the requirements of AASHTO M 17.
2. Shall consist of rock dust, slag dust, hydrated lime, hydraulic cement, fly ash or other suitable mineral matter.
3. Shall be free of organic impurities and agglomerations.
4. Shall be dry enough to flow freely.
5. Shall have a plasticity index not greater than 4, excluding hydrated lime and hydraulic cement.
6. Shall be graded within the following limits:

Sieve	Mass Percent Passing
No. 30	100
No. 50	95-100
No. 200	70-100

D. Hydrated Lime:

1. Shall conform to the requirements of ASTM C 207, Type N. In addition, the residue retained on a 200-mesh sieve shall not exceed 10% when determined in accordance with ASTM C 110. (Drying of the residue in an atmosphere free from carbon dioxide will not be required).

E. Bituminous Materials:

1. Asphalt Cements:

- a. Shall conform to the requirements of AASHTO M 320 for the grade specified.
- b. Grade PG 58-28 shall be used for all Hot Mix Asphalt unless otherwise permitted by the ENGINEER, in writing.

2. Emulsified Asphalts:

- a. Shall conform to the requirements of AASHTO M 140 and M 208 for the designated types and grades.
- b. Emulsified asphalt for tack coat shall be Grade CSS-1 or CSS-1h and shall conform to AASHTO M 208.

2.02 PREPARATION OF Hot Mix Asphalt

A. Shall be in accordance with CDOT, Section 401.13.

2.03 PREPARATION OF AGGREGATES

A. Shall be in accordance with CDOT, Section 401.14.

2.04 MIXING

A. Shall be in accordance with CDOT, Section 401.15.

2.05 EQUIPMENT

A. Bituminous Mixing Plant:

1. The mixing plant shall be operated and maintained in accordance with CDOT, Section 401.08.

B. Hauling Equipment:

1. Trucks used for hauling bituminous mixtures shall have tight, clean, smooth metal beds which have been thinly coated with a minimum amount of paraffin oil, lime solution or other approved release agent.
2. Petroleum distillates such as kerosene or fuel oil will not be permitted.
3. Except as otherwise permitted, each truck shall have a cover of canvas or other suitable material of such size as to protect the mixture from the weather.

C. Bituminous Pavers:

1. Bituminous pavers shall be self-contained, power-propelled units, provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in widths applicable to the specified typical section and thicknesses shown on the plans.
2. Each paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation.
3. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed.
4. Each paving machine shall be equipped with an automatic control system which will control the elevation of the screed and which is automatically actuated by a system of sensor-operated devices which sense and follow reference lines or surfaces on one or both sides of the machine as required.
5. The screed shall be maintained at the proper elevation at each end by controlling the elevation of one end and automatically controlling the transverse slope or by controlling the elevation of each end independently, as directed.
6. When a control line is used to control elevation it shall be installed by the CONTRACTOR and shall be maintained taut and to the grade and alignment established.
7. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.
8. When laying mixtures, the paver shall be capable of being operated at forward speeds consistent with satisfactory laying of the mixture.

D. Rollers:

1. Rollers shall be of the steel wheel, vibratory, pneumatic tire type, or combination and shall be in good condition, capable of reversing without backlash.

2.06 SOIL STERILIZATION

- A. Shall be in accordance with CDOT, Section 217.02.**

PART 3 - EXECUTION

3.01 WEATHER LIMITATIONS

Bituminous plant mix shall be placed only on properly constructed and accepted layers that are free from water, snow, or ice. Bituminous mixture shall not be placed on a frozen surface unless otherwise approved by the ENGINEER. The bituminous mixture shall be placed within the air temperature limitations of the following table and only when weather conditions otherwise permit the pavement to be properly placed and finished.

PLACEMENT TEMPERATURE LIMITATIONS					
Top Layer of the Completed Pavement			Layers Below the Top Layer of Completed Pavement		
Min. Placement Air Temp.			Min. Placement Air Temp.		
Compacted Thickness	Mix Temp. 235°	Mix Temp. 200°-234°	Compacted Thickness	Mix Temp. 234°	Mix Temp. 200°-234°
1"	60°F	70°F	2"	40°F	50°F
1" -2½"	50°F	55°F	2"-3"	35°F	40°F
>2½"	40°F	45°F	3½"-4"	20°F	20°F

The ENGINEER may waive minimum ambient air temperature requirements for placing prime coats and layers of bituminous mixtures below the top layer of the completed pavement.

3.02 CONDITIONING OF EXISTING SURFACE

- A. **When the surface of the existing pavement or old base is irregular, it shall be brought to uniform grade and cross section as directed.**
- B. **When specified in the Contract Documents, all longitudinal and transverse joints and all cracks shall be sealed by the application of an approved joint sealing compound before spreading the mixture upon a Portland cement concrete surface.**
- C. **All excess hot mix asphalt shall be removed from joints and cracks prior to spreading the mixture.**
- D. **Contact surfaces of curbing, gutters, manholes, and other structures shall be painted with a thin, uniform coating of bituminous material prior to the bituminous mixture being placed against them.**

3.03 SPREADING AND FINISHING

- A. **The mixture shall be laid upon an approved surface, spread and struck off to the grade and elevation established.**
- B. **Hot Mix Asphalt pavers shall be used to distribute the mixture either over the entire width or over such partial width as may be practicable.**
- C. **The longitudinal joint in one layer shall offset that in the layer immediately below by approximately six inches.**
- D. **The joints in any pavement layer shall not fall in a wheel track.**
- E. **The joints in the top layer shall be located as follows:**

1. For 2-lane roadways, at the center line of the pavement and at the outside edge of travel lanes.
 2. For roadways of more than two lanes at the lane lines and at the outside edge of the travel lanes.
- F. On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, the mixture shall be spread, raked and luted by hand tools. For such areas, the mixture shall be dumped, spread and screeded to give the required compacted thickness.**
- G. The bituminous mixture shall be transported and placed on the roadway in such manner as to minimize segregation.**
- H. All segregated areas behind the paver shall be removed immediately at the time of discovery.**
- I. All segregated material shall be replaced with specification material before the initial rolling has taken place.**
- J. If more than 50 square feet of segregated is ordered removed and replaced in any continuous 500 linear feet of paver width laydown, paving operations with the paving machine involved shall be discontinued until the source of the segregation has been found and corrected.**
- K. The ENGINEER will determine by judgement the extent of segregated areas. It is not intended that each segregated area be sampled and tested; however, segregation is defined as follows:**
1. Representative samples of allegedly segregated areas will be tested in accordance with CDOT Procedures 42 and 31.
 2. The mixture will be designated as segregated when the percent passing the No. 4 sieve varies from the average of the previous 5 acceptance tests by more than 9 percentage points.
 3. Where less than 5 acceptance tests are available for the average, all acceptance tests prior to that time will be averaged for comparison to the sampling being checked for segregation.
- L. The CONTRACTOR will not be allowed additional compensation for correction of segregated areas.**

3.04 COMPACTION

- A. After the bituminous mixture has been spread, struck off and the surface irregularities adjusted, it shall be thoroughly and uniformly compacted by rolling.**
- B. The surface shall be rolled when the mixture is in the proper condition and when the rolling does not cause undue displacement, cracking, or shoving.**
- C. The number, weight, and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition.**
- D. Unless otherwise directed, rolling shall begin at the sides and proceed longitudinally parallel to the road centerline, each trip overlapping one-half the roller width, gradually progressing to the crown of the road.**
- E. When abutting a previously placed lane, the longitudinal joint shall be rolled first, followed by the regular rolling procedure.**
- F. On super-elevated curves, the rolling shall begin at the low side and progress to the high side by overlapping of longitudinal strips parallel to the centerline.**
- G. Rolling shall be continued until all roller marks are eliminated and a minimum density of 95 percent of a laboratory specimen made in the proportions of the job-mix formula has been obtained.**

- H. **Field density determinations will be made in accordance with CDOT Procedure No. 44 or No. 81.**
- I. **Any displacement occurring as a result of the reversing of the direction of a roller, or from other causes, shall be corrected at once by the use of rakes and addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edges of the bituminous mixture.**
- J. **To prevent adhesion of the mixture to the rollers, the wheels shall be kept properly moistened with water or water mixed with very small quantities of detergent or other approved material. Excess liquid will not be permitted.**
- K. **Along forms, curbs, headers, walls and other places not accessible to the rollers, the mixture shall be thoroughly compacted with hand tampers or with mechanical tampers.**
- L. **On depressed areas, a trench roller may be used or cleated compression strips may be used under the roller to transmit compression to the depressed area.**
- M. **Any mixture that becomes loose and broken, mixed with dirt, or is in any way defective, shall be removed and replaced with fresh hot mixture, which shall be compacted to conform with the surrounding area.**

3.05 JOINTS

- A. **Placing of the bituminous paving shall be as continuous as possible.**
- B. **Rollers shall not pass over the unprotected end of a freshly laid mixture unless authorized by the ENGINEER.**
- C. **Transverse joints shall be formed by cutting back on the previous run to expose the full depth of the course.**
- D. **When directed by the ENGINEER, a coat of bituminous material shall be used on contact surfaces of all joints just before additional mixture is placed against the previously rolled material.**

3.06 PAVEMENT SAMPLES

- A. **The ENGINEER may take samples of the compacted pavement at random locations on the project for testing.**
- B. **Where samples have been taken, new material shall be placed and compacted by the CONTRACTOR to conform with the surrounding area.**

3.07 SURFACE TOLERANCES

- A. **The variation between any two contacts with the surface shall not exceed 3/16 inch in 10 feet.**
- B. **All humps or depressions exceeding the specified tolerance shall be corrected by removing defective work and replacing it with new material as directed.**

3.08 STRUCTURES

- A. All manholes, catch basins, or structures of a permanent nature, encountered in the areas to be paved, shall be raised or lowered to the elevation of the surface of the new pavement.**

3.09 TACK COAT

A. General:

1. A tack coat shall be required on all paving operations when overlaying existing pavement.
2. A tack coat may be required on full depth asphalt applications when, in the ENGINEER's opinion, sufficient time has elapsed between lifts that the bonding of separate lifts may be impaired.
3. Emulsified asphalt for tack coat shall conform to subsection 2.01 E 2 of this section.

B. Weather Limitations:

1. Tack coat shall not be applied under the following conditions:
 - a. When the surface is wet.
 - b. When weather conditions would prevent the proper penetration or curing of the tack coat.
 - c. When the temperature in the shade is below 55°F.

C. Surface Preparation:

1. Existing pavement to receive tack coat shall be patched and cleaned and shall be free of irregularities prior to application of tack coat.
2. A herbicide meeting the requirements of CDOT Section 217 shall be applied to all cracks and joints in the area to be treated prior to application of tack coat.
3. All vegetation, growing or dead, shall be removed by the CONTRACTOR prior to application of the tack coat.
4. Cleaning shall continue until the embedded aggregate is exposed but not dislodged.
5. All dust, mud and foreign matter shall be removed prior to application of tack coat.

D. Application of Tack Coat:

1. Tack coat shall be uniformly applied to the width of the area to be coated.
2. The CONTRACTOR shall exercise care at the junctions of spreads so that excess tack coat is not applied.
3. Excess tack coat applied shall be squeegeed from the surface or otherwise removed or distributed as directed by the ENGINEER.

E. Application Rates and Curing:

1. Tack coat shall be applied at the rate of 0.10 gallons per square yard unless otherwise directed by the ENGINEER.
2. Application temperature of the tack coat shall be between 80°F and 130°F.
3. The tacked surface shall be free from residual moisture prior to placing any bituminous pavement.

3.10 SUB-GRADE PREPARATION

A. General:

1. Natural soils shall be stripped of organic matter, scarified, moisture treated and compacted by the CONTRACTOR prior to asphalt placement.
2. The top one (1) foot of the sub-grade shall be moisture treated to between optimum and two (2) percent above optimum moisture content. The testing agent retained by the OWNER will perform the necessary tests to determine compliance with this provision.
3. Soils shall be compacted to at least 95 percent of maximum standard Proctor dry density when tested in accordance with AASHTO T 99, Method A.
4. Moisture treatment and compaction requirements shall also apply where additional fill is required to bring the subgrade to the required elevation.
5. The subgrade shall be in a moist condition at the time the asphalt is placed per subsection 3.10 A 2 above.
6. Asphalt shall not be placed on any portion of the subgrade which has not been tested for correct grade and cross-section.
7. The subgrade shall be cleared of any loose material which may have fallen upon it.
8. All soft and unyielding material and other portions of the subgrade which will not compact readily when rolled or tamped shall be removed as directed and replaced with suitable granular material, placed and compacted as specified.

3.11 SOIL STERILIZATION

- A. Three days prior to paving, an approved granular herbicide shall be applied at the rates listed in CDH, Section 217.02 to all areas to receive paving. Application shall be according to the methods and precautions recommended by the manufacturer.**
- B. Treatment shall be made at a temperature of 70°F or higher, or as designated by the ENGINEER.**
- C. The CONTRACTOR shall comply with all Colorado statutes and all local ordinances or codes pertaining to the use and application of fungicides, insecticides, herbicides, or other agricultural chemicals.**
- D. The CONTRACTOR will be held responsible for any damage to plant growth outside the designated treatment areas, where such damage is attributable to carelessness or improper application of the herbicide. Care shall be exercised to prevent powder spray or vapor drift which may damage crops, gardens, shrubs, or trees in the vicinity of the areas being treated.**
- E. Herbicides shall not be used where they may contaminate water used for irrigation or drinking purposes.**

Note: CDOT references the Colorado Department of Transportation. For Specifications, CDOT refers to the 2023 CDOT Standard Specifications for Road and Bridge Construction. For test procedures, CDOT refers to the current CDOT Field Materials Manual or the CDOT Manual of Laboratory Test Procedures.

END OF SECTION

**SECTION 02 51 09
GRAVEL SURFACING**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section covers gravel surfacing to be furnished and placed at gravel roads, streets, alleys or parking lots disturbed by trenching or the operation of equipment and machinery during the course of the Work.**
- B. Related work specified elsewhere:**
1. Section 02 22 00 – Removal of Structures and Obstructions
 2. Section 02 23 00 – Clearing and Grubbing
 3. Section 02 31 00 – Excavation and Embankment
 4. Section 02 32 00 – Trenching Excavation and Backfill

1.02 QUALITY ASSURANCE

- A. Reference standards:**
1. American Society for Testing and Materials (ASTM).
 - a. As referenced herein.

1.03 SUBMITTALS

- A. Certification: Submit certification to the Engineer that the aggregate meets the Standard Specifications.**

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Aggregates for base course and gravel surface: Colorado Department of Highways Class 6 aggregate Base Course.**
- B. Thickness: 6 inches minimum. Match existing thickness if greater than 6 inches.**

PART 3 - EXECUTION

3.01 PREPARATION

- A. Major clearing and grading work shall be performed in accordance with Section 02 23 00.**
- B. Prepare subgrade in accordance with the following:**
1. Scarify to a depth of six (6) inches and compact to 95% of standard proctor at optimum moisture content as determined by the Geotechnical Engineer.
 - a. Reinforce subgrades with stabilization material which are otherwise solid, but become muddy on top due to construction operations.
 - b. Finish stabilized subgrade to elevations shown on the Drawings.
 2. Do not work on subgrade while ground is frozen or muddy.

3. Remove exposed cobbles, stones or boulders greater than six (6) inches in size that create an irregular surface at subgrade. Backfill resulting voids with crushed gravel base course compacted to specific density.
4. Carefully compact near structures to avoid damage.
5. Level and compact subgrade so that surface materials will bond well with the first layer of backfill, fill or embankment.

C. Areas to receive gravel surfacing shall be graded in such a manner that the edges of the gravel surfacing, when placed as specified and to the designated uniform thickness, will be at the same elevation as adjacent earth.

D. Graveled surface shall be crowned to drain. Perform grading necessary to provide a smooth roadway.

3.02 APPLICATION

A. Apply gravel surfacing in uniform layers with each layer not to exceed a total compacted depth of 4 inches.

B. Handle and spread gravel surfacing in a manner that will prevent segregation of sizes. Each layer shall be carefully and uniformly spread.

3.03 COMPACTION

A. When each layer is sufficiently deep to form a compacted layer of the specified thickness, it shall be rolled by a road-type vibrator compactor or pneumatic tired roller to obtain a density of 95% in accordance with ASTM D698.

3.04 COMPLETED SURFACE

A. Provide surface conforming to proper elevation and contour free of ruts, depressions, and other surface disturbances and be finished to the lines and grades indicated on the drawings.

1. Maximum variation in any 20-foot section, one-tenth of one foot.

END OF SECTION

SECTION 02 61 00
PRECAST REINFORCED CONCRETE PIPE

PART 1 GENERAL

1.01 SECTION INCLUDES

This section includes construction of reinforced concrete pipe for storm drainage, culverts, and sanitary sewer, including appurtenances normally installed as a part of these systems. Construction may include surface preparation; trench excavation; shoring; dewatering; lay, align and join pipe installation of appurtenances; bedding and backfilling; surface restoration; and other related work.

1.02 RELATED SECTIONS

- A. Section 02 24 00 – Water Control and Dewatering
- B. Section 02 32 00 – Trench Excavation and Backfill

1.03 SUBMITTALS

CONTRACTOR shall cooperate with ENGINEER in obtaining and providing samples of all specified materials. CONTRACTOR shall submit certified laboratory test certificates for all items required in this section.

1.04 QUALITY CONTROL

All pipe shall be inspected by ENGINEER prior to installation.

All pipe which does not meet the requirements of PART 2 of this section will be rejected and replaced at CONTRACTOR's expense.

PART 2 PRODUCTS

CONTRACTOR shall install storm sewer pipe of the type, diameter, load class, wall thickness and protective coating that is shown on the DRAWINGS. All pipe and appurtenances used shall conform to the following requirements.

2.01 MATERIALS

- A. **General.** Precast concrete pipe which does not conform to the applicable ASTM Standard Specifications listed below or to any other requirement specified herein shall not be approved for storm sewer, culvert, or sanitary sewer installations.
- B. **Allowable ASTM Specifications.** All material, manufacturing operations, testing, inspection, and making of concrete pipe shall conform to the requirements of the appropriate allowable ASTM Standard Specifications, latest revision thereof, listed below.
 - 1. ASTM C-14 – Concrete Sewer, Storm Drain, and Culvert Pipe
 - 2. ASTM C- – Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
 - 3. ASTM C-361 – Reinforced Concrete Low-Head Pressure Pipe
 - 4. ASTM C-506 – Reinforced Concrete Arch Culvert, Storm Drain and Sewer Pipe
 - 5. ASTM C-507 – Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe
- C. **Diameter of Pipe.** The diameter indicated on the DRAWINGS shall mean the inside diameter of the pipe.

- D. **Wall Thickness and Class of Pipe.** The wall thickness and reinforcing steel, if any, shall comply with the appropriate ASTM Specification and the class of pipe designated on the DRAWINGS. No elliptical reinforcing will be allowed in any circular pipe. All jacking pipe shall be specifically designed by the pipe manufacturer to withstand all forces that the pipe may be subjected to during the jacking operations.
- E. **Fittings and Specials.** Details of all fittings and specials shall be furnished for approval by ENGINEER. Fittings and specials shall be made up of pipe segments having the same structural qualities as the adjoining pipe and shall have the interior treated the same as the pipe.
- F. **Lifting Holes.** Lifting holes will be allowed for storm sewer pipe provided, however, only two lifting holes per pipe length will be allowed and all pipe shall be installed such that the lifting holes are in the crown of the pipe. All lifting holes shall be properly grouted with cement mortar immediately after the pipe is installed prior to commencement of any backfilling.
- G. **Cement.** Unless otherwise required by ENGINEER, or specified otherwise on the DRAWINGS, Type II Modified Portland Cement complying with the requirements of ASTM Designation C-150 will normally be acceptable in the manufacture of concrete pipe.
- H. **Acceptance.** In addition to any deficiencies not covered by the applicable ASTM Specifications, concrete pipe which has any of the following visual defects will not be accepted.
1. Porous spots on either the inside or the outside surface of a pipe having an area of more than ten (10) square inches and a depth of more than one-half (½) inch.
 2. Pipe which has been patched to repair porous spots, cracks, or other defects, when such patching was not approved by ENGINEER.
 3. Exposure of the reinforcement when such exposure would indicate that the reinforcement is misplaced.
 4. Pipe that has been damaged during shipment or handling even previously approved before shipment.
 5. Concrete pipe, at delivery to the job site, will be at least five (5) days (one hundred twenty [120] hours) old.
- Acceptance of the pipe at point of delivery will not relieve CONTRACTOR of full responsibility for any defects in materials due to workmanship.
- I. **Marking.** The following shall be clearly marked on both the interior and exterior surface of the pipe.
1. ASTM Specifications
 2. Class and Size
 3. Date of Manufacturer
 4. Name or Trademark of Manufacturer
- J. **Joints.** The joint design for concrete pipe shall be bell and spigot or tongue and groove. Where rubber gaskets are required or specified, the bell or tongue shall be grooved to properly contain and seat the rubber gasket. The joint assemblies shall be accurately formed so that when each pipe section is forced together in the trench the assembled pipe shall form a continuous watertight conduit with smooth and uniform interior surface, and shall provide for slight movement of any piece of the pipeline due to expansion, contraction, settlement or lateral displacement. If a gasketed joint is used, the gasket shall be the sole element of the joint providing water tightness. The ends of the pipe shall be in planes at right angles to the longitudinal centerline of the pipe, except where bevel-end pipe is required. The ends shall be furnished to regular smooth surfaces.

The jointing material used for concrete pipe storm sewer installations thirty six-inch (36") diameter and greater will be a rubber gasketed joint. For storm sewers less than thirty six-inch (36") diameter the jointing material may be either a rubber gasket or a flexible plastic sealing compound unless otherwise specified on the DRAWINGS. Only rubber gasketed joints will be acceptable for concrete pipe sanitary sewer installations. All joints and jointing material shall conform to the following minimum requirements.

1. Rubber Gasketed Joints: Rubber gasket joints for tongue and groove or bell and spigot pipe shall consist of an O-ring rubber gasket or other approved gasket configuration and shall conform to the requirements of the appropriate ASTM Specification of the pipe designated. Unless otherwise approved by ENGINEER, the standard joint configuration shall be similar and equal to the Bureau of Reclamation's "R-4" joint designation.

Gaskets may be either natural rubber or neoprene conforming to ASTM Designation C-443. All gaskets shall be stored in a cool place, preferably at a temperature of less than seventy degrees Fahrenheit (70° F.), and in no case shall the gaskets be stored in the open, or exposed to the direct rays of the sun. No gaskets that show signs of deterioration, such as surface cracking or checking, shall be installed in a pipe joint. The neoprene gaskets used when the air temperature is ten degrees Fahrenheit (10°F) or lower, shall be warmed to temperature of sixty degrees Fahrenheit (60° F) for a period of thirty (30) minutes before being placed on the pipe.

2. Mortared Joints: Mortared joints shall only be used in special circumstances and only where specifically authorized by ENGINEER. It is the intent of these SPECIFICATIONS to limit the use of mortared joints to the minimum extent possible except where unusual field conditions require deviation from the jointing material specified.
3. Flexible Plastic Joint Sealing Compound: Preformed plastic gaskets conforming to the minimum and application requirements set forth below may be used in as a joint sealant for storm sewer installations in lieu of rubber gaskets.
 - a. The flexible plastic gasket shall be in conformance with Federal Specification SS-S-00210, "Sealing Compound, Preformed Plastic for Expansion Joints and Pipe Joints."
 - b. The plastic sealing compound shall be packaged in extruded preformed rope-like shape of proper size to completely fill the joint when fully compressed. The material shall be protected in a suitable, removable, two-piece wrapper so that no wrapper may be removed as the compound is applied to the joint surface without disturbing the other wrapper, which remains attached to the compound for protection. The sealing compound shall be impermeable to water, have immediate bonding strength to the primed concrete surface and shall maintain permanent plasticity, resistance to water, acids, and alkalis.
 - c. All surfaces of the tongue and groove or bell and spigot shall be primed with an approved priming compound prior to the installation of the sealing compound. The installation of the priming compound and the sealing compound shall be accomplished in strict accordance with the manufacturer's instructions, as to the method of application, quantity of material, the grade of the materials, and the application temperatures.
 - d. Gaskets installed on both male and female joint surfaces (double gasketing) will be required for all deflected pipe joints, as well as arch or elliptical pipe joints.
4. SHOP DRAWINGS: Unless otherwise specified, CONTRACTOR shall submit to ENGINEER for approval SHOP DRAWINGS showing the exact dimension of the joints including the permissible tolerances for each size of pipe being furnished and the size, type and locations of gasket materials. Approval of the joint detail DRAWINGS will not relieve CONTRACTOR of any responsibilities to meet all of the requirements of these SPECIFICATIONS, or of the responsibility for correctness of CONTRACTOR's details.

5. Acceptable Joint for Concrete Storm and Sanitary Sewer Installations: Except where a specified type of pipe joint or jointing material is noted on the DRAWINGS, joints and jointing material for concrete sewer installations shall be in conformance with the following table.

Allowable Type of Joints

Application	Tongue & Groove w/flexible plastic sealing compound	Bell & Spigot w/B.O.R. Type R-4 Joint (ASTM C-361)	Bell & Spigot w/B.O.R. Type R-2 Joint
1. Non-Pressurized Storm Sewers			
a. Open Cut 36" & larger		X	
b. Open Cut 15" to 33"	X	X	X
c. Jack or Bored/Cased		X	X
2. Pressurized Storm Sewers			
a. Open Cut		X	X
b. Jack or Bored/Cased		X	X
3. Pressurized and Non-Pressurized Sanitary Sewers			
a. Open Cut		X	X
b. Jack or Bored/Cased		X	X

NOTES.

- 1) Where more than one type of joint is acceptable, CONTRACTOR may use either type subject to the physical characteristics and manufacturing method of the pipe and approval of ENGINEER.
- 2) All elliptical pipe or arch pipe shall be double gasketed.
- 3) In addition to the gasket requirements, if the average joint gap in 36-inch diameter pipe or larger pipe exceeds 3/4-inch, the void shall be filled and troweled smooth with an approved non-metallic, non-shrink grout conforming to ASTM C-827 or a flexible plastic sealant conforming to Federal Specification SS-S-00210 so to provide a smooth interior surface at the joint.
- 4) For pipe sizes 18-, 24-, 27-, 30-, and 36-inch in diameter, the reinforcement in the bell and spigot shall conform to ASTM C-76 for the class of pipe specified or to ASTM C-361 for a minimum pressure head of 25 foot, whichever is greater.

- K. **Protective Coatings.** Normally, no additional exterior or interior protective coatings will be required for concrete pipe. However, whenever adverse corrosive conditions warrant additional interior protection, those pipe segments will be noted on the DRAWINGS.

PART 3 EXECUTION

3.0.1 SURFACE PREPARATION

- A. **Within Easements, Cultivated, Landscaped, or Agricultural Area.** All vegetation, such as brush, sod, heavy growth of grass or weeds, decayed vegetable matter, rubbish and other unsuitable material within the area of excavation and trenchside storage shall be stripped and disposed of in accordance with the requirements of Section 02 23 00.

Topsoil shall be removed from the area to be excavated and stockpiled, or, CONTRACTOR may elect to import topsoil to replace that lost during excavation. Topsoil shall be removed to a depth of 8 inches or the full depth of the topsoil, whichever is less.

- B. **Within Unpaved Roadway Areas.** CONTRACTOR shall strip the cover material from graveled roadways or other developed, but unpaved traffic surfaces to the full depth of the existing surfacing. The surfacing shall be stockpiled to the extent that it is acceptable and useable for restoration purposes.

- C. **Within Paved Areas.** The removal of pavement, sidewalks, driveways, or curb and gutter shall be performed in a neat and workmanlike manner. Concrete pavement, asphalt, sidewalks, driveways, or curb and gutter shall be cut with a power saw to a depth of two (2) inches prior to breaking. The concrete shall be cut vertically in straight lines and avoiding acute angles.

Bituminous pavement, sidewalks, driveways, or curb and gutter shall be cut with a power saw, pavement breaker, or other approved method of scoring the mat prior to breaking or excavation. The bituminous mat shall be cut vertically, in straight lines and avoiding acute angles.

Any overbreak, separation, or other damage to the existing bituminous or concrete outside the designated cut lines shall be replaced at CONTRACTOR's expense. Excavated paving materials shall be removed from the job site and shall not be used as fill or backfill.

3.02 DEWATERING

All pipe trenches and excavation for structures and appurtenances shall be kept free of water during pipe laying and other related work. The method of dewatering shall provide for a dry foundation at the final grades of excavation in accordance with Section 02 24 00. Water shall be disposed of in a manner that does not inconvenience the public or result in a menace to public health. Pipe trenches shall contain enough backfill to prevent pipe flotation before dewatering is discontinued. Dewatering shall continue until such time as it is safe to allow the water to rise in the excavation.

3.03 LAYING, ALIGNING, AND JOINING PIPE

Storm sewer pipe shall be installed in accordance with the manufacturer's recommendations for installing the type of pipe used, unless otherwise shown on the DRAWINGS.

Proper equipment, implements, tools and facilities shall be provided and used by CONTRACTOR for safe and convenient installation of the type of pipe being installed.

- A. **Responsibility for Material.** CONTRACTOR shall be responsible for all materials intended for the work that are delivered to the construction-site and accepted by CONTRACTOR. Payment shall not be made for materials found to be defective or damaged in handling after delivery and acceptance. Defective or damaged materials shall be removed and replaced with acceptable materials at CONTRACTOR's expense.

CONTRACTOR shall be responsible for the safe and proper storage of such materials.

- B. **Handling.** Pipe and accessories furnished by CONTRACTOR shall be delivered to, unloaded and distributed at the site by CONTRACTOR. Pipe and accessories furnished by the Contracting Agency shall be unloaded and distributed at the site by CONTRACTOR. Each pipe shall be unloaded adjacent to or near the intended laying location.

Pipe fittings, specials, valves and appurtenances shall be unloaded and stored in a manner that precludes shock or damage. Such materials shall not be dropped.

Pipe shall be handled so as to prevent damage to the pipe ends or to any coating or lining. Pipe shall not be skidded or rolled against adjacent pipe. Damaged coatings or lining shall be repaired by CONTRACTOR, at CONTRACTOR's expense in accordance with the recommendations of the manufacturer and in a manner satisfactory to ENGINEER. Physical damage to the pipe or accessory shall be repaired by CONTRACTOR at CONTRACTOR's expense, and in a manner satisfactory to ENGINEER.

- C. **Laying Pipe.** The pipe and pipe coatings shall be inspected for damage or defects before being placed in the trench. Damaged or defective pipe shall not be installed.

Pipe lines shall be laid to the grades and alignment shown on the DRAWINGS or staked by ENGINEER. Variation from the prescribed grade and alignment shall not exceed one-tenth (0.10) foot, and the rate of

departure from, or return to, the established grade or alignment shall be not more than one (1) inch in ten (10) feet, unless approved by ENGINEER. No deviation from grade shall cause a depression in the sewer invert that could retain fluids or solids.

Pipe fittings shall be laid so as to form a close concentric joint with the adjoining pipe to avoid sudden offsets of the flowline. Pipe sections shall be joined together in accordance with the manufacturer's recommendations.

Pipe fittings and appurtenances shall be carefully lowered into the trench with suitable tools or equipment to prevent damage to the pipe and protective coatings and linings; pipe and accessory materials shall not be dropped or dumped into the trench.

Obstructions not shown on the DRAWINGS may be encountered during the progress of the work. Should such an obstruction require an alternation to the pipe alignment or grade, ENGINEER shall have authority to order a deviation from the DRAWINGS, or ENGINEER may arrange for the removal, relocation, or reconstruction of any structures which obstruct the pipeline.

Precautions shall be taken to prevent foreign material from entering the pipe before or while it is being placed in the line. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe. The open ends of pipe shall be closed with a watertight plug, or with other devices approved by ENGINEER, at times when pipe laying is not in progress.

Joints of precast concrete boxes and precast concrete pipe shall be grouted in accordance with the manufacturer's recommendations or as designated on the DRAWINGS.

3.04 BEDDING AND BACKFILLING

Select bedding and backfill material may be required and shall be so shown on the DRAWINGS. Select bedding materials shall conform to the designated gradation requirements in Section 02 32 00.

Bedding material shall be placed under and around all pipe as shown on the DRAWINGS. Bedding shall be placed in a manner that will minimize separation or change in its uniform gradation. Bedding shall be distributed in six-inch (6") maximum layers over the full width of the trench and simultaneously on both sides of the pipe. Special care shall be taken to assure full compaction under the haunches and joints of the pipe.

Backfill compaction shall not be attained by inundation or jetting unless approved in writing by ENGINEER. Backfill material shall be uniformly compacted the full depth of the trench.

3.05 SURFACE RESTORATION

All streets, alleys, driveways, sidewalks, curbs or other surfaces broken, cut or damaged by CONTRACTOR shall be replaced in kind or as shown on the DRAWINGS.

3.06 CONCRETE CUTOFF COLLARS

Concrete shall meet the requirements of Section 03 31 00.

3.07 CLEAN UP

All rubbish, unused materials and other non-native materials shall be removed from the job site. All excess excavation shall be disposed of as specified, and the right-of-way shall be left in a state of order and cleanliness.

END OF SECTION

**SECTION 02 71 00
AGGREGATE BASE COURSE**

PART 1 GENERAL

1.01 SECTION INCLUDES

The WORK to be performed includes the preparation of the aggregate base course foundation; and the production, stockpiling, hauling, placing, and compacting of aggregate base course.

1.02 RELATED SECTIONS

- A. Section 02 24 00 – Water Control and Dewatering
- B. Section 02 31 00 – Excavation and Embankment

1.03 SUBMITTALS

CONTRACTOR shall cooperate with ENGINEER in obtaining and providing samples of all specified materials. CONTRACTOR shall submit certified laboratory test certificates for all items required in this section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. **Aggregates.** Aggregates for bases shall be crushed stone, crushed slag, crushed gravel or natural gravel that conforms to the quality requirements of AASHTO M 147 except that the requirements for the ratio for the minus No. 200 sieve fraction to the minus No. 40 sieve fraction shall not apply. The requirements for the Los Angeles wear test shall not apply to Class 1, 2 and 3. Aggregates for bases shall meet the grading requirements as called out in the DRAWINGS. The liquid limit shall be as shown in the table and the plasticity index shall be ≤ 6 .
- B. **Gradations**

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves						
	LL < 35			LL < 30			
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7
4 inch	---	100	---	---	---	---	---
3 inch	---	95 - 100	---	---	---	---	---
2 1/2 inch	100	---	---	---	---	---	---
2 inch	95 - 100	---	---	100	---	---	---
1 1/2 inch	---	---	---	90 - 100	100	---	---
1 inch	---	---	---	---	95 - 100	100	100
3/4 inch	---	---	---	50 - 90	---	95-100	---
No. 4	30 - 65	---	---	30 - 50	30 - 70	30 - 65	---
No. 8	---	---	---	---	---	25 - 55	20 - 85
No. 200	3 - 15	3 - 15	20 max.	3 - 12	3 - 15	3 - 12	5 - 15

Note: Class 3 materials shall consist of bank or pit run material.

2.02 EQUIPMENT

Equipment shall be capable of legally performing the WORK as described in this SPECIFICATION. Equipment that is inadequate to obtain the results specified shall be replaced or supplemented as required to meet the

requirements of this SPECIFICATION. Any equipment that is used in an improper manner may be cause for rejection of the WORK if in the opinion of ENGINEER the WORK fails to meet the requirements of this specification.

Equipment used for compaction shall be the rolling type, vibratory type, or combination of both types, and shall be of sufficient capacity to meet the compaction requirements herein.

PART 3 EXECUTION

3.01 PREPARATION OF FOUNDATION

The foundation shall be considered to be the finished earth subgrade, subbase course, or base course, as the case may be, upon which any subbase, base or surface course is to be constructed.

Preparation of foundation for construction of a subbase, base, or surface course shall consist of the WORK necessary to restore, correct, strengthen or prepare the foundation to a condition suitable for applying and supporting the intended course.

For aggregate base course roads and parking areas, the top six-inches of topsoil shall be stripped within the area to be aggregate surfaced. Following stripping of the topsoil, the upper twelve (12) inches of the subgrade shall be scarified and compacted to a minimum of ninety five percent (95%) of the Maximum Standard Proctor Density (ASTM D698). On-site material may be used as accepted by ENGINEER, for compacted fill for the aggregate base course. Fill shall be placed within two percent (2%) of optimum moisture content and compacted to a minimum of ninety five percent (95%) of the Maximum Standard Proctor Density (ASTM D698).

Aggregate base course used as a foundation for pavements shall be placed on the subgrade within two percent (2%) of optimum moisture and compacted to a minimum of one hundred percent (100%) of the Maximum Modified Proctor Density (ASTM D1557). The top six (6) inches of topsoil shall be stripped within the area to be aggregate surfaced. Following stripping of the topsoil, the upper twelve (12) inches of the subgrade shall be scarified and compacted to a minimum of ninety five percent (95%) of the Maximum Standard Proctor Density (ASTM D698). On-site material may be used, as accepted by ENGINEER, for compacted fill for the aggregate base course. Fill shall be placed within two percent (2%) of optimum moisture content and compacted to a minimum of ninety five percent (95%) of the Maximum Standard Proctor Density (ASTM D698). Deviations in aggregate base course under pavements of more than one-quarter ($\frac{1}{4}$) inch in ten (10) feet, measured with a ten-foot (10') straight edge, shall be corrected prior to pavement construction.

The foundation shall be prepared and constructed such that it will have a uniform density throughout. It shall be brought to the required alignment and cross section with equipment and methods adapted for the purpose. Upon completion of the shaping and compacting operations, the foundation shall be smooth, at the required density, and at the proper elevation and contour to receive the aggregate base course.

Unless otherwise provided, all holes, ruts and other depressions in the foundation shall be filled with materials similar to those existing in the foundation. High places shall be excavated and removed to the required lines, grade and section.

Areas of yielding or unstable material shall be excavated and backfilled with stabilization rock as determined by ENGINEER. Base course material shall not be placed on a foundation that is soft, spongy, or one that is covered by ice or snow. Base course shall not be placed on a dry or dusty foundation where the existing condition would cause rapid dissipation of moisture from the base course material and hinder or preclude its proper compaction. Dry foundations shall have water applied and reworked and compacted as necessary.

ENGINEER shall direct CONTRACTOR to make minor adjustments in the finish grade from that shown in the DRAWINGS as may be necessary or desirable to maintain the characteristics of a stabilized foundation by minimizing the amount of cutting into or filling.

3.02 EARTH SUBGRADE

When the foundation is an earth subgrade it shall be prepared by removing all vegetation, excavating and removing materials, filling depressions, scarifying, shaping, smoothing and compacting to meet the required grade, section and density. Stones over six (6) inches in greatest dimension shall be removed.

3.03 PLACEMENT

The aggregate base course shall be constructed to the width and section shown in the DRAWINGS. If the required compacted depth of base coarse exceeds six (6) inches, the base shall be constructed in two (2) or more layers of approximate equal thickness. The maximum compacted thickness of any one (1) layer shall not exceed six (6) inches.

Each layer shall be constructed as far in advance of the succeeding layer as ENGINEER may direct. The WORK shall, in general, proceed from the point on the PROJECT nearest the point of supply of the aggregate in order that the hauling equipment may travel over the previously placed material, and the hauling equipment shall be routed as uniformly as possible over all portions of the previously constructed courses or layers of the base course.

The material shall be deposited on the soil foundation, or previously placed layer, in a manner to minimize segregation and to facilitate spreading to a uniform layer of the required section. In the event that blending of materials is necessary to provide required gradation and properties of the material, and is done in the roadway, the same shall be accomplished by mixing the aggregate and blending material by means of blade graders, discs, harrows, or other equipment to effect a uniform distribution and gradation throughout the finished mixture. Excessive mixing and grading that will cause segregation between the coarse and fine materials is prohibited.

3.04 COMPACTION

- A. After a layer or course has been placed and spread to the required thickness, width and contour, it shall be compacted. If the material is too dry to readily attain the required density, it shall be uniformly moistened to the degree necessary during compaction operations for proper compaction.
- B. Compaction of each layer shall continue until the required density specified in Sub-section 3.01 is reached. The surface of each layer shall be maintained during compaction operations in such a manner that a uniform texture is produced and aggregates firmly keyed.

All areas where proper compaction is not obtainable due to segregation of materials, excess fines, or other deficiencies in the aggregate shall be reworked as necessary or the material removed and replaced with aggregates that will meet this specification.

The surface of each layer shall be kept true and smooth at all times.

3.05 MIXING

Unless otherwise specified, CONTRACTOR shall mix the aggregate by any one of the three following methods:

- A. **Stationary Plant Method.** Aggregate base course and water shall be mixed in an approved mixer. After mixing, the aggregate shall be transported to the project site while it contains the proper moisture content and shall be placed on the roadbed by means of an approved spreader.
- B. **Travel Plant Method.** After the material for each layer has been placed through an aggregate spreader or windrow-sizing device, it shall be uniformly mixed by a traveling mixing plant.
- C. **Road Mix Method.** After material for each layer has been placed, the materials shall be mixed while at optimum moisture content by motor graders or other approved equipment until the mixture is uniform throughout.

3.06 SHOULDER CONSTRUCTION

Shoulders shall be constructed with base course material to conform to the elevation and section shown in the DRAWINGS. No equipment shall be used which by its design or through its manner of operation will damage the pavement or curbs. Insofar as practicable, the base course material shall be placed directly on the shoulder area. Materials that are deposited outside the shoulder area, if not contaminated, shall be recovered and placed within the required limits. CONTRACTOR shall not be compensated for materials not recovered as determined by ENGINEER.

Materials shall not be deposited on the pavement or surfacing during placing unless specifically permitted by ENGINEER.

The base course material as placed shall be spread and compacted to the required density in layers not exceeding six (6) inches in compacted thickness. Any material inadvertently placed on the pavement shall be broomed from the pavement. The result shall not effect a change in the gradation of the shoulder material.

END OF SECTION

DIVISION 32

EXTERIOR IMPROVEMENTS

**SECTION 32 92 19
NATIVE SEEDING**

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS: The General Contract Conditions, Drawings and Division - 1 Specification sections apply to Work of this section.
- 1.02 SUMMARY:
- A. Work Included: Installation of native grass seed and specified mulch, netting if applicable, landscape mulch and maintenance of the seeded areas until Final Acceptance.
- 1.03 REFERENCES:
- A. Reference Standards: Comply with U.S. Department of Agriculture Rules and Regulations under Federal Seed Act and be equal or better in quality than standards for certified seed.
- 1.04 SUBMITTALS:
- A. Quality Control Submittals:
1. Certificates: State or Federal Seed Tags or other inspection certificates shall accompany the invoice for materials showing source or origin. Submit to ENGINEER prior to acceptance of the material.
- B. Contract Closeout Submittals:
1. Operating and Maintenance Data: At completion of work, submit 3 copies in accordance with the specifications.
- 1.05 QUALITY ASSURANCE:
- A. Source Quality Control:
1. Seed Materials: Subject to inspection and acceptance. The ENGINEER reserves the right to reject at any time or place prior to acceptance, any work and seed which in the ENGINEER's opinion fails to meet specification requirements.
2. Inspection: Primarily for quality; however, other requirements are not waived even though visual inspection results in acceptance.
3. Inspection will be made periodically during seeding, at completion of seeding and at end of warranty period by ENGINEER.
- B. Testing Requirements: Seed and seed labels shall conform to current State and Federal regulations and be subject to testing provisions of the Association of Official Seed Analysis.
- 1.06 DELIVERY, STORAGE, AND HANDLING
- A. Seed: Deliver seed in sealed standard containers stating correct name and composition on the outside of the container. Seed damaged in transit or storage will not be accepted.
- B. Material will be inspected upon arrival at project site.
- C. Immediately remove unacceptable material from job site.

1.07 PROJECT/SITE CONDITIONS

- A. Existing Conditions: Vehicular accessibility on site shall be as directed by ENGINEER. Repair damage to prepared ground and surfaces, caused by vehicular movement during work under this section, to original condition at no additional cost to the Town.
- B. Environmental Conditions: Do not drill or sow seed during windy weather or when ground is frozen or otherwise untillable.

1.08 WARRANTY:

- A. Warranty for Native Seed in Non-irrigated Areas: No warranty will be required.

1.09 MAINTENANCE:

- A. General: The maintenance period shall begin immediately after each area is seeded and continue until Final Acceptance of entire project or a minimum of 90 days, whichever is longer. Final Acceptance of seeded areas will not be given until ENGINEER is satisfied with germination and a full stand of grass is in a vigorous growing condition, with consistency and completion of coverage. During this time, be responsible for watering, mowing, spraying, weeding, and all related work as necessary to ensure that seeded areas are in a vigorous growing condition. Provide all supervision, labor, material and equipment to maintain seeded areas. After Final Acceptance, maintenance shall become the responsibility of the Town.
- B. Non-irrigated Areas: The seeded areas shall be accepted on the basis of showing evidence of growth of specified seed material over the entire seeded area within three (3) months of seeding during weather conditions that are favorable for seed germination and growth.
- C. Materials: Conform to specifications or otherwise be acceptable to the Town.
- D. Mowing and Trimming: Mow native grasses after the grass has gone to seed, cutting back to not less than 4" height.
- E. Weed Control: Control weeds by mowing and in accordance with the Town of Blue River Noxious Weed Management Plan.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General:

Unless otherwise stated in the Contract, the Contractor shall be responsible for selecting the seed mix to be used on the project based on the soil types and seed mixes outlined under Seed Mixes below.

1. The selected seed mix must be approved by the ENGINEER prior to its incorporation into the project.
2. All seed shall be furnished in bags or containers clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, origin, the percent of weed seed content, the guaranteed percentage of purity and germination, pounds of pure live seed (PLS) of each seed species, and the total pounds of PLS in the container. All brands shall be free from Colorado prohibited noxious weed seeds as Russian or Canadian Thistle, European Bindweed, Johnson Grass, and Leafy Spurge. The Contractor shall furnish to the ENGINEER a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within six

months prior to the date of delivery. Seed that has become wet, moldy or damaged in transit or in storage will not be acceptable.

3. Computation for quantity of seed required on the project is based on Pure Live Seed (PLS). The formula used for determining the quantity of PLS shall be: $Pounds\ of\ Seed\ x\ (Purity\ x\ Germination) = Pounds\ of\ PLS$. If seed available on the market does not meet the minimum purity and germination specified, the Contractor must compensate for a lesser percentage of purity or germination by furnishing sufficient additional seed to equal the specified product. Product comparison shall be made on the basis of PLS in pounds, stated on each seed bag.

B. Seed Mixes:

1. Use a 50/50 combination of the Short Dry Grass Mix and Native High Country Grass Seed mixes provided by Neils Lunceford, Inc., 740 Blue River Parkway, Silverthorne, CO. 80498 (P) 970-468-0340, or approved equal. Use a rate of 2-3 pounds per 1,000 square feet.

a.	Short Dry Grass Mix:	
	Hard Fescue, Rhino	30%
	Creeping Red Fescue, SR5250	30%
	Sheep Fescue, VNS	25%
	Canada Bluegrass, Reubens	10%
	Canby Bluegrass, Canbar	<u>5%</u>
		100%

b.	Native High Country Grass:	
	Slender Wheatgrass	15%
	Bluebunch Wheatgrass	15%
	Sandberg Bluegrass	10%
	Indian Ricegrass	10%
	Idahoe Fescue	10%
	Western Wheatgrass	10%
	Blue Wildrye	10%
	Rocky Mountain Fescue	10%
	Tufted Hairgrass	5%
	Canby Bluegrass	<u>5%</u>
		100%

- C. Water: Free of substances harmful to plant growth. Be responsible for furnishing water from underground sprinkler system, quick couplers or other source.
- D. Fertilizer: None required.
- E. Mulch: Comply with CDOT 213.02. Straw mulch shall be a clean grass hay or cereal straw and certified weed free before delivery on site and acceptance. Fifty percent of straw length shall be 10 inches or longer.
- F. Tackifier: Comply with CDOT 213.02.
- G. Erosion Control Blanket: Comply with CDOT 216.02
- H. Landscape Mulch: Provide natural shredded tree mulch supplied by Neils Lunceford, Inc., 740 Blue River Parkway, Silverthorne, CO. 80498 (P) 970-468-0340, or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Verify that existing site conditions are as specified and indicated before beginning work under this
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(SPRUCE CREEK ROAD IMPROVEMENTS)

section.

1. Layout: Verify layout of seeding areas as indicated prior to starting seeding operations.
 2. Grades: Inspect to verify that fine grading is within 0.1 foot of grades specified and indicated.
- B. Unsatisfactory Conditions: Report in writing to General Contractor with a copy to the ENGINEER.
- C. Acceptance: Beginning of installation means acceptance of existing conditions by this Contractor.

3.02 PREPARATION

- A. Protection:
1. Be responsible for proper repair to landscape, utilities, fences, pavements and other site improvements damaged by operations under this section.
 2. Pay for repairs made by Contractor(s) designated by the Town.
 3. Identify prepared seeding areas requiring protection and erect barriers for proper protection and traffic control.
- B. Erosion Control: Take measures and furnish equipment and labor necessary to control and prevent soil erosion, blowing soil and accumulation of wind-deposited materials on the site throughout the duration of work.
- C. Seeding Areas: Remove weeds, debris and rocks larger than 1" which may hinder seeding or subsequent operations. Dispose of accumulated debris at direction of the ENGINEER.
- D. Fine Grading: Perform as required to maintain positive drainage, prevent ponding and direct run-off into catch basins, drainage structures, etc., and to provide smooth well-contoured surface prior to proceeding. A firm weed-free seed bed is required. Tolerance: ± 0.10 foot.

3.03 SEEDING:

- A. General: Accomplish seeding by a rangeland grass drill with double disk openers and depth bands. Rows of seed shall be at right angles to the slope. Seed shall be sown at a depth of 1/4" to 1/2". Furrows left by drill seeding shall be left in place unless otherwise directed by the ENGINEER.
- B. In areas too small or steep to operate a drill and if approved by the ENGINEER, seeding may be accomplished by broadcast or hydraulic type seeders at twice the rate specified, at no additional cost to project. Broadcast seed to be raked in at a min. 1/4".
- C. Seeding Seasons
1. Contractor
 - a. Spring Seeding: Spring thaw to June 30
 - b. Fall Seeding (dormant): October 15 to March 31
- D. Dormant Seeding: Upon approval of the ENGINEER, dormant seeding may be accomplished between October 15 and March 31. No seeding shall be done when the ground is frozen, muddy, covered with snow, or otherwise in a condition unsuitable for seeding. Dormant seeding will not relieve the Contractor from any of the warranty or acceptance requirements specified elsewhere in this Section, except that Final Acceptance shall not occur until June 1 at the earliest.

3.04 MULCHING:

- A. In areas too small or too steep for crimping, straw may be spread uniformly on the surface at the specified rate. Apply tackifier in accordance with CDOT 213.03.
- B. Hydromulch Application: Use an approved hydromulcher to apply cellulose fiber at a rate of 2000 lbs/acre. Mulch tackifier shall be applied at 200 lb/acre.
- C. Mulching shall not be done in the presence of free surface water resulting from rains, melting snow or other causes.
- D. Areas not properly mulched, or damaged due to the Contractor's negligence, shall be repaired and remulched in an acceptable manner at the Contractor's expense. Mulching removed by wind prior to acceptance shall be replaced by the Contractor at his own expense.
- E. The seeded area shall be mulched within 24 hours after seeding. Areas not mulched within 24 hours after seeding must be re-seeded with the specified seed mix at the Contractor's expense.
- F. Remove oversprayed mulch immediately from trees, shrubs and sod to prevent damage to same.

- 3.05 EROSION CONTROL BLANKET: Install erosion control blanket on slopes exceeding 4:1, in swales or other areas of concentrated runoff, including edges of new trails and sidewalks where water bars or other features of topography may lead to run off or rilling. Install in accordance with manufacturer's instructions. Areas to be covered with erosion control blanket shall be properly prepared and seeded before blankets are placed.

No mulch shall be placed under areas to be protected by erosion control blanket. Contour furrowing shall not be done in areas where blankets are to be placed. The soil shall be raked smooth, free of clods, rocks, wood, and other obstructions so that the blankets are in direct contact with soil. No gaps or voids shall exist under the blankets/mats.

Erosion Control Blanket (CF072B or as indicated on DRAWINGS) shall be installed smoothly but loosely on the soil surface without stretching. Blankets shall be staked and anchored per manufacturer's recommendation. A minimum edge distance of 3-inches from the edge of blanket to the edge of stake shall be maintained.

Initial anchor trenches shall be used at trail edges or upper sides of all installations. All seams shall overlap 6 inches. On slopes 4:1 or greater, 6 inch deep check slots with fabric anchored 12 inches on center shall be installed 10 feet on center perpendicular to the fall line.

Any areas disturbed during installation of the erosion control blankets shall be reseeded and mulched. Install erosion control blanket where indicated on Drawings and on slopes exceeding 3:1 and in swales or other areas of concentrated runoff. Install in accordance with manufacturer's instructions.

- 3.06 CLEANING: Remove debris and excess materials from site. Clean paved and finished areas soiled as a result from work under this section, in accordance with direction given by the ENGINEER. Clean out drainage inlet structures.

- 3.07 PROTECTION: At no additional cost to the Town, provide and install barriers as required and as directed by the ENGINEER to protect seeded areas from damage from pedestrian and vehicular traffic.

END OF SECTION



Town of Blue River Noxious Weed Management Plan

Developed by the Blue River Noxious Weed Advisory Board

Adopted December 15, 2021



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Introduction

The Colorado Noxious Weed Act

Several species of invasive non-native plants have become a threat to the economic and environmental land value in Blue River, Colorado. These plants are not indigenous to North America and have no natural predators or diseases to keep their populations in balance with the ecosystem. Invasive non-native plants rapidly displace native vegetation, disrupt hydrologic processes, alter soil chemistry, and disturb the native ecosystem stability and diversity, while negatively affecting environmental and recreational resources. The Colorado State Department of Agriculture has mandated that “a countywide plan must be implanted by every county to prevent further damage by these noxious weed species” pursuant to The Colorado Noxious Weed Act, C.R.S. 35-5.5-101, et seq. (“The Act”), and the Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act, 8 C.C.R. 1206-2 (“The Rules”). The noxious weeds are categorized into three lists based on priority for management in Colorado:

- List A noxious weeds are newly arrived and/or less common in Colorado and are designated for eradication from all lands in State. It is a violation of the Act to allow any List A species to produce seed or develop other reproductive means such as roots, shoots and runners. The Rules allow the local governing authority to file for a compliance waiver if it is determined that eradication is not a practical management objective for specific populations.
- List B noxious weeds may be designated for eradication, containment, or suppression, depending on the extent of their presence. This Plan is designed to stop the continued spread of List B species, making it a violation to allow any List B species to spread to un-infested areas.
- List C noxious weeds are widespread or well-established noxious weeds for which local governments have authority to decide the management strategy. This Plan recommends but does not require control methods to stop the spread of List C species to un-infested areas.
- Watch List-non-native plant species not known to exist in Colorado, but have been recognized as noxious or problematic by another state in the region, and require careful observation. The Watch List serves as advisory and for educational purposes only, to encourage identification and reporting should these species appear on Colorado lands.

The Blue River Noxious Weed Management Plan

The Blue River Board of Trustees has appointed the Citizen Advisory Committee as the Noxious Weed Advisory Board, and has resolved to adopt this Blue River Noxious Weed Management Plan (“WMP”) for the purpose of fulfilling its responsibilities with respect to The Act and The Rules and managing the land within Blue River town limits with respect to noxious weeds.

The objectives of this Blue River Weed Management Plan are to:

- Educate and Communicate with the Public: This document serves as a weed control guide for Blue River landowners. It provides guidelines and training about the CO Noxious Weed Law, identification of noxious weed species, integrated weed management practices, prevention, control, and disposal methods. It aims to raise awareness, improve communication, and foster a spirit of cooperation among landowners on the noxious weed issue.
- This document is a resource and guideline to prevent the spread of noxious weed infestation in and around Blue River.



Public Education

Education is essential to the sustainable success of this Plan. The Noxious Weed Advisory Board will reach out to Blue River residents through community events and education series, Town website, digital informational brochures, posters, and social media. Groups targeted for public education include those with agricultural interests, homeowners, landowners, developers, recreational groups, youth groups and schools. Subject areas will include: the definition of “noxious weed,” why noxious weeds are a problem; State and Local laws, compliance with “The Act” and “The Rules,” noxious weed species identification, best recommended Integrated Weed Management Practices including prevention, control, removal, and disposal methods. Public announcements and noxious weed information can be found at:

<https://townofblueriver.colorado.gov/community/community-education-series/noxious-weeds>

Blue River’s Statement of the Noxious Weed Problem

Diversity Sacrificed for Monoculture

The health of Blue River’s natural environment is a high priority of residents of Blue River, CO. The health and productivity of our ecological systems are in danger as invasive, non-native weeds grow due to Blue River on personal automobiles, shoes of hikers, bike tires, animal fur, infested construction equipment, contaminated fill and the like. Once these weeds take hold infesting one site and their seeds blow to uninfested lands exacerbating the problem. Moreover, weed seeds can be viable in the soil for decades. Non-native invasive plants can crowd out desirable native vegetation, reducing the diversity and quantity of native plants, threatening rare plants and animals and their habitats, reducing water supply, and altering the ecosystem processes and functions by diminishing native forage for wildlife.



Noxious Weeds (Photo 1)



Wild flowers (Photo 2)

As the photographs illustrate, noxious weeds can dramatically reduce native species diversity. In Photo 1, before the noxious weed infestation, there are many different species of plants providing specialized nectar and food sources for a wide variety of native pollinators and other animals. In Photo 2, after the infestation, many of these species become crowded out into a monoculture or near-monoculture of noxious weeds which provide few or no ecosystem services. Native wildflowers such as Colorado Blue Columbine, the state flower, cannot compete with aggressive, invasive plants for nutrients, sunlight, and water. As a result, our biologically diverse mountain meadows, grasslands, and wetlands are in danger of being overrun by monocultures of non-native species.

To date, noxious weeds have displaced at least 10% of Colorado’s native plant species and have severely degraded important native plant communities that provide essential habitat to more than 85% of Colorado’s wildlife species. Experts in weed science estimate that the current populations increase 15 percent annually without mitigation. Blue River is located with the White River National Forest, and surrounded by US Forest Service land and provides access to many trails in Summit County. Left untreated, millions of acres of adjacent lands become threatened. Without an integrated weed management program, aggressive invasive species will continue to infest and degrade the lands that we value so highly.



What is a “noxious weed?”

A ‘weed’ is any plant growing where you don’t want it to. A “noxious weed” is a legal and regulatory definition for a non-native, invasive, ecologically damaging plant that did not exist in the United States prior to human settlement. Colorado’s native grasses and wildflowers evolved over millions of years to fill unique ecological niches and have insects and diseases keep them in balance. The invasive noxious weeds that this plan targets were originally imported to the United States for their ornamental beauty, aggressive growth habits, xeriscape, or re-seeding capabilities. However, the very aggressive growth traits, which made these plants desirable for a garden or landscape have enabled them to thrive outside cultivated areas and become fierce competitors with our native vegetation. Lacking environmental controls and natural predators, they have escaped cultivation and become aggressive invaders of wildlands, open space, housing subdivisions, municipal areas, private property and roadsides.

Why should you care?

Some people believe that nature will “heal itself” and that as new plants come in, a new, more “resilient” ecosystem will be born. While it is true that weeds can cause a plant community shift, it is usually into a far less biodiverse one. The idea that the plant will heal itself is not more than wishful thinking. Humans created the problem. Therefore, it is our duty to try to mitigate some of our effects. Its call stewardship. Being a good steward is realizing that there is harm to the environment, and thereby working to prevent further harm. If noxious weeds were simply pioneer species “doing their job” to fill in disturbed areas, there wouldn’t be a problem with them displacing wildlife and dominating an area that once held a mix of native species. Residents of Blue River have expressed interest in preserving the health of the natural ecosystem. It is desired to preserve and repair the ecosystem.



Inventorying/ Mapping

The primary objective of weed inventorying and mapping is to identify which species of noxious weeds are currently present within the Town and to accurately locate where these populations of unwanted plants occur. This information could be potentially used by the Town in order to:

- Predict those areas potentially subject to weed invasion
- Develop and evaluate the effectiveness of any weed control methodologies
- Increase public awareness, education, and weed management efforts

Treatment & Disposal Methods

Integrated Weed Management

It is necessary to implement a well-thought-out package of management techniques that will complement each other and together weaken existing stands of noxious weeds, prevent their spread, and gradually reduce their numbers. Proper timing will be critical to ensure that the various treatment methods will work together, rather than against each other. Since weed seeds can remain viable in the soil for decades, an integrated weed management plan is a long-term commitment, regardless of treatment choice. Treatment methods specified for specific weeds in this Plan include, but are not limited to:

- **Prevention**
 - Prevention is a vital part of any successful weed management plan and critical to keeping future costs down. Methods include, educating Blue River residents about Noxious Weeds and least toxic control practices. Monitoring vigilantly and eradicating small, new infestations. Using only certified weed-free seed, manure, and hay. Obtaining gravel, fill dirt, soil, and mulch from weed-free sources. Minimizing soil disturbance caused by water, vehicles, or machinery. Observing good land management practices such as water conservation, erosion control, and revegetation with native plants after removing noxious weeds. Frequent monitoring and mapping of noxious weeds to quickly locate any new infestations.
- **Mechanical Control**
 - Methodologies or management practices that physically disrupt plan growth, including tilling, mowing, burning, mulching, hand-pulling, hoeing, grazing and removing flowers or seed heads.
- **Cultural Control/Restoration**
 - Methodologies or management practices that favor the growth of desirable native plants to compete with noxious weeds, including maintaining an optimum fertility and plant moisture status in an area, planting at optimum density and spatial arrangement in an area, and planting species most suited to an area.
- **Biological Control**
 - The use of organisms or natural predators (such as insects, mites, or diseases which feed only on specific noxious weeds) to disrupt the growth of noxious weeds. Bio-control agents are prohibited for use on species designated for eradication. Note there are limited to no effective biological controls in the mountains and many weeds have no established bio-controls to date.
 - Seed mixes provided on the Town website for reference.
- **Chemical Control**
 - The use of herbicides or plant growth regulators to disrupt the growth of noxious weeds-to be used **ONLY** as a last resort. Communication with neighbors, consideration for individuals with chemical sensitivities, and proximity to wells, waterways, wildlife and gardens should be considered before the decision to use herbicides is finalized. If chemical means are used, adequate signage, application rates and personal safety precautions should



be practiced. Note that many herbicides require certification training in order to use them. Visit Summit County Weed Control at <https://www.summitcountyco.gov/114/Weed-Control> for more information and assistance with chemical controls. It should be noted that in certain cases, the limited use of herbicides may be the only way to effectively control a noxious weed species. In the absence of such effective control, the species will continue to spread infesting more land and eventually require more control that will be more costly in the long-run.

- ***Disposal***

- Option 1: Decompose-Ideally, pull or mow noxious weeds before they flower so they can be left on the ground to decompose naturally, unless management methods for individual species warn against re-propagation of plant parts.
- Option 2: Landfill-flowers, seeds or other propagules can be placed in sealed 3.0 mil plastic bags (contractor type) and disposed in a solid waste landfill which covers refuse daily with six inches of soil or alternative material.
- Attempts should not be made to burn noxious weeds at home due to fire risk.



Blue River Noxious Weed List

List A	List B	List C	Nuisance List
Required to Eradicate	Required to Eradicate, Contain, or Suppress	Recommended to Suppress	Recommended to Suppress
Myrtle Spurge	Diffuse Knapweed (C)	Common Burdock	Reed Canary grass
Cypress Spurge	Hoary Cress (C)	Common Mullein	Small-flowered Alyssum
Orange Hawkweed	Houndstongue (E)		Yellow Sweet Clover
Bull Thistle	Leafy Spurge (E)		
Canada Thistle	Spotted Knapweed (E)		
Musk Thistle	Wild Caraway (E)		
Oxeye Daisy	Yellow Toadflax (E)		
Scentless Chamomile	Cheat Grass		
Scotch Thistle	Poison Hemlock		

**For more information visit <https://www.colorado.gov/pacific/agconservation/noxious-weed-mapping>

Management Objectives

The noxious weed species listed in this plan have been identified by the Blue River Noxious Weed Advisory Board to be present within Blue River Town limits, to be undesirable as per the Act and Rules and are hereby designated by the following prioritized management objectives:



- Eradicate-remove the reproductive portions of noxious weed species or specified noxious weed populations in largely un-infested areas to zero and/or permanently eliminate the species or populations within a specified period of time.
- Contain-maintain an intensively managed buffer zone, including road right of way, that separates infested regions where suppression activities prevail, from largely un-infested regions where eradication activities prevail.
- Suppress-reduce the vigor of weed populations within an infested region, decrease the propensity of noxious weed species to spread to surrounding lands, and mitigate the negative effects of noxious weed populations on infested lands.
- Encourage homeowners to address noxious weeds in right of way adjacent to their property.
- Develop an annual educational event around the removal of noxious weeds and the reseeded of the area.

Use the descriptions that follow to aid in identification, planning and implementation of an integrated management program for Blue River’s noxious weeds, with the purpose of achieving specified management objectives and promoting desirable plan communities, while choosing the least toxic options wherever possible. For more information on integrated management plans, refer to Fact Sheets for specific weed species provided by the Colorado Department of Agriculture: <https://www.colorado.gov/agmain>.





Blue River List A Noxious Weeds:


**Required to be ERADICATED from all lands in the State*

<p>Myrtle Spurge <i>Euphorbia myrsinites</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Low growing, 4-8" tall with 18" spread. Flowers yellow-green with heart-shaped bracts. Trailing stems with fleshy blue-green alternate leaves. Taproot. Leaves and stems have toxic milky sap that is poisonous; can cause skin irritations, nausea, vomiting, and diarrhea.</p> <p>Blooms: Perennial. Early spring, March –May.</p> <p>Reproduces: By seed and can spread vegetatively. Seed heads are explosive and can project seeds up to 15 ft.</p> <p>Control Methods: Integrated management is best. Mechanical: Hand-pullable, but protect skin from sap, bag up entire plant and dispose. Do not leave plant parts on the ground as they could re-propagate. Monitor the area for at least 9 years to ensure the plant is eradicated. Cultural: Revegetate area with native seed or plants that bloom August-October. Suggested alternatives: Creeping Mahonia, Creeping Sedum, Sulphur Flower, Kinnikinnick, White Horehound. Biological: None known. Chemical: Large infestations can be controlled with herbicides.</p>
<p>Cypress Spurge <i>Euphorbia cyparissias</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Low growing perennial. Flowers yellow-green and similar looking to myrtle spurge, but leaves are linear. Taproot. Leaves and stems have toxic milky sap that is poisonous; can cause skin irritations, nausea, vomiting, and diarrhea.</p> <p>Blooms: Perennial. Early spring, March-May</p> <p>Reproduces: By seed and can spread vegetatively. See heads are explosive and can project seeds up to 15ft.</p> <p>Control Methods: Integrated management is best. Mechanical: Hand-pullable, but protect skin from sap, bag up entire plant and dispose. Do not leave plant parts on ground as they could re-propagate. Monitor the area for at least 9 years to ensure the plant is eradicated. Cultural: Revegetate area with native seed or plants that bloom August-October. Suggested alternatives: Creeping Mahonia, Creeping Dedum, Sulfur Flower, Kinnikinnick, White Horehound. Biological: None known Chemical: Large infestations can be controlled with herbicides.</p>





<p>Orange Hawkweed <i>Hieracium aurantiacum</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Grows 10-20" tall. Flower 1/2-3/4" wide, bright orange with notched tips, resembling dandelions. Clusters of 5-35 flowers on top of stem, and tend to close up in shade, making the plant difficult to see. Leaves area basal, one or two small leaves may occur on the slender, bristly stem. Rosette leaves are 4-6" in length, spatula shaped, finely toothed margins.</p> <p>Blooms: Creeping perennial. Flowers June-July.</p> <p>Reproduces: from runners, rhizomes, sporadic root buds and seed.</p> <p>Control Methods: Integrated management is best. Mechanical: Very difficult to eliminate solely by hand-pulling. Bag and dispose entire plant if flowering. Cultural: Revegetate area with native seed or plants that bloom in August-October. Suggested alternatives: Wallflower, Globemallow, Poppies. Biological: None Known Chemical: Herbicides at the bud stage is the best method for elimination.</p>
<p>Bull Thistle <i>Cirsium vulgare</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: In Colorado, Bull thistles are the only species that are prickly hairy on the top and are cottony-hairy on the undersides of the leaves. In mature plants the leaves extend down, clasping the stem and are divided into segments.</p> <p>Blooms: Gumdrop shaped pinkish to dark purple 1 1/2-2" in diameter. Flowers June-July. Seeds set in July-August.</p> <p>Reproduces: Biennial. Spiky rosettes first season, flowers second season.</p> <p>Control Methods: Mechanical: Because biennial thistles do not reproduce from their roots, any mechanical or physical method that severs the root below the soil surface will kill the weed. Cultural: Revegetate area with native seed or plants that bloom July-September. Suggested alternatives: Rocky Mountain Bee Plant, Purple Coneflower (Echinacea), Garden Phlox. Biological: None known Chemical: Not needed, if mechanical methods are used.</p>



<p>Canada Thistle <i>Cirsium arvense (breea)</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Grows 2-4 ft. tall. Flowers pink, purple, 1/2-3/4" wide. Clusters of 1-5 small flowers per branch. Stems erect, hollow, lower covered with fine hairs. Leaves lance shaped, spine tipped lobes, hairless or fine hairs. Rosette at bottom is spiny-tipped with wavy leaves. Roots extensive, fleshy, creeping, forming colonies.</p> <p>Blooms: Creeping perennial. Rosette every spring. Flowers June-October.</p> <p>Reproduces: By seed and deep, reproducible roots that spread horizontally 18 feet in one season. 75% of Canada thistle plant is underground.</p> <p>Control Methods: Mechanical: Mow May-September just before flowering. If flower heads are purple or have gone to seed, bag and dispose flower heads first before mowing. Aim to exhaust the seed bank. Shallow tillage only increases the number of plants. Cultural: Revegetate area with native seed or plants that bloom July-September. Suggested alternatives: Rocky Mountain Bee Plan, Purple Coneflower (Echinacea), Garden Phlox. Biological: None known Chemical: Herbicides are the best method for elimination</p>
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<p>Musk Thistle <i>Carduus nutans ssp. macrolepis</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Grows 2-6 ft. tall. Flowers 1 ½-3” wide, pinkish-purple, with pinecone-like prickly bracts below. 1 or more stems from base highly branched above, one flower per stem. Leaves waxy, alternate, extending down stem, dark green, deeply lobed, spines on edges, white edges and midribs. Rosettes densely hairy. Taproot.</p> <p>Blooms: Biennial. Spiky rosettes first season, blowers second season, late May-June. Seeds set June-July.</p> <p>Reproduces: Only by seed.</p> <p>Control Methods: Mechanical: Pull entire plant before flowering. Otherwise, clip and bag flowers while leaving the roset of the plant on ground to decompose. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Rocky Mountain Bee Plant, Purple Coneflower (Echinacea), Garden Phlox. Biological: None known Chemical: Apply herbicide when the plants are approximately 1” tall. If flower heads are purple or have gone to seed, clip and bag flower heads first.</p>
<p>Oxeye Daisy <i>Leucanthemum vulgare/ Chrysanthemum leucanthemum</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Grows 10-24” tall. Large 2” daisy-style flower with yellow center and white petals, singular flower at end of stem. Leaves are deeply toothed. Lower leaves spoon-shaped, upper leaves are narrow and clasp the stem, increasingly less leaves at top of stem. Rosette at bottom. Creeping root system.</p> <p>Blooms: Creeping perennial. Flowers June-August</p> <p>Reproduces: by seed and underground rhizomes.</p> <p>Control Methods: Mechanical: Hand pull or dig when soil is moist and infestations are small. Oxeye daisy is fairly shallow rooted, make sure to pull up all of the roots. Clip and bag flowers while leaving the rest of plant on ground to decompose. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Coulter Daisy, Showy Daisy, Marguerite Daisy, White or Purple Coneflower. Biological: None known Chemical: Larger infestations may require chemical control to effectively control this plant.</p>



Scentless Chamomile

Matricaria perforata

CO List A

Designated for Eradication



DESCRIPTION: Grows 6-30" tall. Small 3/4" daisy-style flower with yellow center and white petals. Leaves fern-like, feathery, alternate, busy appearance. Stems erect and smooth. Roots fibrous. Differs from the chamomile used in tea because its flowers, leaves lack odor, flavor. Irritates mucous membranes of livestock.

Blooms: Annual. Flowers early summer until frost.

Reproduces: only by seed

Control Methods:


Mechanical: Hand pulling can prevent spread into new areas and effective on small infestations. If pulled before flowering, can be left on ground to decompose, otherwise, must be bagged and disposed. Aim to exhaust the seed bank. Frequent, shallow tillage can help exhaust the seed bank. Mowing is not an effective long-term control method due to the fact the plant will grow prostrate and bloom. However, in the short-term mowing will assist with limiting seed production.

Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Pearly Everlasting, White Columbine, White Coral Bells, and Feverfew.

Biological: None known



Chemical: Can be controlled with herbicides.



<p>Scotch Thistle <i>Onopordum acanthium</i> CO List A Designated for Eradication</p> 	<p>DESCRIPTION: Grows up to 12' tall, branching, and can be quite dense. Flowers reddish-purple to violet, numerous, 1-2 inches in diameter, with spine-tipped bracts. Leaves hairy, up to 1 ft. wide and 2 ft. long. Rosettes up to 2 ft. diameter. Fleshy taproot.</p> <p>Blooms: Biennial. Rosette in spring or fall of first year. Flowers mid-June to September of second year.</p> <p>Reproduces: Only by seed. Can produce up to 14,000 seeds per plant.</p> <p>Control Methods: Mechanical: Hand-pullable, best controlled in the rosette stage by severing its taproot 1-2 inches below the ground. Chemical and Cultural Integrated management: One integrated approach to Scotch thistle management involves 1) incorporate livestock grazing to increase grass vigor and reduce bare ground; 2) spray rosettes with herbicide; 3) re-seed treated ground with competitive desirable plants in the fall after spraying. Suggested alternatives: Rocky Mountain Bee Plant, Purple Coneflower (Echinacea), Garden Phlox; 4) Follow up with spot cutting of entire plants when first flowers appear annually for several years to deplete the seed bank in the soil. Biological: None known</p>
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Blue River List B Noxious Weeds

<p>Diffuse Knapweed <i>Centaurea diffusa</i> CO List B Designated for Containment</p> 	<p>DESCRIPTION: Grows 1 ½-3 ft. tall. Highly branched, becomes a tumbleweed in the winter. Flowers white or lavender, solitary or on clusters on each branch tip. Yellow-brown spiny bracts with pronounced tip and fringed edges. Young leaves covered with fine hairs, finely-divided, becoming reduced as the plant matures. Rosette at base with finely divided leaves covered in short hairs. Taproot.</p> <p>Blooms: Biennial. Seeds germinate in spring or late summer. Plants bolt in mid-spring. Flowers June-August.</p> <p>Reproduces: Only by seed.</p> <p>Control Methods: Mechanical: Hand-pullable, best in May or June. Bag and dispose of flowers or seeds. Rest of plant, can be left on ground to decompose. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in May-October. Suggested alternatives: Rocky Mountain Bee Plant, Wax Currant, and Apache Plume. Biological: None known Chemical: Can be controlled with herbicides.</p>
<p>Hoary Cress <i>Cardaria draba</i> CO List B Designated for Containment</p> 	<p>DESCRIPTION: Grows 10 to 24 inches tall. Flowers small, white, numerous, 4 petals on stalks radiating from a stem. Leaves alternate ½ to 4 inches long with blunt ends, upper leaves have 2 lobes that clasp the stem. Seed capsules are heart-shaped with two small, flat, reddish brown seeds.</p> <p>Blooms: Creeping perennial. Rosette in early spring. Flowers May-June.</p> <p>Reproduces: By seeds and vigorous creeping roots. One plant can produce from 1,200 to 4,800 seeds and drop them by mid-summer.</p> <p>Control Methods: Mechanical: Control of hoary cress is difficult because of the perennial root system, abundant seed production, and diverse habitats. Mowing may be ineffective. Cultural: Revegetate area with native seed or plants that bloom in May-July. Suggested alternatives: Yarrow, Pearly Everlasting Biological: None known Chemical: Commonly controlled with herbicides.</p>



Houndstongue

Cynoglossum officinale

CO List B

Designated for Eradication



DESCRIPTION: Grows up to 3 ft. tall. Flowers reddish-purple, ¼ inches wide. The seeds are covered with short, hooked prickles that cling to hair, fur and clothing.

Blooms: Biennial or short leaved perennial. Blooms May-June.

Reproduces: by seeds. One plant can produce up to 2,000 seeds that remain viable for 2 to 3 years.

Control Methods:

Mechanical: Digging, pulling and cutting can be effective if the root crown is severed. Clipping or mowing second-year plants can greatly reduce seed production. Bag up and dispose flowers or seeds. Aim to exhaust the seed bank. Grazing is not practical due to risk of poisoning.

Cultural: Revegetate area with native seed or plants that bloom May-July. Suggested alternatives: Rocky Mountain Bee Plant, Garden Phlox, First Love Dianthus, Meadow Rue

Biological: None known

Chemical: Commonly controlled with herbicides.



<p>Leafy Spurge <i>Euphorbia esula</i> CO List B Designated for Eradication</p> 	<p>DESCRIPTION: Grows 2-6 ft. tall. Flowers 1 ½-3” Pull wide, pinkish-purple with pinecone-like prickly bracts below. 1 or more stems from base, highly branched above, one flower per stem. Leaves waxy, alternate, extending down stem, dark green, deeply lobed, spines on edges, white edges and midribs. Rosettes densely hairy. Taproot.</p> <p>Blooms: Biennial. Spiky rosettes first season, flowers second season, late May-June. Seeds set in June-July.</p> <p>Reproduces: Only by seed.</p> <p>Control Methods: Mechanical: Pull entire plant before flowering. Otherwise, clip and bag flowers while leaving the rest of plant on ground to decompose. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Rocky Mountains Bee Plant, Purple Coneflower (Echinacea), Garden Phlox. Biological: None known Chemical: Apply herbicide when the plants are approximately 1’ tall. If flower heads are purple or have gone to seed, clip and bag flower heads first.</p>
<p>Spotted Knapweed <i>Centaurea maculosa</i> CO List B Designated for Eradication</p> 	<p>DESCRIPTION: Grows 1-3 ft. tall. Flowers pinkish-purple, usually single at end of branches, with dark-spotted, fringed bracts at base. Stems upright, ridged, one or more branches. Fruit has parachute-like structure. Seeds 1/8” long. Leaves ¾-1 ½” long. Rosette 6” long, deeply lobed. Taproot. Sap irritates skins.</p> <p>Blooms: Biennial. Rosette the first year. Flowers June-October.</p> <p>Reproduces: by seed.</p> <p>Control Methods: Mechanical: Hand-pullable, best in May or June. Bag and dispose of flowers or seeds. Otherwise, can be left on ground to decompose. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in May-October. Suggested alternatives: Rocky Mountain Bee Plant, Wax Currant, Apache Plume, and Tansy Aster. Biological: None known. Chemical: Can be controlled with herbicides.</p>



Wild Caraway

Carum carvi

CO List B

Designated for Eradication



DESCRIPTION: Flowers white or pinkish in color, small, occur in terminal or lateral loose clusters at the top stems. Stem leaves finely divided, resemble those carrots. Shoot leaves alternate and oblong or oval in shape.

Blooms: Biennial or sometimes perennial forb. Low growing rosette in the first year, flowering stalk bolts the second year, it can sometimes bolt a third year. Flowers June-August.

Reproduces: By seed. Prolific seed producer, each plant can produce several thousand seeds.

Control Methods:

Mechanical: Hand-pulling of bolting stalks is effective at preventing seed production, but at maturity seed heads are fragile and shatter easily. At this stage, place plastic bag carefully over the mature plant, close tightly around the stem and hand-pull without accidentally spreading seed. Bag and dispose of flowers or seeds. Aim to exhaust the seed bank. Tilling can be effective because this plant is sensitive to root disturbance.



Mowing is not an effective long-term control method due to the fact the plant will grow prostate and bloom.

Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Yarrow, Cow Parsnip.

Biological: None known.

Chemical: Can be controlled with herbicides.



<p>Yellow Toadflax “Butter & Eggs” <i>Linaria vulgaris</i> CO List B Designated for Eradication</p> 	<p>DESCRIPTION: Grows up to 3’ tall. Snapdragon-like yellow flowers, 1” long with deep orange centers, with spur as long as the flower. Stems woody at base and smooth at top. Leaves narrow, linear, 1-2 inches long.</p> <p>Blooms: Perennial. May-August</p> <p>Reproduces: By seeds and creeping roots.</p> <p>Control Methods: Integrated management is best: Mechanical & Chemical: Prevent seed formation and vegetative spread of roots. For small infestations, dig roots up deep, bag up and dispose entire plant. For large infestations, hand-pulling and digging not effective, as it is unlikely the entire root will be evacuated and shallow tillage only increases number of plants. A combination of mowing and herbicides applied at or before flowering over a period of several years is best. Cultural: Revegetate area with native seed or plants that bloom in June-September. Suggested alternatives: Golden Banner, Yellow Columbine, Snapdragons, Hardy Jerusalem Sage. Biological: None known.</p>
<p>Downy Brome/Cheat Grass <i>Bromus tectorum</i> CO List B Designated for Suppression</p> 	<p>DESCRIPTION: Grows 2 to 36” tall. Stems slender, dense, and drooping. Color green, then purple, then blonde or brown. Spikelets slender, 3/8” to 3/4” long, nodding. The awns on the end of the spikelets 5/8” long. Leaves densely covered in with soft hairs. Roots fibrous and fleshy.</p> <p>Blooms: Annual. Early spring. Goes to seed by May</p> <p>Reproduces: by seed.</p> <p>Control Methods: Mechanical: Hand-pullable. Bag and dispose of entire plant. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that blooms in May-September. Suggested alternatives: Foxtail Barley Biological: Non known Chemical: Can be controlled with herbicides.</p>



Poison Hemlock

Conium maculatum

CO List B

Designated for Suppression



DESCRIPTION: Grows 4-8 feet tall. Flowers white umbrella-like clusters, show, at the end of the branch, 5 petals, notched. Stems smooth, hollow, covered with purple spots. Leaves shiny green, multi-stemmed, fern like appearance, lacy, resembling parsley and have musty odor when crushed. Fruit is flat, small, and grayish-green. All parts of this plant are poisonous and can be lethal.

Blooms: Biennial. Large rosette the first year. The second year the plant bolts a large stem, and flowers June to July. Fruit matures in August-September.

Reproduces: by seed.

Control Methods:

Mechanical: Hand-pullable, must wear gloves. Bag up and dispose entire plant. Aim to exhaust the seed bank.


Cultural: Revegetate area with native seed or plants that bloom in June-September. Suggested alternatives: yarrow, Cow parsnip.

Biological: Hemlock moth has been effective in other areas.



Chemical: Can be controlled with herbicides.



Blue River List C Noxious Weeds

<p>Common Burdock <i>Articum minus</i> CO List C Designated for Suppression</p> 	<p>DESCRIPTION: Grows 3-10 ft. tall. Large rosette 6 to 18" long and up to 10" wide. Broadly triangular or oval, bluntly pointed leaves, coarsely veined. Upper surface is smooth to sparsely hairy and dull, dark green; the lower surface has a woolly texture, light green. A branched flower stalk emerges the second year. Flowers rose-purple, with many spines at base that often have a hook on the end. Flower and spines dry and become an easily dispersible bur. Taproot brown and fleshy.</p> <p>Blooms: Biennial. Rosette first year. Flowers July-October of second year.</p> <p>Reproduces: By seed (burs stick to everything, everyone)</p> <p>Control Methods: Mechanical: Hand-pullable. Bag and dispose of flowers or seeds. Rest of plant can be left on ground to decompose. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Creeping Mahonia, heartleaf arnica. Biological: None known. Chemical: Can be controlled with herbicides when in the rosette stage.</p>
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<p>Common Mullein <i>Verbascum thapsus</i> CO List C Designated for Suppression</p> 	<p>DESCRIPTION: Erect stem, grows 2 to 6 ft. tall. Flowers yellow, five petals, 3/4-1 1/2", on spikes 20" long. Leaves light green, covered in soft velvety hairs, alternate and overlapping, up to 1 ft. long. Basal rosette 30" wide. Taproot and fibrous roots.</p> <p>Blooms: Biennial. Basal rosette first year, stem in spring of second. Flowers June-August.</p> <p>Reproduces: By seed.</p> <p>Control Methods: Mechanical: Hand-pullable. If not flowering, pull and leave on ground to decompose. Otherwise bag and dispose flowering heads. Aim to exhaust the seed bank. Cultural: Revegetate area with native seed or plants that bloom in June-September. Suggested Alternatives: Green Gentian, Rocky Mountain Bee Plant, and Snapdragon. Biological: Non known. Chemical: Can be controlled with herbicides when in the rosette stage.</p>
<p>Field Bindweed <i>Convolvulus arvensis</i> CO List C Designated for Suppression</p> 	<p>DESCRIPTION: Grows up to 6 feet long, creeping, twining, low along ground. Flowers white or pink, bell or trumpet shaped, 1" long. Leaves arrowhead shape. Taproot 20 ft. deep and numerous horizontal roots. Grows predominately in low turf or native grass areas.</p> <p>Blooms: Creeping perennial. Emerges from roots in spring, flowers June until first fall frost.</p> <p>Reproduces: From seed and creeping, horizontal extensive root system.</p> <p>Control Methods: Mechanical: Dig up roots deep, being careful not to break them. Shallow tilling only increases spreading. Bag and dispose of entire plant. Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Native Clematis (not Chinese Clematis!), Honeysuckle Graham Thomas, Virginia Creeper. Biological: Non known. Chemical: For large infestations, herbicides are the only effective way of controlling this plant.</p>



Blue River's Nuisance List:

<p>Reed Canary grass <i>Phalaris arundinacea</i> Designated for Suppression</p> 	<p>DESCRIPTION: Tall bunchgrass forms extensive single-species stands along the margins of wet open areas. Panicles (inflorescences) are compact and resemble spikes when immature, but become open and slightly spreading at anthesis. Creeping rhizomes often form a thick sod layer.</p> <p>Blooms: Perennial. June-August.</p> <p>Reproduces: By seed, but also spreads vegetatively by underground rhizomes.</p> <p>Control Methods: Very difficult to control once established. Prevention is the best method of control.</p> <p>Mechanical: For small infestations, dig up and remove entire root mass. Be sure to remove all rhizomes and roots, as fragments can resprout. Bag and dispose entire plant.</p> <p>Cultural: Revegetate area with native seed or plants that bloom in May-September. Suggested alternatives: Horsetail.</p> <p>Biological: None known.</p> <p>Chemical: Can be controlled with herbicides, but only aquatic-safe formulations should be used.</p>
<p>Small-Flowered Alyssum <i>Alyssum minus/parviflorum</i> Designated for Suppression</p> 	<p>DESCRIPTION: Short plant, grows 3' tall. Flowers tiny and bright yellow. Stems are straight. Seeds are flat, round, and hairy, seed burs stick to clothing, shoes and fur.</p> <p>Blooms: Annual. Emerges early spring, March-April.</p> <p>Reproduces: By seed.</p> <p>Control Methods: Integrated Management is best:</p> <p>Mechanical: Pullable, bag up and dispose entire plant. Aim to exhaust the seed bank.</p> <p>Cultural: Revegetate area with a native seed or plants that bloom in March-October. Suggested alternatives: Pearly Everlasting, Native Cinquefoils, Golden Banner, and Wallflower.</p> <p>Biological: None known.</p> <p>Chemical: Can be controlled with herbicides.</p>



<p>Yellow Sweet Clover <i>Melilotus officinale</i> Designated for Suppression</p> 	<p>DESCRIPTION: Yellow flowers crowded densely at the top 4” of a central stem, each flower is attached by a minute stalk. Leaves are divided into three finely toothed leaflets; middle leaflet grows on a short stalk. Fragrant.</p> <p>Blooms: Biennial. Blooms June-August on second year plants.</p> <p>Reproduces: By seed.</p> <p>Control Methods: Mechanical: Aim to exhaust the seed bank. Hand pulling, effective on small infestations when the soil is moist. Bag and dispose of flowers or seeds. Rest of plant, can be left on ground to decompose. Mowing or cutting before flowers emerge can help stress the plant. Cultural: Revegetate area with native seed or plants that bloom in March-October. Suggested alternatives: Pearly Everlasting, Native Cinquefoils, Golden Banner, and Wallflower. Biological: None know. Chemical: Can be controlled with herbicides.</p>
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Conclusion

Proper noxious weed identification, monitoring, and integrated management practices are the most important steps to reducing or eradicating infestations. Remember, not all techniques will work in all situations. If we are diligent in our efforts, we will protect our lands for the enjoyment of future generations.

What You Can Do To Help?

- Familiarize yourself with the identification of noxious weeds and native plants in your area.
- Communicate, educate, and cooperate with neighboring landowners to identify the extent of noxious weed populations and generate solutions for mitigation.
- Use a combination of control methods for noxious weeds including prevention, mechanical and restoration, as per the suggestions of this Plan. Use chemicals only as a last resort and only after notification/approval with neighbors.
- Ensure that revegetation with native plants is part of your control methodology, or you efforts will be lost to the competitive nature of these extremely aggressive weeds.
- Be patient and diligent! You may have to repeat some methodologies for several successive years to achieve desired results.
- Volunteer in a community weed pull.
- The Town of Blue River encourages all citizens to be educated and vigilant about noxious weeds.
- In the spirit of cooperation, residents are encouraged to communicate directly with landowners to raise awareness and generate solutions for noxious weed problems on a property in Blue River, as per the recommendations of this Plan.

Thank you for caring about our natural environment and taking proactive measures to maintain the health and diversity of our mountain ecosystems.



APPENDIX A: RESOURCES

Noxious Weed Identification and Integrated Management Recommendations

Blue River’s Noxious Weeds Website:

<https://townofblueriver.colorado.gov/community/community-education-series/noxious-weeds>

Colorado Noxious Weed List:

<https://www.colorado.gov/pacific/agconservation/noxious-weed-species>

Summit County Noxious Weeds

<https://www.summitcountyco.gov/993/Summit-County-Noxious-Weeds>

Summit County Weed Program:

<https://www.summitcountyco.gov/114/Weed-Control>

Colorado Department of Agriculture:

Early Detection Rapid Response, Noxious Weed Mapping, Noxious Weed Species ID, and more:

<https://www.colorado.gov/pacific/agconservation/noxiousweeds>

Publications: <https://www.colorado.gov/pacific/agconservation/noxious-weed-publications>

Noxious Weeds Species <https://www.colorado.gov/pacific/agconservation/noxious-weed-species>

Colorado State University Extension:

Sources of Colorado Native Plants

<https://extension.colostate.edu/docs/pubs/natres/sources-native-plants.pdf>

*I want to learn more about.....*The Colorado Noxious Weed Law

Colorado Noxious Weed Act C.R.S. 35-5.50-101 (“The Act”)

<https://www.colorado.gov/pacific/agconservation/noxious-weed-publications>

*I want to speak to someone...*About Noxious Weeds

Summit County Weed Control

(970) 668-4218

PO Box 626

Frisco, CO 80443



APPENDIX B: CONSTRUCTION BEST MANAGEMENT PRACTICES

For Controlling the Spread of Noxious Weeds

The following Best Management Practices are intended to provide information to land owners in order to reduce the potential for introducing new noxious weed species and to eliminate the spread of existing noxious weed infestations during construction practices.

Survey and Treat the Project Area

Prior to ground-disturbing activities, survey the project area to document the presence of any pre-existing weed infestations. Treat infestations prior to ground-disturbing activities and remove all weed seed and propagules to prevent weed spread. If possible, survey and treat infestations on adjacent properties to reduce the likelihood of noxious seed dispersal into the project site.

Inspect All Equipment

Inspect all equipment used in the project to be clean, i.e. free of mud, dirt, plant parts, and seeds, or other debris that could contain or hold plant parts or seeds, prior to entering the project area, and prior to leaving a weed-infested project area.

Topsoil Salvage/Stockpiling

The goal of topsoil salvage is to keep the soil alive, weed free, and protected from damage until it can be used for planting or seeding. Usually, topsoil is stockpiled until the site is ready for seeding. Topsoil should be stored for less than one year in a weed-free location. Salvage entails scraping off the top soil, or the uppermost, fertile layer of the soil, and setting it aside in stockpiles until needed. After construction, this topsoil should be spread out to a minimum depth of 3” on all surfaces that are to be seeded. Soil stockpiles should be protected from wind and water erosion with temporary seed mixtures or erosion control barriers.

Seed Bed Presentation

A good seedbed is crucial to successful revegetation. Slopes should be graded to avoid concentrated water flow and subsequent erosion. If possible, any areas severely compacted by machinery and equipment during construction should be ripped by tractor or backhoe to loosen soils and allow for water infiltration and root growth. Clods larger than 3” should be broken, and any weeds controlled by tilling the soil.

Use Certified Weed Free Seed for Revegetation

The Town of Blue River encourages the use of native seed mixes in revegetation. Drill seeding is general the best seeding method for seeding. If the site is too small or steep for a tractor for drill seeding, then broadcast the seed by hand or with a mechanical spreader. Broadcast seed needs to be applied at twice the rate of drilled seed. For further information on Revegetation, please refer to resources listed at the end of this Appendix. More information is available on the Town website at <https://townofblueriver.colorado.gov>.

Mulch

For steeper slopes, a mulch is necessary to keep the seed and topsoil in place. Mulch also provides shade to seedlings and helps to retain soil moisture. On slopes of 3:1 or less, the mulch can be certified weed-free straw or a synthetic hydro-mulch. On steeper slopes, an erosion control matting should be used. Follow the manufacturer’s installation instructions for erosion control products.

Monitoring

Most revegetation sites will be dominated by “pioneer” or “weedy” species for the first few years following disturbance. Normally, these plants are not aggressive and they will eventually be replaced by desirable vegetation. However, monitoring is critical during initial establishment to ensure that a timely and appropriate



response is taken to the appearance of a noxious weed species. Monitoring the site for 3 years post construction is recommended.

Revegetation Resources

Summit County Weed control

<https://www.summitcountyco.gov/114/Weed-Control>

Native Plant Revegetation Guide for Colorado

Colorado Parks and Wildlife webpage

<https://cpw.state.co.us/Documents/CNAP/RevegetationGuide.pdf>

Town of Blue River Building Code

<https://townofblueriver.colorado.gov>



APPENDIX C: DEFINITIONS

All language definitions used within this plan shall be consistent with the “Colorado Noxious Weed Act” 35-5.5-101 C.R.S. and the “permanent Rules Pertaining to the Administration and Enforcement of the Colorado Weed Management Act” 8 C.C.R. 1206-2, as amended.

“The ACT”

The Colorado Noxious Weed Act, C.R.S. 35-5.5-101, et seq., as amended. The Act directs the Board of County Commissioners of each county in Colorado to adopt and administer a Noxious Weed Management Plan for all unincorporated land within the county, and to appoint a local Weed Advisory Board.

Adjacent

Meeting or touching at some point, or having nothing of the same kind intervening.

Biological Control

The use of organisms or natural predators (such as insects, mites, or diseases which feed only on specific noxious weeds) to disrupt the growth of noxious weeds.

Chemical Control

The use of herbicides or plant growth regulators to disrupt the growth of noxious weeds.

Containment

Maintaining an intensively managed buffer zone that separates infested regions where suppression activities prevail, from largely un-infested regions where eradication activities prevail.

Control

To manage the populations of noxious weed species so that the population is maintained or reduced in size. Control methods include Mechanical, Cultural, Chemical, and Biological.

Cultural Control

Methodologies or management practices that favor the growth of desirable native plants over noxious weeds, including maintaining an optimum fertility and plant moisture status in an area, planting at optimum density and spatial arrangement in the area, and planting species most suited to an area.

Integrated Management or Integrated Management Practices (IMP)

The planning and implementation of coordinated program utilizing a variety of methods for managing noxious weeds, the purpose of which is to achieve specified management objectives and promote desirable plant communities. Such methods may include but are not limited to education, preventative measures, good stewardship, and techniques such as biological control, chemical control, cultural control, and mechanical control.

Invasive

Capable of entering a native plant community to the detriment of native species.

List A

Rare noxious weed species that are subject to eradication wherever detected in Colorado in order to protect neighboring lands and the state as a whole, as per The Act.



List B

Noxious weed species with discrete distributions in Colorado that are subject to eradication, containment or suppression as designated by the Blue River Noxious Weed Advisory Board in order to stop the spread of these species, as per The Act.

List C

Widespread and well-established noxious weed species in Colorado for which management is recommended but not required, although the Blue River Noxious Weed Advisory Board may in its discretion require management, as per The Act.

Manage

Any activity that prevents a plant from establishing, reproducing or dispersing itself.

Management Objective

Controlling noxious weeds in accordance with applicable provisions of the Act and Rules, designating that specific weeds shall be eradicated, contained or suppressed on a species-by-species basis.

Mechanical Control

Methodologies or management practices that physically disrupt plant growth, including tilling, mowing, burning, mulching, hand-pulling, hoeing, grazing, and removing flowers or seed heads.

Native Plant

A plant species, which is indigenous to the State of Colorado.

Noxious Weed

A non-native, invasive plant that has been designated as per the Act to meet one or more of the following criteria:

- Aggressively invades or is detrimental to economic crops or native plant communities;
- Is poisonous to livestock;
- Is a carrier of detrimental insects, diseases, or parasites;
- Has a direct or indirect detrimental effect on the environmentally sound management of natural or agricultural ecosystems.

Nuisance Weed

A plant not designated by the Act or the Rules as noxious, but has qualities that outcompete desired vegetation and can be included in a local Noxious Weed Management Plan.

Restoration or Revegetation

The removal of noxious weed species and subsequent reestablishment of desirable native plant communities.

“The Rules”

The Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act. 8 C.C.R. 1206-2 as amended.

Suppression

Reducing the vigor of weed populations within an infested region, decreasing the propensity of noxious weed species to spread to surrounding lands, and mitigating the negative effects of noxious weed populations on infested lands.



APPENDIX D: ACKNOWLEDGMENTS

The Blue River Noxious Weed Advisory Board would like to extend special thanks to the following for assisting in content, advice, and development of this plan, and the hard work of community weed pulls:

- Blue River Noxious Weed Advisory Board
- Blue River Board of Trustees

Credits

- Nederland Noxious Weed Committee Management Plan
- Summit County Weed Control
- Colorado Weed Management Association
- Colorado Department of Agriculture Conservation Services Division (CDA)

