

# Grey Fox Sewer Improvements

Upper Thompson Sanitation District  
P.O. Box 568  
Estes Park, CO 80517

## Project Manual

### Construction Documents

May 20, 2016



**CORNERSTONE**  
ENGINEERING & SURVEYING, INC.

1692 Big Thompson, Suite 200  
Estes Park, Colorado 80517  
PHONE 970.586.2458  
E-MAIL [ces@ces-ccc.com](mailto:ces@ces-ccc.com)  
WEB [www.ces-ccc.com](http://www.ces-ccc.com)

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**SECTION 00020**

**INVITATION TO BID**

Sealed Bids will be received by Upper Thompson Sanitation District  
(Hereinafter referred to as the Owner), at Upper Thompson Sanitation District  
2196 Mall Road, P.O. Box 568, Estes Park, CO 80517

Until 2:00 p.m., local time, on June 6, 2016. Bids may be deposited at the Administration Office, 2196 Mall Road, or mailed to Upper Thompson Sanitation District P.O. Box 568, Estes Park, Colorado 80517. No faxed or emailed Bids will be accepted. Sealed Bids should be in an envelope labeled "Grey Fox Sewer Improvements." Bids will be opened and publicly read to all those present.

At said time and place, and promptly thereafter, all bids that have been duly received will be publicly opened and read to all those present at 2:00 p.m. on Monday June 6, 2016. Vendors submitting Bids are invited, but not required to attend opening. Sole responsibility rests with the vendor to see that their Bid is received on time at the stated location. No Bids will be considered which are received after the time indicated and any Bids so received after said time shall be returned to the Bidder unopened. Bids will be received on a price basis as set forth in the Bid Proposal.

The Agreement provides for the construction of Grey Fox Sewer Improvements, Lot 43, Grey Fox Estates, Estes Park, Colorado 80517 hereinafter referred to as the Work.

All Bids must be in accordance with the Contract Documents on file with Cornerstone Engineering & Surveying, Inc.

Copies of the Contract Documents, complete with Drawings and Specifications, may be downloaded at [www.ces-ccc.com](http://www.ces-ccc.com) or procured from Cornerstone Engineering & Surveying, Inc., 1692 Big Thompson Ave., Suite 200, Estes Park, CO 80517 upon payment of a non-refundable fee of (\$25.00) per set after May 20, 2016. (Send an additional \$10.00 per set if local mailing is requested). Checks shall be made payable to Cornerstone Engineering & Surveying, Inc.

The Contract Documents may be examined at:

Upper Thompson Sanitation District  
2196 Mall Road  
Estes Park, CO 80517  
970-586-4544

Cornerstone Engineering & Surveying, Inc.  
1692 Big Thompson Ave  
Estes Park, CO 80517  
970-586-2458

A pre-bid conference will be held at 11:00 a.m. on May 26, 2016 at the office of Cornerstone Engineering & Surveying, Inc., 1692 Big Thompson Ave., Suite 200, Estes Park, CO 80517.

Prospective Bidders are invited to present their questions relative to their Bid at this meeting. Attendance at this meeting is not a requirement for submitting a Bid for the Work.

Bids will be received on a price basis as set forth in the Bid Proposal.

All work must be completed within 30 days after commencement of work with substantial project completion no later than July 30, 2016.

Within ten (10) days of the date of the Notice of Award, the successful Bidder will be required to furnish Performance Bond and a Payment Bond in the amount of one hundred (100) percent of the Contract Amount, guaranteeing faithful performance and the payment of all bills and obligations arising from the performance of the Agreement. Performance and Payment Bond will not be required for submitted bids less than \$50,000.00 upon Upper Thompson Sanitation District review and approval.

No Bid may be withdrawn within a period of sixty (60) days after the date fixed for opening Bids.

The OWNER reserves the right to reject any and all bids or to accept that bid or combination of bids, if any, which in its sole and absolute judgement will under all circumstances best serve the OWNER'S interest. No Bid will be accepted from any firm, person, or corporation, who is a defaulter as to surety or otherwise, or is deemed

incompetent, irresponsible, or unreliable by the OWNER.

No Bids will be considered which are received after the time indicated and any Bids so received after said time shall be returned to the Bidder unopened.

Where items of equipment and/or materials are specifically identified by a manufacturer's name, model or catalog number, only such specific items may be used in the Bid unless prior written approval of other material has been obtained from the Engineer. Applications for such approval shall be submitted in duplicate at least six working days prior to Bid opening date. Applications for approval shall be accompanied by a typewritten listing of the specified manufacturer and catalog number and shall also state in typewritten detail any and all significant details in which each item requested for approval differs from the item specified. Failure to so list such information shall not relieve the Contractor from providing properly functioning or fitting materials, regardless of the approval action taken by the Engineer.

Estimated Project Cost

A) \$35,000.00; project construction period 30 Colander days.

The Contractor shall name the Upper Thompson Sanitation District and Cornerstone Engineering & Surveying, Inc., as "additionally insured" on their General Liability and Automobile Liability Insurance.

Questions should be directed to Michael Todd, Cornerstone Engineering & Surveying, Inc. (970)586-2458. Responses will be in written Addendums.

Contract Description:

The proposed work for the Grey Fox Sewer Improvements is to include:

Repair of approximately 250 linear feet of a small tributary channel and bedding of a sewer main that was eroded out during the 2013 flood event. Work will include installation of temporary erosion control for construction, re-bedding the exposed sewer main, grading, placement of geo fabric and riprap along the drainage channel and placement of erosion control fabric as noted on bid schedule and on plans.

PROPOSED PROJECT SCHEDULE

|                               |               |
|-------------------------------|---------------|
| Letting Date:                 | May 20, 2016  |
| Prebid Meeting:               | May 26, 2016  |
| Bid Opening:                  | June 6, 2016  |
| Construction Beginning After: | June 19, 2016 |
| Project Completion:           | July 30, 2016 |

## SECTION 00100

### INSTRUCTIONS TO BIDDERS

#### 1.0 COPIES OF CONTRACT DOCUMENTS.

1.1. Complete sets of Contract Documents may be obtained as stated in the Invitation to Bid. No partial sets will be issued. The Contract Documents may be examined at the locations identified in the Invitation to Bid.

1.2. Complete sets of Contract 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 Contract Documents.

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

#### 2.0 QUALIFICATION OF BIDDERS.

2.1. Owner may make investigations as it deems necessary to determine the ability of the Bidder to perform the Work. The Bidder shall furnish, upon request, all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Bid if the evidence submitted or investigation of such Bidder fails to satisfy the Owner that the Bidder is properly qualified to meet the obligations of the Agreement and/or complete the Work.

2.2. In determining the Bidder's qualifications, the following factors will be considered: Work previously completed by the Bidder and whether the Bidder (a) maintains a permanent place of business, (b) has adequate plant and equipment to do the Work properly and expeditiously, (c) has the financial resources to meet all obligations incident to the Work, and (d) has appropriate technical experience.

2.3. Each Bidder may be required to show that he has handled former work so that no just claims are pending against such work. No Bid will be accepted from a Bidder who is engaged in any other work which would impair his ability to perform or finance this Work.

#### 3.0 EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF THE WORK.

3.1. It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors or discrepancies in the Contract Documents.

3.2. Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site of the work is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities or others, and Owner and Engineer do not assume responsibility for the accuracy or completeness thereof.

3.3. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 4.1. and 4.2. of the General Conditions.

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

Documents.

3.5. On request in advance, Owner or Engineer will assist each Bidder in obtaining access to the site to conduct such explorations and tests as Bidder deems necessary for submission of a Bid. Bidder shall restore the site upon completion of such explorations and tests.

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

3.7. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 3, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

#### 4.0 INTERPRETATIONS AND ADDENDA.

4.1. All questions about the meaning or intent of the Contract Documents are to be submitted in writing. Interpretation or clarifications considered necessary in response to such questions will be issued only by Addenda. Questions received less than six days prior to the date for opening of the Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

4.2. Questions should be directed as indicated in paragraph 3.0.

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

4.4. Addenda will be mailed or delivered to all parties recorded by Engineer as having received the Contract Documents. No addenda will be issued later than four days prior to the date for receipt of Bids or withdrawing the request for Bids.

#### 5.0 BID SECURITY.

Not Applicable

#### 6.0 CONTRACT TIME.

The number of days within which, or the date by which the Work is to be completed and ready for final payment (the Contract Time) are set forth in the Agreement.

#### 7.0 LIQUIDATED DAMAGES.

Provisions for liquidated damages are set forth in the contract and other contract documents (see Supplementary Conditions Section 00800)

#### 8.0 BID FORM.

8.1. The bid shall be submitted on the proposal form as provided in the book forming the Contract Documents for subject Work.

8.2. Bid Forms must be completed in ink or typed. All lump sum prices on the form must be stated in words and numerals; in case of a conflict, words will take precedence.

8.3. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other appropriate officer accompanied by evidence of authority to sign) and 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 below the corporate name.

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

8.5. Bids by joint venture shall be signed by each participant in the joint venture or by an authorized agent of each participant. The full name of each person or company interested in the Bid shall be listed on the Bid Form.

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

8.7. No alterations in Bids, or in the printed forms therefore, by erasures, interpolations, or otherwise will be acceptable unless each such alteration is signed or initialed by the Bidder; if initialed, Owner may require the Bidder to identify any alteration so initialed.

8.8. The address and telephone number for communications regarding the Bid shall be shown.

#### 9.0 BID PRICING.

Bids must be priced as set forth in the Bid Schedule.

#### 10.0 SUBMISSION OF BIDS.

10.1. Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the title of the Work, and name and address of the Bidder. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

10.2. Bids shall be deposited at the designated location prior to the time and date for receipt of Bids indicated in the Invitation to Bid, or any extension thereof made by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened. Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

10.3. Oral, telephonic, or telegraphic Bids are invalid and will not receive consideration.

10.4. No Bidder may submit more than one Bid. Multiple Bids under different names will not be accepted from one firm or association.

#### 11.0 MODIFICATION AND WITHDRAWAL OF BIDS.

11.1. Bids may be modified or withdrawn by an appropriate document duly executed (in a manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

11.2. Bids may also be modified or withdrawn in person by the Bidder or an authorized representative provided he can prove his identity and authority.

11.3. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

#### 12.0 OPENING OF BIDS.

Bids will be opened and (unless obviously non-responsive) read aloud publicly as indicated in the Invitation to Bid. An abstract of the amounts of the base Bids and major alternates (if any) will be made available after the opening of Bids.

### 13.0 BIDS TO REMAIN OPEN SUBJECT TO ACCEPTANCE.

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

### 14.0 AWARD OF AGREEMENT.

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

14.2. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations is submitted as requested by Owner. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

14.3. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidder's proposed Subcontractors and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

14.4. If the Agreement is to be awarded, it will be awarded to the lowest Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interest of the Work.

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

### 15.0 CONTRACT SECURITY.

Paragraph 5.8. of the General Conditions and the Supplementary Conditions set forth Owner's requirements as to Performance and other Bonds. When the Successful Bidder delivers the executed Agreement to the Owner, it shall be accompanied by the required Securities.

### 16.0 SIGNING OF AGREEMENT.

When Owner gives a Notice of Award to the Successful Bidder, within ten days thereafter, Contractor shall deliver to Owner five sets of the required Security Bonds and Insurance forms. Within ten days thereafter, Owner shall deliver two fully signed sets of Contract Documents to the Contractor.

No Agreement is binding upon the Owner until it has been executed by the Owner and delivered to the Contractor.

### 17.0 TAXES.

Owner may be 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 Contract Amount if the Owner is exempt. Reference is made to Paragraph 9.3. of the General Conditions.



## ILLEGAL ALIEN AFFIDAVIT

1. **UNLAWFUL EMPLOYEES, CONTRACTORS AND SUBCONTRACTORS.** Contractor shall not knowingly employ or contract with an illegal alien to perform work under this Contract. Contractor shall not knowingly contract with a subcontractor that (a) knowingly employs or contracts with an illegal alien to perform work under this Contract or (b) fails to certify to the Contractor that the subcontractor will not knowingly employ or contract with an illegal alien to perform work under this contract.
2. **VERIFICATION REGARDING ILLEGAL ALIENS.** Contractor has verified or attempted to verify through participation in the basic pilot program of the State of Colorado that Contractor does not employ any illegal aliens or Contractor verifies that Contractor has not been accepted into the basic pilot program prior to entering into this Contract. Contractor further verifies that if Contractor has not been accepted into the basic pilot program of the State of Colorado, Contractor will apply to participate in the basic pilot program of the State of Colorado every three months until Contractor is accepted or this Contract is completed, whichever is earlier. If the Basic Pilot Program is discontinued, this provision shall not be required or be effective.
3. **LIMITATION REGARDING BASIC PILOT PROGRAM.** Contractor shall not use Basic Pilot Program procedures to undertake pre-employment screening of job applicants while performing this Contract.
4. **DUTY TO TERMINATE A SUBCONTRACT; EXCEPTIONS.** If Contractor obtains actual knowledge that a subcontractor performing work under this Contract knowingly employs or contracts with an illegal alien, the Contractor shall:
  - 4.1 Notify the subcontractor and the District within three days that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and,
  - 4.2 Terminate the subcontract with the subcontractor if, within three days of receiving notice that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien, the subcontractor does not stop employing or contracting with the illegal alien. The contractor shall not terminate the contract with the subcontractor if during the three days, the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.
5. **DUTY TO COMPLY WITH STATE INVESTIGATION.** Contractor shall comply with any reasonable request of the Colorado Department of Labor and Employment made in the course of an investigation pursuant to Section 8-17.5-102(5), C.R.S.
6. **DAMAGES FOR BREACH OF CONTRACT.** In addition to any other legal or equitable remedy, the District may be entitled to for a breach of this Contract, if the District terminates this Contract, in whole or in part, due to Contractor's breach of the obligations set forth above, Contractor shall be liable for actual and consequential damages to the District.

**PROSPECTIVE CONTRACTOR'S CERTIFICATE REGARDING  
EMPLOYING OR CONTRACTING WITH AN ILLEGAL ALIEN**

FROM: \_\_\_\_\_  
(Prospective Contractor)

TO:

Project Name: \_\_\_\_\_

Bid Number: \_\_\_\_\_ Project Number: \_\_\_\_\_

As a prospective contractor for the above-identified bid, I (we) do hereby certify that, as of the date of this certification, I (we) do not knowingly employ or contract with an illegal alien and the I (we) have participated in or attempted to participate in the basic pilot program of the State of Colorado in order to verify that I (we) do not employ any illegal aliens.

Signed on \_\_\_\_\_, 20\_\_

Prospective Contractor \_\_\_\_\_

By: \_\_\_\_\_

Its: \_\_\_\_\_

Title

(Insert the Individual, Corporate or Partnership Certificate as appropriate)

# CONTRACTOR'S BID PROPOSAL

CONTRACTOR'S NAME: \_\_\_\_\_

PROPOSAL FOR: Grey Fox Sewer Improvements

I, the undersigned bidder for the project(s) listed above, hereby offer this proposal to the Upper Thompson Sanitation District, 2196 Mall Road, Estes Park, Colorado 80517

I UNDERSTAND the bidding and award for this project(s) shall be in accordance with the rules that implement the "Construction Bidding for Public Project Act", Sections 24-92-101 et seq., CRS.

I FURTHER UNDERSTAND that if this proposal is accepted, the Invitation to Bid, Proposal, Plans, Specifications, Supplemental Specifications, Special Provisions, Contract Form, and Contract Bonds shall be part of the complete contract.

IN PREPARING THE PROPOSAL, I HAVE:

- examined the Plans, Specifications, and the site of the proposed project and I am satisfied as to the conditions to be met and the work to be accomplished.
- considered any revisions to the Plans and Specifications which were made after advertisement. Acknowledge Revision No. \_\_\_\_\_ through \_\_\_\_\_.

IF THIS PROPOSAL IS ACCEPTED AND I AM AWARDED THE CONTRACT, I AGREE TO:

- execute a Contract and Bonds of forms provided by the Owner within 10 calendar days after the date of award. I understand that failure to do so will be just cause for cancellation of the award and forfeiture of the proposal guarantee.
- commence work as specified in the Notice to Proceed after the award date. I will complete in accordance with the time stated in the project Specifications.
- accomplish the work on the project in accordance with the Plans and Specifications, under the direction and according to instructions of the Project Engineer or, authorized representative, at the unit prices named in this proposal.
- perform any increased or decreased quantities of work at the unit prices named in the Proposal, except for alterations as provided for in the Specifications. I understand the Bid Schedule of quantities shown in this proposal is approximate and subject to change and that the Owner may, in its sole discretion, unilaterally increase the funds available under the Contract if the quantities increase.
- furnish all labor, machinery, equipment, materials, and supplies necessary to accomplish the work on the project.
- provide adequate compensation insurance to protect my employees working on the project.

Company Name

2<sup>nd</sup> Company Name (if joint venture)

Address

Address

County

County

By (signature)

By (signature)

Print Name

Print Name

Title

Title

Date

Date

Attest:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(Seal)

Note: This document must be signed in ink by an individual with legal authority to bind the contractor. It must also be attested by the corporate secretary and bear the seal of the corporation.

**CONTRACTORS PROPOSAL CHECKLIST (For information only)**

The documents checked below are included in and made part of this proposal. I have completed and signed all forms where indicated.

Contractors Bid Proposal

Invitation to Bid, plus any revisions notices

Bid Form

Illegal Alien Affidavit

**SECTION 00400**

**BID FORM**

**DATE** \_\_\_\_\_, 2016.  
**PROJECT** Grey Fox Sewer Improvements  
**PROPOSAL OF** \_\_\_\_\_  
Hereinafter called "Bidder", a (corporation) (partnership) (sole proprietorship)  
(Bidder strike out inapplicable terms)  
**TO** Upper Thompson Sanitation District (hereinafter called "Owner")

The undersigned, in compliance with your Advertisement for Bids, submits the following Bid.

**1.1 REPRESENTATIONS**

- A. Bidder will accept the provisions of the Bidding Documents.
- B. Bidder will enter into and execute a contract with the Owner within ten (10) days after notification of the acceptance of this Bid.
- C. Bidder will accomplish the Work in accordance with the Bidding Documents prepared by Cornerstone Engineering & Surveying, Inc.

**1.2 SCHEDULE OF WORK**

Work is anticipated to begin after June 19, 2016 with final substantial completion by July 30, 2016.

**1.3 BID AMOUNTS**

- A. Unit Prices: The unit prices listed below and described in Section 01 2200, will apply throughout the project:

|    | <u>Item</u>            | <u>UNIT</u> | <u>QUANTITY</u> | <u>UNIT PRICE</u> | <u>UNIT COST</u> |
|----|------------------------|-------------|-----------------|-------------------|------------------|
| 1  | Mobilization           | LS          | 1               | _____             | _____            |
| 2  | Traffic Control        | LS          | 1               | _____             | _____            |
| 3  | Grading                | LS          | 1               | _____             | _____            |
| 4  | Geofabric Mirafi 110N  | SY          | 420             | _____             | _____            |
| 5  | Erosion Blanket        | SY          | 400             | _____             | _____            |
| 6  | Bedding Sewer Main     | LF          | 50              | _____             | _____            |
| 7  | Seeding / Revegetation | LS          | 1               | _____             | _____            |
| 8  | RipRap D = 3"          | CY          | 45              | _____             | _____            |
| 9  | RipRap D = 9"          | CY          | 47              | _____             | _____            |
| 10 | Erosion Control        | LS          | 1               | _____             | _____            |

**TOTAL CONSTRUCTION COST** \_\_\_\_\_

**Total: \$** \_\_\_\_\_ (numbers)

\_\_\_\_\_ (written).

**1.4 ADDENDA**

A. Bidder acknowledges receipt of the following Addenda:

No. \_\_\_\_\_ Dated \_\_\_\_\_, 20\_\_\_\_

No. \_\_\_\_\_ Dated \_\_\_\_\_, 20\_\_\_\_

Respectfully Submitted,

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
By

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
Signature

\_\_\_\_\_  
City, State and Zip Code

\_\_\_\_\_  
Title

\_\_\_\_\_  
Telephone

Corporations: Affix Corporate Seal

\_\_\_\_\_  
State in which incorporated

**END OF DOCUMENT**

SECTION 00500  
AGREEMENT FORMS

|       |                   |
|-------|-------------------|
| 00510 | Notice of Award   |
| 00520 | Agreement         |
| 00530 | Notice to Proceed |





**SECTION 00510**  
**NOTICE OF AWARD**

DATE: \_\_\_\_\_

TO: \_\_\_\_\_

DESCRIPTION OF WORK: Grey Fox Sewer Improvements

OWNER: Upper Thompson Sanitation District

You are hereby notified that your Bid dated \_\_\_\_\_, 20\_\_\_\_ for the above Work has been considered. You are the apparent Successful Bidder and an Agreement for the Work will be executed.

The Contract Amount is \_\_\_\_\_ Dollars,

(\$\_\_\_\_\_).

You must comply with the following conditions within ten (10) days of the date of this Notice of Award.

You must deliver to the Engineer three sets of the Contract Security (Bonds) and Insurance Forms as specified in the Instructions to Bidders, General Conditions (Article 5) and Supplementary Conditions.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

OWNER: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

**SECTION 00520**

**AGREEMENT**

STATE OF COLORADO \_\_\_\_\_ )  
 )ss.  
COUNTY OF \_\_\_\_\_ )

THIS AGREEMENT AND FORMAL CONTRACT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_,  
by and between \_\_\_\_\_ Upper Thompson Sanitation District \_\_\_\_\_, party of  
the first part, hereinafter called the "OWNER", and \_\_\_\_\_ a \_\_\_\_\_,  
of the City of \_\_\_\_\_, County of \_\_\_\_\_, State of Colorado \_\_\_\_\_,  
hereinafter called the "CONTRACTOR" party of the second part,

WITNESSETH, that whereas the OWNER intends to construct Grey Fox Sewer Improvements, hereinafter called the Work, in accordance with the Drawings, Specifications, and other Contract Documents prepared by CORNERSTONE ENGINEERING & SURVEYING, INC.

NOW, THEREFORE, the OWNER and CONTRACTOR for the considerations hereinafter set forth, agree as follows:

- 1. The CONTRACTOR agrees to furnish all the necessary labor, materials, equipment, tools and services necessary to perform and complete in a workmanlike manner all work required for the construction of the Work, in strict compliance with the Contract Documents herein mentioned, which are hereby made a part of the Agreement, including the following Addenda:

Addendum No.                      Date

- a) Contract Time: Work must be complete by July 30, 2016 from the anticipated construction start date of June 20, 2016.
  - b) Sub-Contractors: The CONTRACTOR agrees to bind every sub-contractor by the terms of the Contract Documents. The Contract Documents shall not be construed as creating any contractual relation between the Sub-Contractor and the OWNER.
2. The OWNER agrees to pay, and the CONTRACTOR agrees to accept, in full payment for the performance of this Agreement, the Contract Amount of: \_\_\_\_\_ Dollars

(\$ \_\_\_\_\_), plus any and all sums to be added and/or deducted resulting from all extra and/or omitted work in connection therewith, as authorized under the terms as stated in the General and Supplementary Conditions, all in accordance with the terms as stated in the Contract Documents.

- a) Progress Payments will be made in accordance with the General and Supplementary Conditions of the Contract Documents.
- b) Payments to Contractor shall be made for services rendered and shall be due and owing within thirty (30) days of Contractor's submittal of Contractor's invoice to District. Contractor shall submit invoice by the 2<sup>nd</sup> Monday of the month for consideration at the District's Board meeting scheduled for the 3<sup>rd</sup> Tuesday of the month. The invoice shall be revised and approved by the District Manager prior to submittal for consideration by the District Board. If the District objects to any invoices submitted by Contractor, the

District will so advise the Contractor in writing giving the reason within seven (7) days of receipt of such invoice.

- c) Upon completion and acceptance of the Work in accordance with the Contract Documents, OWNER shall pay the remainder of the Contract Amount after publication by the OWNER in accordance with Colorado statutory requirements.

### 3. Contract Documents

It is hereby mutually agreed that the following list of instruments, plans, specifications, and documents which are attached hereto, bound herewith or incorporated herein by reference shall constitute the Contract Documents, all of which are made a part hereof, and collectively evidenced and constitute the Agreement between the parties hereto, and they are fully a part of the Agreement as if they were set out verbatim and in full herein, and are designated as follows:

- a) Instructions to Bidders
- b) Bid Proposal
- c) Notice of Award
- d) Agreement
- e) Performance and Payment Bonds
- f) Certificates of Insurance, Policy Endorsement
- g) Notice to Proceed
- h) General Conditions
- i) Supplementary Conditions
- j) Technical Specifications
- k) Drawings
- l) Addenda

### 4. Liquidated Damages

Not Used

### 5. Contractor Representations

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

- a) CONTRACTOR has familiarized himself with the nature and extent of the Contract Documents, Work, locality, and with all local conditions and federal, state, and local laws, ordinances, rules and regulations that in any manner may affect cost, progress or performance of the Work.
- b) CONTRACTOR has studied carefully the Contract Documents and all other items otherwise affecting cost, progress or performance of the Work which were relied upon by the Engineer in the preparation of the Contract Drawings and Specifications and which have been identified in the Supplementary Conditions as a part of the Contract Documents.
- c) CONTRACTOR has made or caused to be made examinations, investigations and tests and studies of such reports and related data in addition to those referred to in paragraph 5.b) as he deems necessary for the performance of the Work at the Contract Amount, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are or will be required by CONTRACTOR for such purposes.
- d) CONTRACTOR has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.
- e) CONTRACTOR has given Engineer written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to CONTRACTOR.

6. Miscellaneous

- a) Terms used in this Formal Contract which are defined in Article 1 of the General Conditions shall have the meanings indicated in the General Conditions.
- b) No assignment by a party hereto of any rights under or interests in the Contract Documents 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.
- c) OWNER and CONTRACTOR each binds himself, his partners, successors, assigns, and legal representatives to the other party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- d) No mechanic, contractor, sub-contractor, materialman or other person can or will contract for or in any manner have or acquire any lien upon the Work covered by this Agreement, or the land upon which the same is situated.
- e) The amount of money appropriated by the contracting public entity, for public works projects, is equal to or in excess of the Contract Amount.
- f) The Agreement prohibits the issuance of any written Modification or other form of order or directive by the Owner requiring additional commensurate Work to be performed, which Work causes the aggregate amount payable under the Agreement to exceed the Contract Amount appropriated for the original Agreement, unless the Contractor is given written assurance by the Owner that lawful appropriations to cover the costs of the additional work have been made or unless such work is covered under remedy-granting provisions in the Agreement.

SIGNATURES:

OWNER: \_\_\_\_\_

DATE: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

ATTEST: \_\_\_\_\_

TITLE: \_\_\_\_\_

Address for giving notices:

CONTRACTOR: \_\_\_\_\_

DATE: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

ATTEST: \_\_\_\_\_

TITLE: \_\_\_\_\_

Address for giving notices:

**SECTION 00530**

**NOTICE TO PROCEED**

TO: \_\_\_\_\_

DESCRIPTION OF WORK: Grey Fox Sewer Improvements

OWNER: Upper Thompson Sanitation District

This notice is to advise you:

That the Agreement covering the above described Work has been fully executed by the Contractor and the Owner.

That the required Contractor's Performance Bond, Payment Bond and Certificates of Insurance and Policy Endorsement have been received by the Owner.

That the Owner has approved the said Contract Documents.

That the Contract Time commences upon execution of this Notice to Proceed by the Owner.

Therefore, as the Contractor for the above described Work, you are hereby authorized and directed to proceed within ten (10) calendar days from receipt of this notice as required by the Agreement.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

OWNER: Upper Thompson Sanitation District

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

**ACKNOWLEDGMENT OF NOTICE**

Receipt of this Notice to Proceed is hereby acknowledged this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

CONTRACTOR: \_\_\_\_\_

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

**CHANGE ORDER**

**Change Order #** \_\_\_\_\_ as of (date): \_\_\_\_\_, 20\_\_\_\_

**PROJECT NAME:** Grey Fox Sewer Improvements

Contractor: \_\_\_\_\_ **Original Contract Value:** \$ \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

The contractor hereby agrees to comply with the following changes and/or additions to the contract plans and specifications. Upon Contractor and Owner approval, the work and contract documents for this Project will be adjusted to include the following:

| <b>Description of Changes &amp; Work</b> (list)<br>(attach drawing, detail, page #, etc.) | <b>Value of Change</b> |
|---|------------------------|
|---|------------------------|

| <b>Adjustments to Contract</b>                 | <b>Price</b> | <b>Days</b> |
|--|--------------|-------------|
| Contract Total including Change Order # _____: | \$ _____     | _____       |
| Adjustments by this Change Order (# _____)     | \$ _____     | _____       |
| Contract Total to Date – including this CO     | \$ _____     | _____       |
| Contract Time expires on: _____                |              |             |

**APPROVED BY:**

**Company:** \_\_\_\_\_

**Upper Thompson Sanitation District**

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

This document will become supplemental to the Contract and all provisions will be included.

SECTION 00700  
GENERAL CONDITIONS

- Article 1 - Definitions
- Article 2 - Preliminary Matters
- Article 3 - Contract Documents: Intent and Reuse
- Article 4 - Physical Conditions
- Article 5 - Bonds and Insurance Requirements
- Article 6 - Scope of Work
- Article 7 - Execution of the Work
- Article 8 - Control of Material
- Article 9 - Legal Relations and Responsibility to the public
- Article 10 - Prosecution and Progress
- Article 11 - Measurement and Payment
- Article 12 - Warranty and Guarantee; Access to Work; Continuation of Work; Partial Utilization
- Article 13 - Work by Others
- Article 14 - Miscellaneous





## SECTION 00700

### GENERAL CONDITIONS

#### ARTICLE 1

##### DEFINITIONS

Wherever used in these General Conditions or in the other sections of these Contract Documents, the following terms, or pronouns in place of them, have the meanings indicated which are applicable to both the singular and plural thereof:

- 1.1 A.A.S.H.T.O.: The American Association of State Highway and Transportation Officials.
- 1.2 A.S.A.: The American Standards Association.
- 1.3 A.S.T.M.: The American Society for Testing Materials.
- 1.4 AWWA: The American Water Works Association.
- 1.5 ADDENDA: Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents and the Contract Documents.
- 1.6 AGREEMENT: The written agreement between Owner and Contractor covering the Work to be performed; other sections of these Contract Documents are attached to the Agreement and made a part thereof as provided therein.
- 1.7 APPLICATION FOR PAYMENT: The form accepted by the Engineer and Owner which is to be used by the Contractor in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents, Owner or Engineer.
- 1.8 BID: The offer or proposal of the Bidder submitted on the prescribed Bid Proposal form setting forth the costs for the Work to be performed.
- 1.9 BIDDER: Any individual, firm or corporation, submitting a proposal directly to the Owner for the Work contemplated, acting directly or through a duly authorized representative.
- 1.10 BONDS: Performance and payment bonds and other instruments of security.
- 1.11 CHANGE ORDER: A written modification to the Contractor signed by the Engineer and the Owner authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Amount or the Contract Time issued after the effective date of the Agreement.
- 1.12 COMPLETION: The Work or a portion thereof, has progressed to a point where, in the opinion of the Engineer and the Owner it is totally complete, and the Engineer certifies that the Work is generally in accordance with the Contract Documents. The Contractor has fulfilled all of his obligations under the Contract Documents, except for certain continuing obligations. The aforementioned completion shall be sufficient to meet the requirements set forth for Final Payment and Acceptance in Paragraph 11.19 of the General Conditions. The terms "complete" and "completed" as applied to the Work refer to completion.
- 1.13 CONTRACT OR CONTRACT DOCUMENTS: The written agreement executed between the Owner and the successful bidder, covering the performance of the Work and the furnishing of labor and materials, by which the Contractor is bound to perform the Work and furnish the labor and materials, and by which the Owner is obligated to compensate him therefore at the mutually established and accepted Contract Amount. The Contract Documents shall include the Instructions to Bidders, Agreement, Notice of Award, Addenda (which pertain to the Contract Documents, Contractor's Bid Proposal including documentation accompanying the Bid and Award), Bonds, Certificates of Insurance, these General Conditions, Supplementary Conditions, Technical Specifications, Drawings, and other items specifically identified in the Agreement together with all Modifications issued after the execution of the Agreement.

1.14 **CONTRACT AMOUNT:** The moneys payable by Owner to Contractor under the Contract Documents as stated in the Agreement.

1.15 **CONTRACT TIME:** The number of days for the completion of the Work as stated in the Agreement commencing with the date of the Notice to Proceed.

1.16 **CONTRACTOR:** The individual, partnership, firm, or corporation with whom Owner has entered into the Agreement, acting directly or through lawful agents or employees, primarily liable for the acceptable performance of the Work for which contracted, and also for the payment of all legal debts pertaining to the Work.

1.17 **DAY:** A calendar day of twenty-four hours measured from midnight to the next midnight.

1.18 **DEFECTIVE:** An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to final payment.

1.19 **DISTRICT:** A legally constituted group of individuals who have joined together as a quasi-municipal corporation and political subdivision organized or acting pursuant to the provisions of Title 32 of the Colorado Revised Statutes in order to facilitate construction of utility systems within the limits of their property. The District shall be represented by its authorized Board of Directors in accordance with its statutory powers.

1.20 **DRAWINGS:** The Contract Drawings or exact reproduction thereof, which graphically show the character and scope of the Work to be performed and which have been prepared or approved in concept by the Engineer and are referred to in and a part of, the Contract Documents.

1.21 **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.

1.22 **ENGINEER:** The person, firm, or corporation named as such in the Contract Documents.

1.23 **EQUIPMENT:** All machinery, together with the necessary parts supplied for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the Work.

1.24 **FEDERAL SPECIFICATIONS:** The Federal Specifications and Standards, and supplements, amendments, and indices thereto, are prepared and issued by the General Services Administration of the Federal Government. These may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20025.

1.25 **FIELD ORDER:** A written order to the Contractor issued by the Engineer effecting a change in the Work not involving an adjustment in the Contract Amount or an adjustment in the Contract Time.

1.26 **INTENTION OF TERMS:** Whenever, in these Specifications or upon the Drawings, the words "directed", "required", "permitted", "ordered", "designated", "prescribed", or words of like import, are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved", "acceptable", "satisfactory", or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner. Any reference to a paragraph or subparagraph within a section shall include the general provision of the section or sections and paragraph pertinent thereto.

1.27 **LABORATORY:** The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer.

1.28 **MODIFICATION:** (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Supplemental Agreement. A modification may only be issued after the effective date of the Agreement.

1.29 NOTICE OF AWARD: The written notice by Owner to the apparent successful Bidder stating that upon compliance by the apparent Successful Bidder with the conditions precedent enumerated therein, within the time specified, Owner will sign and deliver the Agreement.

1.30 NOTICE TO PROCEED: A written notice given by Owner to Contractor (with a copy to Engineer), the date of which fixes the Contract Time will commence to run and on which Contractor shall start to perform his obligation under the Contract Documents.

1.31 OWNER: The public body or authority, corporation, association, firm or individual with whom the Contractor has entered into the Agreement and for whom the Work is to be provided.

1.32 PAYMENT BOND: The approved form of security furnished by the Contractor and his Surety as a guarantee that he will pay in full all bills and accounts for materials and labor used in the execution of the Work, as provided by law.

1.33 PERFORMANCE BOND: The approved form of security furnished by the Contractor and his Surety as a guarantee of good faith and ability on the part of the Contractor to execute the Work in accordance with the terms of the Contract Documents.

1.34 PROJECT REPRESENTATIVE: An authorized representative of the Owner who is assigned to the Work or any part thereof.

1.35 PROJECT MANAGER: An authorized representative of the Owner who is assigned to the Work or any part thereof.

1.36 PROPOSAL: See "BID".

1.37 SHOP DRAWINGS: All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by the Contractor, a Subcontractor, manufacturer, fabricator, supplier or distributor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by Contractor to illustrate material or equipment for some portion of the Work.

1.38 SPECIFICATIONS: A part of the Contract Documents consisting of written descriptions, of a technical nature, of materials, equipment, construction systems, standards and workmanship for execution of the work which may be included in the Contract Documents.

1.39 SUBCONTRACTOR: An individual, firm or corporation having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

1.40 SUBSTANTIAL COMPLETION: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the Engineer as evidenced by a written opinion as to Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part thereof) can be utilized or partially utilized for the purposes and in a manner for which it was intended; or if there be no such written opinion issued, when final payment is due in accordance with paragraph 11.19. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

1.41 SUPERINTENDENT: Executive representative for the Contractor present on the Work at all times, authorized to receive and fulfill instructions from the Engineer and capable of superintending the Work efficiently.

1.42 SUPPLEMENTAL AGREEMENT: A written proposal and agreement executed by the Contractor and by the Owner with the consent of the Contractor's Surety, covering Work not included in the Contract Documents or as specified in paragraph 6.3 which is necessary or desirable to the proper completion of the Work.

1.43 SUPPLEMENTARY CONDITIONS: The part of the Contract Documents which amends or supplements the General Conditions and Technical Specifications.

1.44 SURETY: The corporate body or individuals who are bound by the Performance Bond and the Payment Bond with and for the Contractor, and which engage to be responsible for the entire and satisfactory fulfillment of the

Agreement and for the payment of all debts incurred in fulfilling the Agreement.

1.45 WORK: The term "Work" shall be understood to mean the furnishing of all labor, materials, equipment, and other incidentals necessary or convenient to the successful completion of the Work and the carrying out of all the duties and obligations imposed by the Contract Documents and the entire completed execution or the various separately identifiable parts thereof required to be furnished under the Contract Documents.

**END ARTICLE 1**

## ARTICLE 2

### PRELIMINARY MATTERS

#### PROPOSAL REQUIREMENTS AND CONDITIONS

##### Substitution of Equipment and Materials:

2.1 Where items of equipment and/or materials are specifically identified by a manufacturer's name, model or catalog number, only such specific items may be used in the Bid unless prior written approval of other material has been obtained from the Engineer. Applications for such approval shall be submitted in duplicate at least six working days prior to Bid opening date. Applications for approval shall be accompanied by a typewritten listing of the specified manufacturer and catalog number and shall also state in typewritten detail any and all significant details in which each item requested for approval differs from the item specified. Failure to so list such information shall not relieve the Contractor from providing properly functioning or fitting materials, regardless of the approval action taken by the Engineer.

##### Rejection of Irregular Bid:

2.2 Bids containing any omission, alternations of form, addition or conditions not called for, conditional or alternate Bids unless called for, incomplete Bids, or Bids otherwise regular which are not accompanied by acceptable Bid Securities, will be considered irregular and may be rejected. The Owner reserves the right to waive technicalities as to changes, alterations or reservations, and make the award to the best interest of the Owner.

##### Disqualification of Bidders:

2.3 Any one or more of the following causes may be considered as sufficient for the disqualification of Bidder and the rejection of his Bid or Bids:

- (a) More than one Bid for the same Work from an individual, firm, partnership, or corporation under the same or different names.
- (b) Evidence of collusion among Bidders. Participants in such collusion may receive no recognition as Bidders for any future Work.
- (c) Unbalanced Bids in which the prices for some items are out of proportion to the prices for other items.
- (d) Failure to submit a price for each item of Work for which a Bid price is required by the Bid.
- (e) Lack of competency as revealed by the financial statement, experience, plant and equipment statements submitted.
- (f) Lack of responsibility as shown by past Work judged from the standpoint of workmanship and progress.
- (g) Uncompleted Work which, in the judgment of the Owner, might hinder or prevent the prompt completion of additional Work if awarded.
- (h) For being in arrears on existing contracts, in litigation with the Owner, or having defaulted on a previous contract.
- (i) Lack of adequate bonds and/or insurance as required by the Contract Documents.
- (j) Any other reason which in the discretion of Owner, renders Bidder unfit to perform the Work or gives the Owner cause to believe there is substantial likelihood that Bidder will default on the Agreement and it is therefore not in Owner's best interest to make such an award.

Materials Guaranty:

2.4 Before any Agreement is awarded, Bidders may be required to furnish a complete statement of the origin, composition and manufacture of all or any materials to be used in the construction of the Work, together with samples, which samples may be subjected to the tests provided for in the Contract Documents to determine their quality and fitness for the Work.

Failure to Execute Agreement:

2.5 Failure to comply with any of the requirements of the Bid Proposal to execute the Agreement within ten (10) days after the date of the Notice of Award or to furnish Bonds, Certificates of Insurance and other documents as required, shall be just cause for the annulment of the award. In the event of such annulment of the award, the amount of Bid Security shall become the property of the Owner, not as a penalty but as liquidated damages. Award may then be made to the next qualified Bidder, or the Work readvertised, or handled as the Owner may elect.

Copies of Contract Documents:

2.6 Owner shall furnish to Contractor up to five copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

COMMENCEMENT OF CONTRACT TIME

Notice To Proceed:

2.7 The Contract Time will commence to run in accordance with the Notice To Proceed which shall be issued no later than thirty days after the date of the Agreement.

Starting the Work:

2.8 Contractor shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site of the Work prior to the date on which the Contract Time commences to run unless prior approval is given by Engineer and Owner.

Before Starting Construction:

2.9 Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error or discrepancy which Contractor may discover.

2.10 Within three days after the date of the Agreement (unless otherwise specified in the Supplementary Conditions), Contractor shall submit to Engineer for review an initial schedule indicating the starting and completion dates of the various stages of the Work, a preliminary schedule of Shop Drawing submissions, and an initial schedule of values of the Work where applicable.

Preconstruction Conference:

2.11 Within five days after the date of the Agreement, but before Contractor starts the Work at the site, a conference will be held for review of the schedules referred to in paragraph 2.10, to establish procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, and to establish such working understandings among the parties as to the Work as are not inconsistent with the Contract Documents.

**END OF ARTICLE 2**

## ARTICLE 3

### CONTRACT DOCUMENTS: INTENT AND REUSE

#### Intent:

3.1 It is the intent of this Agreement to describe a complete project which may be utilized for its intended purpose(s) as more fully described in the Contract Documents. The Contract Documents comprise the entire agreement between Owner and Contractor concerning the Work. They may be altered only by a written modification.

3.2 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If, during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, he shall report it to Engineer in writing at once and before proceeding with the Work affected thereby; however, Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof or should reasonably have known thereof.

3.3 It is the intent of the Contract Drawings and Specifications to describe the complete Work (or part thereof) to be executed in accordance with the Contract Documents. Any Work that may reasonably be inferred from the Contract Drawings and Specifications as being required to produce the intended result shall be supplied whether or not it is specifically called for. When words which have a well-known technical or trade meaning are used to describe the Work, materials or equipment, such words shall be interpreted in accordance with such meaning.

Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the code of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code 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. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of Owner, Contractor or Engineer, or any of their agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided for in paragraph 7.6.

3.4 The Contract Documents will be governed by the laws of the State of Colorado.

#### Reuse of Documents:

3.5 Neither Contractor nor any Subcontractor, manufacturer, fabricator, supplier or distributor shall have or acquire any title to or ownership rights in any of the Contract Drawings and Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of the Engineer; and they shall not reuse any of them on extensions of the Work or any other project without written consent of the Owner and the Engineer and specific written verification or adoption by the Engineer.

**END ARTICLE 3**

## ARTICLE 4

### PHYSICAL CONDITIONS

#### Physical Conditions--Investigations and Reports:

4.1 Reference is made to the Supplementary Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Work which have been relied upon by the Engineer in preparation of the Contract Drawings and Specifications. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents.

#### Unforeseen Physical Conditions:

4.2 Contractor shall promptly notify Owner and Engineer in writing of any subsurface or latent physical conditions at the site or in any existing structure differing materially from those indicated or referred to in the Contract Documents. Engineer will promptly review those conditions and advise Owner in writing if further investigation or tests are necessary. Promptly thereafter, Owner shall obtain the necessary additional investigations and tests and furnish copies to Engineer and Contractor. If Engineer and Owner find that the results of such investigations or tests indicate that there are subsurface or latent physical conditions which differ materially from those identified in the Contract Documents, and which could not reasonably have been anticipated by Contractor after personal investigation and testing, a Change Order shall be issued incorporating the necessary revisions. No such change shall be approved unless asserted prior to Final Payment.

**END ARTICLE 4**



## ARTICLE 5

### BONDS AND INSURANCE REQUIREMENTS

#### General:

5.1 The Contractor shall not commence work under this Agreement until he has obtained all insurance required by these Contract Documents, and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence Work until all similar insurance required of the subcontractor has been obtained. **The Contractor shall add the Owner and Engineer together with their officers, agents and employees, to all relevant insurance policies as an additional named insured.**

#### Workmen's Compensation Insurance:

5.2 The Contractor shall obtain and maintain during the life of this Agreement adequate Workmen's Compensation Insurance as prescribed by the Workmen's Compensation Act, as amended, of the State of Colorado. This insurance shall cover all of his employees employed for the work. If any of the Work is sublet, the Contractor shall require each of his subcontractors to provide similar coverage for all of the latter's employees to be engaged in such Work.

#### Public Liability and Property Damage Insurance:

5.3 The Contractor shall be required to carry Comprehensive General Liability/Auto Liability insurance to protect himself, his subcontractors, the Owner, and the Engineer, including any officer or agent of said Owner and Engineer, from claims for public liability or property damage which may arise from the operations under this Agreement, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them. The minimum limits of insurance are indicated in the Supplementary Conditions. Any subcontractor will be required to carry Comprehensive General Liability and Automobile Liability insurance in an amount equal to that required by the Contractor. **The Comprehensive General Liability insurance will include as Additional Named Insureds: the Owner (name), the Engineer (name) and each of their consultants, agents and employees. The Contractor shall furnish a policy endorsement in addition to Certificate of Insurance.**

Contractor and his Insurance Provider agree that it will indemnify and hold harmless the Owner, the Engineer and all of their consultants, agents and employees from any loss, cost, damage, expense and liability including attorney's fees, by reason of property damage, personal injury, or death, such damage and injury of whatsoever nature or kind arising out of or as a result of the performance of the Work under this Agreement, or any negligent act or negligent failing to act, or on account of the use of improper or defective materials, or on account of any poor workmanship or on account of any act of omission or commission in connection with the performance of the Work by Contractor, its employees, agents and subcontractors. Contractor agrees that the Comprehensive General Liability and Property Damage Insurance (including Automobile Liability and Property Damage Insurance), which the Contractor is required to maintain pursuant to the Contract Documents shall not act as a limitation on Contractor's obligation to indemnify the Owner, the Engineer and all of their consultants, agents and employees. The Comprehensive General Liability insurance shall include broad form property damage coverage, broad form contractual liability coverage and completed operations insurance.

#### Property Insurance:

5.4 Contractor shall purchase and maintain property insurance upon the Work to the full replacement value thereof. This insurance shall include the interests of Owner, Engineer, Contractor and Subcontractors in the Work, shall insure against the perils of fire, earthquake, flood and extended coverage and shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in the Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment.

Proof of Insurance:

5.5 Prior to the commencement of any work under this Agreement, the Contractor shall furnish to the Owner certificates of insurance to prove that all required insurance is in force, and shall require any subcontractor to submit similar evidence before undertaking work under this Agreement. Each insurance policy shall contain a clause providing that it shall not be canceled or materially altered without thirty (30) days' written notice to the Owner and Engineer. Insurance obtained by the Contractor shall be subject to approval by the Owner for adequacy of protection. Neither approval by the Owner of any insurance supplied by a Contractor or subcontractor, nor failure to disapprove such insurance shall relieve the Contractor or subcontractors of their obligation to maintain in full force during the life of the Agreement all required insurance as set forth in this Article and in the Supplementary Conditions.

Receipt and Application of Proceeds of Insurance:

5.6 Any insured loss under the policies of insurance required by this Article or the Supplementary Conditions shall be adjusted with Owner and made payable to Owner as trustee for the insureds, as their interests may appear, subject to the requirements of paragraph 5.7. Owner shall deposit in a separate account any money so received, and he 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.

Adjustment and Settlement of Insurance Claims:

5.7 Owner as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as trustee shall only make settlement with the insurers in accordance with such agreement as the parties in interest may reach.

Performance, Payment and Other Bonds:

5.8 Contractor shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Amount as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These Bonds shall remain in effect until the expiration of the warranty period. Contractor shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by the Contract Documents and be executed by such Sureties as (i) are licensed to conduct business in the State of Colorado and (ii) are named in the current 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 Fiscal Service, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

5.9 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 Work is located or it ceases to meet the requirements of clauses (i) and (ii) of Paragraph 5.8, Contractor shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to Owner.

Changes in Work; Notice:

5.10 If notice of any change affecting the general scope of the Work or change in the Contract Amount is required by the provisions of any Bond to be given to the Surety, it will be Contractor's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. Contractor shall furnish proof of such adjustment to Owner.

Term of Insurance Required:

5.11 All insurance policies required pursuant to these Contract Documents shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work in accordance with paragraph 12.5.

**END ARTICLE 5**

## ARTICLE 6

### SCOPE OF WORK

#### Intent of Drawings and Specifications:

6.1 The intent of the Contract Drawings and Specifications is to prescribe a complete work or improvement which the Contractor undertakes to do in full compliance with the Contract Documents, together with any authorized Modifications. The Contractor shall perform all items of work covered and stipulated in the Contract Documents together with any authorized modifications, all in accordance with the lines, grades, cross sections and dimensions shown on the Contract Drawings. The Contractor shall furnish, unless otherwise provided in the Contract Documents, all materials, equipment, implements, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

6.2 Should any construction or conditions which are not thoroughly or satisfactorily stipulated or set forth by the Contract Drawings and Specifications be anticipated on any proposed Work, Supplementary Conditions for such work may be prepared and attached to the Bid Proposal Form and Agreement, and shall be considered as part of the Contract Documents, the same as though contained fully therein. Should any Supplementary Condition conflict with the General Conditions, the Supplementary Condition will govern.

#### Changes and Increased or Decreased Quantities of Work:

6.3 The Owner through the Engineer reserves and shall have the right to make such changes, from time to time, in the Contract Documents, the character or quantity of the Work as may be considered necessary or desirable to complete fully and acceptably the proposed Work in a satisfactory manner, provided such alterations do not change the Contract Amount of the Work, based on the originally estimated quantities and the unit prices Bid or lump sum Bid, by more than twenty-five percent (25%). Should it become necessary, for the best interest of the Owner, to make changes in excess of that herein specified, the same shall be covered by Supplemental Agreement. The Contractor shall not start work on any alteration requiring a Supplemental Agreement until the Agreement setting forth the adjusted prices shall be executed by the Engineer, Owner and Contractor. In case a satisfactory adjustment in the Contract Amount cannot be reached for any item requiring a Supplemental Agreement, the Owner reserves the right to terminate the Agreement as it applies to the items in question and make such arrangements as may be deemed necessary to complete the Work as altered or decreased. Engineer may authorize minor changes in the Work not involving an adjustment of Contract Amount or Contract Time, which are consistent with the overall intent of the Contract Documents. Said minor changes shall be binding on Owner and Contractor, and shall be performed promptly by Contractor.

#### Deleted Items:

6.4 The Engineer may, in writing, order deleted from the Work any item other than major items found unnecessary to the Work and such deletion shall not be a waiver of any condition of the Agreement nor invalidate any of the provisions thereof. Major items may be deleted by Supplemental Agreements. The Contractor will be paid for all work done toward the completion of the item prior to such deletion as provided in paragraph 11.5.

#### Extra Work:

6.5 Whenever any additional work, including but not limited to additional materials, equipment or labor, is necessary for the proper completion of the Work, and such work was not included in the Bid Proposal nor subject to a Supplemental Agreement, such work must be authorized by a Change Order approved by the Owner and the Engineer. Payment for such work shall be determined in the same manner as for Extra Work as specified in Paragraph 11.6.

When work is necessary to the proper completion of the Work for which no quantities or prices were given in the Bid Proposal, the same shall be called extra work and shall be performed by the Contractor when so authorized in writing by the Engineer and the Owner. Extra work shall be performed by the Contractor in accordance with the Contract Documents in a proper and workmanlike manner and as may be authorized by the Engineer and the Owner. Prices for extra work shall be itemized and covered by a written Modification submitted by the Contractor and approved by

the Owner and Engineer prior to the actual starting of such work. Should the parties be unable to agree on unit prices or a lump sum for the extra work, or if this method is impractical, the Engineer may instruct the Contractor to proceed with the work on the basis of the Cost of the Work as hereinafter provided in Paragraph 11.6. Claims for extra work not authorized in writing by the Engineer and the Owner prior to the work being done will be rejected.

Maintenance of Traffic:

6.6 Unless the Contract specifically provides for the closing to traffic of any local road or highway while the Work is in progress, such road or highway shall be kept open to all traffic by the Contractor. The Contractor shall also provide and maintain in a safe condition temporary approaches, crossings, or intersections with roads and highways. The Contractor shall bear all expense of maintaining traffic over the section of road affected by the Work to be done under this Agreement, and of constructing and maintaining such approaches, crossing, intersections and any necessary features without direct compensation, except as otherwise provided. Any encumbrances to normal traffic operations proposed by the Contractor shall require submission of a Traffic Control Plan for review and approval by the Owner, Engineer, and regulatory authority.

Removal and Disposal of Structures and Obstructions:

6.7 All structures or obstructions found on the site of the Work and shown on the Contract Drawings which are not to remain in place or which are not to be used in the new construction shall be removed to the satisfaction of the Engineer. Unless specified in the Bid Proposal, this Work will not be paid for separately but will be included in the price Bid for that portion of the Work requiring the removal of the obstruction. All material found on the site or removed therefrom shall remain the property of the Owner unless otherwise indicated.

Use of Materials Found on the Work:

6.8 The Contractor, with the approval of the Engineer, may use in the proposed Work any stone, sand, or gravel found on the site of the Work. The Contractor will not be paid for such excavation unless specifically stated in the Bid Proposal, and he shall replace with other suitable material, without compensation, all of that portion of the material so removed and used. If it was intended by the Engineer and indicated in the Contract Documents that any or all of the material so excavated and used was to have been wasted, then the Contractor will not be required to replace it. The Contractor shall not excavate outside of the proposed slope, grade lines, property or easement as indicated on the Contract Drawings, without prior approval by the Engineer.

Final Cleaning Up:

6.9 Upon completion of the Work and before acceptance and final payment will be made, the Contractor shall remove from the site of the Work all machinery, equipment, surplus, and discarded materials, rubbish, temporary structures, and stumps or portions of trees. He shall cut all brush and woods within the limits indicated and shall leave the site of the Work in a neat and presentable condition. Material cleared from the site of the Work and deposited on property adjacent, will not be considered as having been disposed of satisfactorily. The Contractor shall leave the site of the Work in a condition generally comparable to the original condition or as specified elsewhere in the Contract Documents.

**END ARTICLE 6**

## ARTICLE 7

### EXECUTION OF THE WORK

#### Authority of Engineer:

7.1 The Engineer shall decide any and all questions which may arise as to the quality and acceptability of the materials furnished, the quality of the Work performed, the general manner of performance and the rate of progress of the Work. He shall decide all questions which may arise as to the interpretation of the Contract Drawings, General Conditions, Supplemental Conditions, and Specifications, all questions as to acceptable fulfillment of the Agreement, all disputes and mutual rights by the Contractors, if there be more than one Contractor on the Work, and, with the approval of the Owner, all questions as to compensation. The decision of the Engineer shall be final and he shall have executive authority to make effective such decisions and to request the Contractor to carry out all orders promptly.

#### Drawings and Shop Drawings:

7.2 The Contract Drawings will show details of all structures; lines and grade of roadways and utility systems, typical cross-sections of roadways; character of foundation; location and designation of all structures; and the general arrangement of circuits and outlets, location of switches, panels and other Work.

Contract Drawings and Specifications are complementary each to the other, and what is called for by one shall be as binding as if called for by both. Data presented on the Contract Drawings are as accurate as planning can determine, but accuracy is not guaranteed and field verification of all dimensions, locations, levels, etc., to suit field conditions is directed. The Contractor shall review all structural and mechanical drawings and adjust all Work to conform to all conditions shown therein. The mechanical drawings shall take precedence over all other Drawings.

Discrepancies between different Contract Drawings, or between Contract Drawings and Specifications, or regulations and codes governing the Work shall be brought to the attention of the Engineer in writing as soon as said discrepancies are noticed. In the event such discrepancies exist and the Engineer is not so notified, the Engineer shall reserve the right to exercise sole authority in making final decisions in resolution of such a conflict. It is mutually agreed that all authorized alterations affecting the requirements and information given on the Contract Drawings shall be in writing and approved by the Engineer. When at any time reference is made to "The Drawings", the interpretation shall be the Contract Drawings as affected by all authorized modifications then in effect. Contract Drawings will be supplemented by such Shop Drawings to be prepared by Contractor as are necessary to adequately control the Work.

7.2.1 After checking and verifying all field measurements and approving of Shop Drawings, Contractor shall submit to Engineer for review, in accordance with the accepted schedule of Shop Drawing submissions (see Paragraph 2.28), six copies (unless otherwise specified in the Supplemental Conditions) of all Shop Drawings, which shall have been checked by and stamped with the approval of Contractor and identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and like information to enable Engineer to review the information as required.

7.2.2 At the time of each submission, Contractor shall in writing call Engineer's attention to any deviations that the Shop Drawings or samples may have from the requirements of the Contract Documents.

7.2.3 Engineer will review with reasonable promptness Shop Drawings and samples, but Engineer's review shall be only for conformance with the design concept of the Work and for compliance with the information given in the Contract Documents and shall not extend to means, methods, sequences, techniques or procedures of construction or to satisfy 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. Contractor shall make any corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and resubmit new samples for Engineer's review. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals. Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that Contractor has reviewed or coordinated each Shop Drawing or sample with the

requirements of the Work and the Contracts Documents.

7.2.4 Where a Shop Drawing or sample is required by the Contract Documents, no related Work shall be commenced until the submittal has been reviewed and approved by the Engineer.

7.2.5 Engineer's review of Shop Drawings or samples shall not relieve Contractor from responsibility for any deviations from the Contract Documents unless Contractor has in writing called Engineer's attention to such deviation at the time of submission and Engineer has given written concurrence and approval to the specific deviation, nor shall any concurrence or approval by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings.

7.2.6 The cost of furnishing all shop drawings shall be borne by the Contractor. The Contractor will reimburse the Engineer for all associated costs if more than two review submittals are required for approval on any particular item.

Operating/Maintenance Manuals and Parts Lists:

7.3 The Contractor shall submit five (5) complete Operating/Maintenance Manuals and Parts Lists to the Engineer for all items of mechanical and electrical equipment incorporated into the Work, unless specified otherwise in the Supplementary Conditions or Specifications.

As-Built Drawings:

7.4 A set of Contract Drawings shall be maintained at the site of the Work, with all changes or deviations from the original drawings neatly marked thereon in brightly contrasting color. This shall be a separate set of drawings, not used for construction purposes, which shall be kept up to date as the job progresses and shall be made available for inspection by the Engineer at all times. Upon completion of the Agreement, this set of drawings shall be delivered to the Engineer.

Conformity with Drawings and Allowable Deviations:

7.5 Finished surfaces in all cases shall conform with lines, grade, cross-sections and dimensions shown on the Contract Drawings. Any deviation from the Contract Drawings, as may be required by the demands of construction, will in all cases be determined by the Engineer and authorized in writing.

Coordination of Drawings and Specifications:

7.6 The Contract Drawings and Specifications, and all supplementary drawings and documents, are essential parts of the Contract Documents, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be cooperative to describe and provide for the complete Work. The Contractor shall not take advantage of any apparent error of omission in the Contract Drawings or Specifications. In the event the Contractor discovers any apparent conflict, error or discrepancy, he shall immediately call upon the Engineer for his interpretation and decision, and such decision shall be final. Any apparent error or discrepancy must be resolved before Contractor proceeds with the Work affected thereby.

7.6.1 In resolving such conflicts, errors and discrepancies, the Contract Documents shall be given preference in the following order (unless it would clearly be erroneous to do so): (1) Agreement; (2) Specifications; (3) Drawings.

7.6.2 Within the Specifications the order of precedence is as follows: (1) Addenda; (2) Supplementary Conditions; (3) Instructions to Bidders; (4) General Conditions; (5) Technical Specifications.

7.6.3 With reference to the Drawings the order of precedence is as follows: (1) Figures govern over scaled dimensions; (2) Detail drawings govern over general drawings; (3) Change Order drawings govern over Contract Drawings; (4) Contract Drawings govern over standard drawings; (5) Contract drawings govern over shop drawings.

#### Cooperation of Contractor:

7.7 The Contractor shall have available on the Work at all times one (1) copy of said Contract Drawings and Specifications, exclusive of the set designated for As-Built Drawings in Paragraph 7.4. The Contractor shall give to the Work the constant attention necessary to facilitate the progress thereof, and he shall cooperate with the Engineer and with other contractors in every way possible. The Contractor shall have a competent Superintendent on the Work at all times who is fully authorized as his agent on the Work; such superintendent shall be capable of reading and thoroughly understanding the Contract Drawings and Specifications and shall receive and fulfill instructions, suggestions and communications from the Engineer, or his authorized representative. The Superintendent shall have full authority to execute the Work specified in the Contract Documents without delay and to promptly supply materials, tools, plant equipment and labor as may be required to perform such Work. Such Superintendent shall be furnished irrespective of the amount of Work sublet. Said Superintendent shall have authority to act on behalf of Contractor. All communications given to the Superintendent shall be as binding as if given to Contractor.

#### Construction Stakes:

7.8 Unless otherwise directed in Section 00800, Supplementary Conditions, the Contractor will furnish and set construction stakes establishing all lines, grades and measurements necessary for the proper execution of the Work contracted for under this Agreement. The Owner will provide basic horizontal and vertical control. If construction surveys are provided by the Owner, the Contractor shall request that Owner provide engineering surveys and placement of construction stakes no less than 48 hours prior to the time such service is needed. The Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors which may have been made in laying out the Work. The Contractor shall be held responsible for the proper preservation of all marks and stakes. Stakes provided by the Owner, which must be reset after initial placement, will be replaced at Contractor's expense at the current billable rate for a three-person survey crew. Said cost may be deducted from any funds due the Contractor.

7.9 The Engineer shall be authorized to inspect Work done and material furnished. Such observation may extend to any part of the Work and to preparation, fabrication, or manufacture of the materials to be used. The Engineer is authorized to call the attention of the Contractor to any failure of the Work or materials to conform to the Contract Documents. He shall have the authority to reject materials or suspend the Work not conforming to Contract Documents until any questions at issue can be referred to and decided between the Engineer and the Owner. If the Contractor refuses to suspend operations on verbal order, the Engineer shall issue a written order giving the reason for suspension of the Work. After placing the order in the hands of the Contractor, the Engineer shall immediately leave the job. Work done during the absence of the Engineer will not be accepted nor paid for. The Engineer shall in no case act as foreman or perform other duties for the Contractor, nor interfere with the management of the Work by the latter. Any advice which the Engineer may give the Contractor shall in no way be construed as releasing the Contractor from fulfilling all of the terms of the Contract Documents..

#### Tests and Inspections:

7.10 Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests or approvals.

7.11 If any law, ordinance, rule, regulation, code, or order of any public body having jurisdiction requires any Work (or part thereof) to specifically be inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner's or Engineer's acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for review prior to Contractor's purchase thereof for incorporation in the Work. The cost of all other inspections, tests and approvals required by the Contract Documents shall be paid by Owner (unless otherwise specified). In the event any tests do not pass initially, and therefore must be performed again, all such extra tests shall be paid for by Contractor.

7.12 All inspections, tests or approvals other than those required by law, ordinance, rule, regulation, code or order of any public body having jurisdiction shall be performed by organizations acceptable to Owner, Contractor, and Engineer.

7.13 If any Work that is to be inspected, tested or approved is concealed without concurrence of Engineer, it must, if requested by Engineer, be exposed for observation. Such exposing shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to conceal such Work and Engineer has not acted with reasonable promptness in response to such notice.

7.14 Neither observations by Engineer nor inspecting, tests or approvals by others shall relieve Contractor of his obligations to perform the Work in accordance with the Contract Documents.

7.14.1 Any Work outside the normal five (5) day, forty (40) hour week may require that the Engineer be on the job. All inspection so required shall be done at the Contractor's expense at the Engineer's current billable rates and the cost thereof shall be deducted from any funds due Contractor. The Contractor shall notify the Engineer at least 48 hours in advance of starting any such overtime Work.

#### Uncovering Work:

7.15 If the Engineer requests it, the Contractor shall, at any time before acceptance of the Work, remove or expose such portions of the finished Work that was not observed by the Engineer or that the Engineer believes has not met the requirements set forth in the Contract Documents. After examination, the Contractor shall restore said portions of the Work to the requirements of the Contract Documents. Should the Work thus exposed, examined, or tested prove acceptable, the exposing, or removing, and the replacing of the concealment or making good of the parts removed, shall be paid for as Extra Work; but should the Work so exposed, examined, or tested prove unacceptable, the exposing or removing, and the replacing of the concealment or making good of the parts removed, shall be at the Contractor's expense.

#### Removal of Defective and Unauthorized Work:

7.16 All Work which has been rejected or condemned shall be repaired, or if it cannot be satisfactorily repaired, be removed and replaced at the Contractor's expense. Work done without lines and grades having been given, Work done beyond the lines and grades shown on the Contract Drawings, or as given, except as herein provided, Work done without proper inspection, or any extra or unclassified Work done without written authority and prior agreement in writing as to cost, will be done at the Contractor's risk and will be considered unauthorized and, at the option of the Engineer, may not be measured and paid for and may be ordered removed and replaced at the Contractor's expense. Upon the failure of the Contractor to repair satisfactorily or to remove and replace rejected, unauthorized, or condemned Work immediately after receiving formal notice from the Engineer, the Owner may recover for such defective Work on the Contractor's Bond or by action in a court having proper jurisdiction over such matters, or may employ labor and equipment and satisfactorily repair or remove and replace such Work and charge the cost of the same to the Contractor, which cost will be deducted from any money due him. In exercising his rights under this paragraph, Owner shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, Owner may exclude Contractor from all or part of the Work, 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 Work and incorporated in the Work and all materials and equipment stored at the Work or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees such access to the Work as may be necessary to enable Owner to exercise his rights under this paragraph. All direct and indirect costs of Owner in exercising such rights shall be charged against Contractor in an amount verified by Engineer and agreed to by Owner, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Amount. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of Work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by Owner of Owner's rights hereunder.

#### Disputed Claims for Extra Work:

7.17 In case the Contractor deems extra compensation is due him for Work not clearly covered in the Contract Documents, or not ordered by the Engineer, he must submit in writing of his intention to make claim for such extra compensation before he begins the Work on which he bases the claim and shall afford the Engineer every facility for keeping the actual cost of the Work. Failure on the part of the Contractor to give such notification or to afford the Engineer proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra



compensation. The filing of such notice by the Contractor and keeping of costs by the Engineer shall not in any way be construed to prove the validity of the claim. When the Work has been completed, the Contractor shall within fifteen (15) days file his claim for extra compensation with the Engineer, who will present it to the Owner for consideration with his recommendations. Further written supporting data will be submitted to the Engineer within forty-five days of completion of the aforementioned Work unless Engineer allows an additional period of time to ascertain more accurate data. Owner and Engineer shall render a decision to Contractor within a reasonable period of time.

Visits to Site:

7.18 Engineer will make visits to the site at intervals appropriate to the various states of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work.

Engineer's efforts will be directed toward providing for the Owner a greater degree of confidence that the completed Work will conform to the Contract Documents.

On the basis of such visits and on-site observations as an experienced and qualified professional, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defects and deficiencies in the Work.

Rejecting Defective Work:

7.19 Engineer will have authority to reject Work which is defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 7.15, whether or not the Work is fabricated, installed or completed.

**END ARTICLE 7**

## ARTICLE 8

### CONTROL OF MATERIAL

#### Source of Supply and Quality of Materials:

8.1 The source of supply of each of the materials required shall be reviewed and accepted by the Engineer before delivery is started. Representative preliminary samples of the character and quality specified may be submitted by the Contractor or producer for examination and testing. The results obtained from testing such samples may be used for preliminary review but will not be used as a final acceptance of the materials. All materials proposed to be used may be inspected or tested at any time during their preparation and use. If, after testing, it is found that sources of supply which have been reviewed and accepted do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish acceptable material from other sources acceptable to Engineer.

#### Acceptance of Materials:

8.2 Samples of all materials for test upon which is to be based the acceptance or rejection, shall be taken by the Engineer or his authorized representative at the discretion of the Engineer. Materials may be sampled either prior to shipment or after being received at the place of construction. All sampling, inspection, and testing shall be done in accordance with the methods hereinafter prescribed. The Contractor shall provide such facilities as the Engineer or his representative may require for conducting field tests and for collecting and forwarding samples. The Contractor shall not use or incorporate into the Work any materials represented by the samples until tests have been made and the material found to be acceptable. Only materials conforming to the requirements of these Contract Documents and which have been accepted by the Engineer or his authorized agents shall be used in the Work. Any material which, after acceptance, has for any reason become unfit for use shall not be incorporated into the Work. Additionally, Contractor and Engineer shall be subject to the procedures and responsibilities set forth in paragraphs 7.2.2 through 7.2.5 as they pertain to samples.

#### Cited Specifications, Samples and Tests:

8.3 Except, as otherwise provided, sampling and testing of all materials, and the laboratory methods and testing equipment required under these Contract Documents, shall be in accordance with the most current edition of the standards set forth in the Technical Specifications. The testing of all samples shall be done at the expense of the Contractor at an independent laboratory accepted by the Engineer. The Contractor shall furnish the required samples without charge. All samples shall have been checked and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended. The Contractor shall give sufficient notification to the Engineer of the placing of orders for materials to permit testing.

#### Storage:

8.4 Materials shall be stored so as to insure the preservation of their quality and fitness for the Work. When considered necessary by the Engineer, they shall be placed on wooden platforms, or other hard, clean surfaces and not on the ground, and shall be placed under cover or otherwise protected when requested by the Engineer. Stored materials shall be located so as to facilitate prompt inspection.

#### Substitution of Materials and Equipment:

8.5 Whenever materials or equipment are specified or described in the Contract Drawings or Specifications by using the name of a proprietary item or the name of a particular manufacturer, fabricator, supplier or distributor, only such specific items may be used unless the name is followed by words indicating that an equal may be used. If the Contractor desires to use a substitute, the procedure for review by Engineer will be as set forth in paragraphs 8.5.1 and 8.5.2 below, and as supplemented in the Supplementary Conditions.

8.5.1 Requests for review of substitute items of material and equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that

specified and be suited to the same use and capable of performing the same function as that specified. The application will state whether or not acceptance of the substitute for use in the Work will require a change in the Contract Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of a license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish at Contractor's expense additional data about the proposed substitute. Engineer will be the sole judge of acceptability, and no substitute will be ordered or installed without Engineer's prior written acceptance. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

8.5.2 Engineer will record time required by Engineer and Engineer's consultants in evaluating substitutions proposed by Contractor and in making changes in the Contract Drawings or Specifications occasioned thereby. Whether or not Engineer accepts a proposed substitute, Contractor shall reimburse Owner for the charges of Engineer and Engineer's consultants for evaluating any proposed substitute.

8.5.3 In case of a difference in price, the Owner shall receive all benefit of the difference for any substitutions, and the Contract Amount shall be altered by Change Order to credit the Owner with any savings so obtained.

**Defective Materials:**

8.6 All materials not conforming to the requirements of the Contract Drawings or Specifications shall be considered defective. Whether in place or not, such material shall be removed immediately from the site of the Work, unless otherwise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used until approval has been given. Upon failure of the Contractor to comply promptly with any order of the Engineer made under the provisions of this article, the Engineer shall have authority to remove defective materials and to deduct the cost of removal and replacement with specified materials from any moneys due or to become due the Contractor.

**END ARTICLE 8**

## ARTICLE 9

### LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

#### Laws to be Observed:

9.1 The Contractor is assumed to be familiar with all federal, state and local laws, codes, ordinances, and regulations which, in any manner, affect those engaged or employed in the Work or the material or equipment used in or upon the site of the Work, or in any way affect the conduct of the Work. No pleas of misunderstanding or ignorance on the part of the Contractor will, in any way, serve to modify the provisions of the Agreement. However, if Contractor observes that the Contract Drawings or Specifications are at variance with any relevant federal, state and local laws, codes, ordinances, and regulations, Contractor shall give Engineer prompt written notice thereof and any necessary changes shall be adjusted by an appropriate written Modification. The Contractor, at all times, shall observe and comply with all federal, state and local laws, codes, ordinances, and regulations in any manner affecting the conduct of the Work, and the Contractor and his Surety shall indemnify and save harmless the Owner, the Engineer and their consultants, agents and employees, against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

#### Permits and Licenses:

9.2 Unless otherwise provided in the Supplementary Conditions, the Contractor shall procure all permits and licenses, pay all charges and fees including, but not limited to, all inspection charges of agencies having appropriate jurisdiction, and give all notices necessary and incidental to the due and lawful prosecution of the Work. Owner and Engineer shall assist Contractor, when necessary, in obtaining such permits and licenses. A copy of all permits and licenses procured by Contractor shall be supplied to Engineer within a reasonable period of time.

#### Taxes:

9.3 If Owner is a municipal corporation or a quasi-municipal corporation, Owner is eligible for sales, consumer, and use tax exemption. If the Agreement is intended to be awarded under appropriate exemption procedures and sales, consumer or use tax should not be included in the Bid Price.

#### Patented Devices, Materials and Processes:

9.4 If the Contractor is required or desires to use any design, device, invention, product, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or patent owner and shall pay all license fees and royalties and assume all costs incident to said use in performance of the Work or incorporation of the Work. The Contractor and the surety shall indemnify and save harmless the Owner and Engineer from any and all claims for infringement by reason of the use of any such patented design, device, invention, product, material, or process or any trademark or copyright in connection with the Work agreed to be performed under this Agreement, and shall indemnify the Owner and Engineer for any costs, expense, and damages, including attorney's fees, which it may be obliged to pay for reason of any such infringement at any time during the prosecution, or after the completion of the Work.

#### Sanitary Provisions:

9.5 The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the State Department of Health or of other authorities having jurisdiction thereover.

#### Safety and Protection:

9.6 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

9.6.1 All employees on the Work and other persons who may be affected thereby,

9.6.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site of the Work, and

9.6.3 Other property at the site of the Work or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of performing the Work.

Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and utilities when prosecution of the Work may affect them. All damage, injury or loss to any property referred to in paragraph 9.6.2 or 9.6.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them 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 Contract Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor). Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and final payment has been made.

9.6.4 The Contractor shall be required to assume sole and complete responsibility for conditions at the site of the Work during the course of performing the Work, including the safety of all persons who may enter on to the site of the Work for any reason and the security of all property located on the site of the Work. The Contractor shall also be responsible for compliance with all applicable Federal, State and local regulations concerning the safety and security of the site of the Work. This requirement shall apply at all times during the course of the Agreement and not only to normal working hours.

9.7 The Contractor shall not close any road to the public except by express permission of the appropriate regulating authority. When the road under construction is being used by the traveling public, special attention shall be exercised to keeping both the subgrade and surfacing in such condition that the public can travel over same in comfort and safety. The Contractor shall cooperate with the appropriate authority in the regulation of traffic. If the Contractor constructs temporary bridges or temporary stream crossings, his responsibility for accidents or mishaps shall include the roadway approaches as well as the structures of such crossings.

9.8 Contractor shall designate a responsible member of his organization at the site of the Work whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by Contractor to Owner.

#### Emergencies:

9.9 In emergencies affecting the safety or protection of persons or the Work or property at the site of the Work or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Engineer prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby.

#### Barricades, Signs and Hazard Markings:

9.10 The Contractor shall provide, erect and maintain all necessary barricades, signs, danger signals and lights to protect the Work and the safety of the public. Contractor shall comply with the provisions of any and all applicable Traffic Safety Manuals which may be published by a governmental entity having jurisdiction over the site of the Work. All barricades, signs and obstructions erected by the Contractor shall be illuminated at night and all devices for this purpose shall be kept burning from sunset to sunrise. The Contractor shall be held responsible for all damage to the Work due to failure of barricades, signs, lights and watchmen to protect it, and whenever evidence of such damage is found prior to acceptance, the Engineer may order the damaged portion immediately removed and replaced by the Contractor without cost to the Owner if, in his opinion, such action is justified. The Contractor's responsibility for necessary barricades, signs and lights shall not cease until the Work has been accepted.

#### Use of Explosives:

9.11 When the use of explosives is necessary for the prosecution of the Work, the Contractor shall use the utmost care so as not to endanger life or property, and whenever directed, the number and size of the charges shall be reduced. The Contractor shall notify the proper representatives of any public service corporation, any company, or any individual, at least 48 hours in advance of any blasting which may damage his or their property on, along, or adjacent to the site of the Work. All explosives shall be stored in a secure manner and all storage places shall be marked clearly "DANGEROUS EXPLOSIVES", and shall be in care of competent watchmen at all times. Prior to the use or storage of explosives on the site of the Work the Contractor shall submit for review by the Owner, Engineer and other jurisdictional authority a "Blasting Plan" identifying all relevant procedures proposed to be utilized as may be required for review.

#### Protection and Restoration of Property:

9.12 The Contractor shall not enter upon private property for any purpose without first obtaining permission, and he shall be responsible for the preservation of all public and private property, trees, fences, monuments, underground structures, etc., on and adjacent to the site of the Work and shall use every precaution necessary to prevent damage or injury thereto. He shall protect carefully, from disturbance or damage, all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed. He shall be responsible for all damage or injury to property of any character resulting from any act, omission, neglect or misconduct in his or any subcontractor's manner, or method of executing said Work, or due to his or any subcontractor's non-execution of said Work, or at any time due to defective Work or materials, and said responsibility shall not be released until the Work has been completed and accepted. The Contractor's attention is directed to the importance of protecting all public utilities encountered in the execution of the Work. These may include telephone, telegraph and power lines, water lines, sewer lines, gas lines, railroad tracks, and other overhead and underground utilities. Before any excavation is begun in the vicinity of water lines, railroad tracks or structures, sewer lines, gas lines, or telephone conduits, each utility company concerned must be notified in advance of such excavation, and such excavation shall not be made until an authorized representative of the utility company concerned is on the site of the Work and has designated the location of their facilities. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work, or in consequence of the non-execution thereof on the part of the Contractor or subcontractor, Contractor shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring, as may be directed, or he shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property or to have started action to make good such damage or injury, the Engineer may, upon forty-eight (48) hours' notice, proceed to direct the repair, rebuilding of or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any moneys due or which may become due the Contractor under the Contract Documents. The cost of damages due to Contractor's operation or cost of protecting utilities where required to permit construction under the Contract Documents shall be included in the original Contract Amount for the Work.

#### Responsibility for Damage Claims:

9.13 To the fullest extent permitted by law, the Contractor and his Surety shall indemnify and save harmless the Owner and Engineer and all of their officers, agents and employees from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in consequence of any neglect in safeguarding the Work, or through the use of unacceptable materials in the execution of the Work, or on account of any act or omission by the said Contractor, Subcontractor, their agents and employees, or on account of the use, misuse, storage or handling of explosives, or on account of any claims or amounts recovered for any infringement of patent, trademark, or copyright, or from any claims or amounts arising or recovered under the state's Compensation laws, or any other law, by-law, ordinance, order or decree, and so much of the money due the said Contractor by virtue of the Contract Documents, as shall be considered necessary by the Owner, may be retained or, in case no money is due, his Surety shall be held until such suit or suits, action or actions, claim or claims, for injuries or damages as aforesaid, shall have been settled and satisfactory evidence to that effect furnished to the Owner.

#### Contractor's Responsibility for the Work:

9.14 Until the final acceptance of the Work by the Engineer as evidenced in writing, the Contractor shall have the charge and care thereof and shall take every necessary precaution against injury or damage to any part thereof by the action of the elements or from any other cause, and the Contractor at his own expense shall rebuild, repair, restore, and make good all injuries or damages to any portion of the Work occasioned by any causes before its completion and acceptance. In case of suspension of Work for any cause whatever, the Contractor shall be responsible for all materials and shall properly store them, if necessary, and shall provide suitable drainage, barricades and warning signs where necessary. The Contractor shall make good or replace at his own expense and as required, any material which may be broken, lost through fire, theft, or otherwise damaged, or in any way made useless for the purpose and use intended by these Contract Drawings and Specifications prior to final payment for the Work even though such breakage, damage, loss or uselessness may result from causes beyond the control of the Contractor.

#### No Waiver of Legal Rights:

9.15 Inspection by the Engineer or by any of his duly authorized representatives; any order, measurement or certificate by the Engineer; any order by the Owner for the payment of money, any payment for or acceptance of any Work or any extension of time; or any possession taken by the Owner shall not operate as a waiver of and provision of the Contract Documents, or any power therein provided, or any waiver of any other or subsequent breach. The Owner reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust the same to meet the requirements of the Contract Documents. The Owner reserves the right to claim and recover, by process of law, sums as may be sufficient to correct any error or make good any deficit in the Work resulting from such error, dishonesty, or collusion upon conclusive proof of collusion or dishonesty between the Contractor or his agents and any person including the Engineer or his assistants discovered in the Work after the final payment has been made.

#### Limitation of Responsibility:

9.16 Owner or Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures in performing the Work, or the safety precautions and programs incident thereto, and Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.17 Owner or Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractors, or of the agents or employees of any Contractor or Subcontractor, or of any other persons at the site of the Work or otherwise performing any of the Work.

9.18 Neither Owner's or Engineer's authority to act under the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the Work.

#### Rights-of-Way:

9.19 The Owner will furnish all lands and rights-of-way required for completion of the Work. In acquiring right-of-way, the Owner will proceed as expeditiously as possible, but in the event all rights-of-way or easements are not acquired prior to the commencement of the Work the Contractor shall begin work on such lands and rights-of-way that have been acquired. In the event of litigation or other delays in acquiring right-of-way, the Contract Time allowed herein for completion will be extended to compensate for the time actually lost by such delay. If the Owner is solely responsible for such delay, the Contractor shall be entitled to an adjustment to the Contract Amount as negotiated with the Owner.

#### Use of Premises:

9.20 Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workmen to areas permitted by law, ordinances, permits or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

**END ARTICLE 9**

## ARTICLE 10

### PROSECUTION AND PROGRESS

#### Supervision:

10.1 Contractor shall supervise 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 utilized in the performance of the Work, but Contractor shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

#### Concerning Subcontractors:

10.2 Contractor shall only employ subcontractors in accordance with the provisions set forth below:

10.2.1 Contractor shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom Owner or Engineer may have reasonable objection. A Subcontractor or other person or organization identified in writing to Owner and Engineer by Contractor prior to the Notice of Award and not objected to in writing by Owner or Engineer prior to the Notice of Award will be deemed acceptable to Owner and Engineer. Acceptance of any Subcontractor, other person or organization by Owner or Engineer shall not constitute a waiver of any right of Owner or Engineer to reject defective Work. If Owner or Engineer after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by Contractor after the Notice of Award, Contractor shall submit an acceptable substitute and the Contract Amount shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. Contractor shall not be required to employ any Subcontractor, other person or organization against whom Contractor has reasonable objection.

10.2.2 Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that Contractor is responsible for the acts and omissions of persons directly employed by Contractor. Nothing in the Contract Documents shall create any contractual relationship between Owner or Engineer and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any monies due any Subcontractor or other person or organization, except as may otherwise be required by law. Owner or Engineer may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to Contractor on account of specific Work done.

10.2.3 The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade unless specifically required in said divisions and sections.

10.2.4 All Work performed for Contractor by a Subcontractor will be pursuant to an appropriate agreement between Contractor and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Contractor shall pay each Subcontractor a just share of any insurance monies received by Contractor on account of losses under policies issued pursuant to Article 5.

#### Prosecution of Work:

10.3 The Contractor shall notify the Engineer at least forty-eight (48) hours in advance of the time he intends to start Work. The Contractor shall operate at such points as the Owner through the Engineer may direct. The Contractor shall conduct the Work in such a manner and with sufficient materials, equipment, and labor as is considered necessary to insure its completion within the Contract Time limit set forth in the Agreement. Should the prosecution of Work for any reason be discontinued by the Contractor, he shall notify the Engineer at least forty-eight (48) hours in advance of resuming operations.



#### Limitations of Operations:

10.4 The Contractor shall at all times conduct the Work in such manner as will incur the least practicable interference with traffic and existing utility systems. No section of any road shall be closed to the public, nor any utility system put out of service except after permission has been granted by the representative Authority having jurisdiction. Each item of Work shall be prosecuted to completion without delay and in no instance will the Contractor be permitted to transfer his forces from uncompleted Work to new Work without prior written notification of the Contractor to the Engineer. The Contractor shall not open up Work to the prejudice of Work already started.

#### Schedules:

10.5 At least ten (10) days prior to submitting the first application for a progress payment, Contractor shall (except as otherwise specified in the Supplementary Conditions) submit to Engineer an initial progress schedule, a final schedule of Shop Drawing submission and where applicable a schedule of values of the Work. These schedules shall be satisfactory in form and substance to Engineer. These schedules shall serve as the basis for progress payments during prosecution of the Work. Upon acceptance of the schedule of values by Engineer, it shall be incorporated into a form of Application for Payment acceptable to Owner and Engineer. The Contractor shall also forward to the Engineer as soon as practicable after the first day of each month, a progress schedule, a summary report of the progress of the various parts of the Work under the Contract Documents in the mills or shops and in the field, stating the existing status rate of progress, estimated time of completion and cause of delay, if any.

#### Character of Personnel and Equipment:

10.6 The Contractor shall employ such superintendents, foremen, as are careful and competent, and the Engineer may request the dismissal of any person or persons employed by the Contractor in, about, or upon the Work who shall misconduct himself or be incompetent or negligent in the proper performance of his or their duties, or neglects or refuses to comply with the Contract Documents given and such person or persons shall not be employed again thereon without the written consent of the Engineer. Should the Contractor continue to employ, or again employ, such person or persons, the Owner may withhold all pay estimates which are or may become due, or the Owner through the Engineer may suspend the Work until such orders are complied with. No preference or discrimination among citizens of the United States shall be made, except as may be required by special labor provisions. The Contractor shall furnish such equipment as is considered necessary for the prosecution of the Work in an acceptable manner and at a satisfactory rate of progress. All equipment, tools, and machinery used for handling materials and executing any part of the Work shall be subject to the approval of the Engineer and shall be maintained in a satisfactory working condition. Equipment used on any portion of the Work shall be such that no damage to the Work, roadways, adjacent property, or other objects will result from its use. The Agreement may be terminated if the Contractor fails to provide adequate equipment for the Work.

10.6.1 All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents.

#### Temporary Suspension of Work:

10.7 The Engineer, in consultation with Owner when time permits, shall have the authority to suspend the Work wholly or in part because of unfavorable weather or other essential conditions, or because of the failure on the part of the Contractor to properly prosecute the Work in accordance with the Contract Documents, to carry out orders or to remove defective material incorporated into the Work. The Contractor shall not suspend the Work without written authorization and prior to resuming Work shall give the Engineer adequate notice to afford opportunity to re-establish observation and inspection of Work being performed.

#### Determination and Extension of Contract Time for Completion:

10.8 The Contractor shall perform fully, entirely, and in a satisfactory and acceptable manner the Work within the number of calendar days stipulated in the Agreement. Time will be assessed against the Contractor in accordance with the Agreement. If the satisfactory execution and completion of the Agreement shall require Work or materials in greater amounts or quantities than those set forth in the Contract Documents, then the Contract Time may be increased as negotiated between Contractor and Engineer and accepted by Owner as set forth in a written

Modification. In general, extensions to the Contract Time will not be approved, regardless of cause of claim for extension.

No allowances will be made for delays or suspensions of the prosecution of the Work due to the fault of the Contractor. In order to secure an extension of the Contract Time by written Modification to the Contract Documents, the Contractor shall within ten (10) days from the beginning of any such Modification notify the Engineer in writing of the causes for request to adjust the Contract Time, whereupon the Engineer shall ascertain the facts and the extent of the Modification and extend the Contract Time for completing the Work in an amount equal to the additional time required due to said Modification when, in his judgment, the findings of fact justify such an extension of time, and his finding of fact thereon shall be final and conclusive. The Contract Time may only be changed by a written Modification.

#### Failure to Complete Work on Time:

10.9 In case the Contractor shall fail to fully perform and complete the Work in conformity to the provisions and conditions of the Agreement within the specified Contract Time limit for such performance and completion or within such further time as, in accordance with the provisions of the Contract Documents, shall be fixed or allowed for such performance and completion, the Contractor shall and will pay to the Owner for each and every day of the additional time in excess of the Contract Time and any granted extension thereof, the sum set forth in Section 4 of the Agreement as liquidated damages and not as a penalty. The parties agree that Owner will suffer loss and damage; however, due to the uncertainty and difficulty of measuring actual damages for every day the Work remains uncompleted and unfinished, the parties agree that said sum is a reasonable forecast of compensatory damages. The Owner shall recover said damages by deducting the amount thereof out of any moneys which may be due or become due the Contractor, or by an action at law against the Contractor or his Surety, or by either or both of these methods. Should the entire completion and final acceptance of the Work herein embraced, together with any modifications or additions, be delayed beyond the Contract Time, it is understood and agreed that aside from any other penalty or damage, all costs of the engineering, observation and inspection on behalf of the Owner which are incurred after the Contract Time has elapsed may be charged to the Contractor and be deducted from any estimate or payment otherwise due and payable to him.

#### Adjustment for Suspended Work:

10.10 In the event the Contractor is ordered by the Engineer, in writing, to suspend Work for some unforeseen cause not provided for in the Contract Documents, and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the Work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the date set out in the written order for Work to cease until the date of the order for Work to resume. Claims for such compensation shall be filed with the Engineer within ten (10) days after date of the order to resume Work or such claims will not be considered. The Contractor shall submit with his claims, substantiating papers covering the entire amount shown on the claim. After receiving relevant information from the Engineer, the Owner shall take the claim under consideration, and may make such investigations as are deemed necessary, and shall be the sole judge as to the equitability of such claim and such decision shall be final. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, delays due to failure of Surety, for suspensions made at the request of the Contractor, or for any other delay provided for in the Contract Documents.

#### Termination of Contract:

10.11 The Agreement, of which these Contract Documents form a part, may be terminated by the Owner for the following reasons: (a) Failure of the Contractor to start the Work on the date given in the Notice to Proceed; (b) Substantial evidence that progress being made by the Contractor is insufficient to complete the Work within the Contract Time; (c) Deliberate failure on the part of the Contractor to observe any requirement of the Contract Documents; (d) Failure of the Contractor to promptly make good any defects in materials or Work or any defects of any other nature, the correction of which has been directed in writing by the Engineer; (e) Substantial evidence of collusion for the purpose of illegally procuring an Agreement or perpetrating fraud on the Owner in the performance of Work under the Agreement; (f) If the Contractor is adjudged bankrupt or becomes insolvent; (g) If the Contractor shall allow any final judgment to stand against him unsatisfied for a period of ten (10) days; (h) If the Contractor makes an assignment for the benefit of creditors; (i) If a trustee or receiver is appointed for Contractor or for any of Contractor's property; (j) If Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy

or similar laws; (k) If Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment; (l) If Contractor repeatedly fails to make prompt payments to Subcontractors for labor, materials or equipment; (m) If Contractor disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction; (n) If Contractor disregards the authority of Engineer; or (o) If Contractor otherwise violates in any substantial way any provisions of the Contract Documents. Before the Agreement is terminated, the Contractor and his Surety will first be notified in writing by the Engineer of the conditions which make termination of the Agreement imminent. Seven (7) days after this notice is given, if a satisfactory effort has not been made by the Contractor or his Surety to correct the conditions, the Owner may declare the Agreement terminated and notify the Contractor and his Surety accordingly. Upon receipt of notice from the Owner that the Agreement has been terminated, the Contractor shall immediately discontinue all operations. The Owner may then proceed with the Work in any lawful manner that he may elect until it is finally completed. Owner may exclude Contractor from the site of the Work and take possession of the Work and of all Contractor's tools, appliances, construction equipment and machinery at the site of the Work and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the site of the Work or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Amount exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to Contractor. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Engineer and incorporated in a Change Order, but in finishing the Work, Owner shall not be required to obtain the lowest figure for the Work performed.

10.12 Where Contractor's services have been so terminated by Owner, the termination shall not affect any rights 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.

10.13 Upon seven (7) days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, Contractor will use his best efforts to minimize additional cost being incurred under the Agreement. Contractor shall be paid for all Work executed prior to the termination date, all materials or equipment ordered prior to the date of the notice of termination which cannot be canceled or, at the option of the Owner, returned, and reasonable termination expenses.

#### Cooperation with Other Contractors:

10.14 In connection with the Work under this Agreement, the right is reserved to award any work not included in the Contract Documents to another Contractor for performance during the progress of this Agreement, or to perform such work with the Owner's forces, and the Contractor for this Agreement shall cooperate and so conduct his operations as to minimize the interference therewith, as directed by the Engineer.

#### Termination of Contractor's Responsibility:

10.15 This Agreement will be considered complete when all Work has been finished, the final inspection made and the Work finally accepted by the Engineer, all claims for payment of labor, materials, or services of any kind used in connection with the Work have been settled by the Contractor or his Surety and final payment has been made by Owner. The Contractor will then be released from further obligation except as set forth in the Surety Bonds. The Surety Bond executed from performance of this Agreement shall be in full effect for a period equal to the warranty correction period following the date of final payment. Neither the final payment nor any provision in the Contract Documents shall relieve the Contractor of the responsibility for negligence or inadequate Workmanship within the warranty period as described in the Supplementary Conditions. Corrections during said warranty period shall be made in accordance with the provisions of paragraph 12.5.

### **END ARTICLE 10**

## ARTICLE 11

### MEASUREMENT AND PAYMENT

#### Detailed Estimate:

11.1 At least ten (10) days prior to submitting the first Application for a progress payment, Contractor shall furnish to the Owner a detailed estimate and breakdown of his Bid for any lump sum item involving more than one item. This breakdown, when reviewed and accepted by the Engineer, shall be used as the basis for making partial payments to the Contractor.

#### Measurement of Quantities:

11.2 The determination of quantities of Work acceptably completed under the terms of the Agreement, will be made by the Engineer and based on measurements taken by him or his representative. These measurements will be taken according to the United States standard measure. All surface and linear measurements will be taken horizontally unless otherwise shown on the Contract Drawings or specified. Structures shall be measured as shown on the Contract Drawings. When base course, topsoil, surface course, or any materials are measured by the cubic yard in the vehicle, such measurement shall be taken at the point of delivery. The capacity of all vehicles shall be plainly marked on said vehicle and the capacity or marking shall not be changed without permission of the Engineer. The Engineer may require all vehicles to have uniform capacity.

#### Scope of Payment:

11.3 The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, equipment, labor, tools, and incidentals necessary to complete the Work and the required bonds and insurance policies; also for loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the Work until the final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the Work, for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified, and for any infringement of patent, trademark, or copyright; and for completing the Work according to the Contract Documents. Neither the payment of any estimate nor of any retained percentage shall relieve the Contractor of any obligations to make good any defective Work or material. No moneys, payable under the Agreement, or any part thereof, except the estimate for the first month or period, shall become due and payable if the Owner so elects, until the Contractor shall satisfy said Owner that he has fully settled or paid for all materials and equipment used in or upon the Work and labor done in connection therewith, and the Owner, if he so elects, may pay any or all such bills, wholly or in part, and deduct the amount or amounts so paid from any monthly or final estimate excepting the first estimate. In the event the Surety on any Performance or Payment Bond given by the Contractor becomes insolvent, or is placed in the hands of a receiver, or has its right to do business in the State revoked as provided by law, or in any manner becomes unacceptable to Owner, the Owner may, at its election, withhold payment of any estimate filed or approved by the Engineer until the Contractor shall give a good sufficient bond in lieu of the bond so executed by such Surety.

#### Payment for Increased or Decreased Quantities:

11.4 When alterations in the Contract Documents or quantities of Work not requiring Supplemental Agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract Amount for the actual quantities of Work done. No allowance will be made for anticipated profits. Increased or decreased Work involving Supplemental Agreements will be paid for as stipulated in such agreements.

#### Payment for Deleted Items:

11.5 As provided in paragraph 6.4, the Engineer shall have the right to cancel or alter the portions of the Agreement relating to the construction of any non-major item or items except that the Contractor shall be entitled to payment in a fair and equitable amount covering all items of cost incurred prior to the date of the cancellation or alteration. Such payment shall reflect the agreed upon unit prices or schedule of values for any work actually performed prior to the date of such cancellation or alteration. Any such cancellation or alteration shall be made by change order. No allowance will be made for anticipated profits in reimbursements to the Contractor for deleted items of Work. Acceptable materials ordered by the Contractor or delivered to the Work prior to the date of

cancellation, alteration, or suspension to the Work by order of the Engineer, will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner. The Contractor shall immediately submit certified statements covering all money expended in preparation for any deleted item, and he shall be reimbursed for any money expended in preparation for any Work on any deleted item when such preparation has no value to the remaining items of the Agreement, or for a proportionate amount based on the total Contract Amount over which such preparation would ordinarily be distributed when other items are included in such preparation.

#### Extra Work:

11.6 Extra Work, for which no price is provided in the Bid Proposal, shall be covered by a Supplemental Agreement or Change Order to be signed by the Owner and Contractor before such Work is commenced. Extra Work will be paid for either at a lump sum, or unit prices agreed upon, or on the basis of the Cost of the Work as set forth in paragraphs 11.7 and 11.8 plus a contractor's fee for overhead and profit as set forth in paragraph 11.9. The Contractor shall make no claim for Work done on Cost of Work basis unless performed on written order and in accordance therewith. Work performed prior to a written order by the Engineer will not be paid for.

#### Cost of the Work:

11.7 The term "Cost of the Work" means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. 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 Work, shall include only the following items and shall not include any of the costs itemized in paragraph 11.8.

11.7.1 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. 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' or Workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Sunday or legal holidays, shall be included in the above to the extent authorized by Owner.

11.7.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturers' 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 all returns from sale of surplus materials and equipment, shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

11.7.3 Payments made by Contractor to the Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive Bids from Subcontractors acceptable to Contractor and shall deliver such Bids to Owner who will then determine, with the advice of Engineer, which Bids will be accepted. If a 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 shall be determined in the same manner as Contractor's Cost of the Work. All subcontractors shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.7.4 Costs of special consultants employed for services specifically related to the Work.

11.7.5 Supplemental costs including the following:

11.7.5.1 The proportion of necessary transportation, travel and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

11.7.5.2 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 workmen, 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.

11.7.5.3 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, installation, dismantling and removal thereof, all in accordance with 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.

11.7.5.4 Sales, use or similar taxes related to the Work, and for which Contractor is liable, imposed by any governmental authority; however, as set forth in paragraph 9.3, such taxes may not be applicable.

11.7.5.5 Deposits lost for causes other than Contractor's negligence, royalty payments and fees for permits and licenses.

11.7.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by Contractor in connection with the execution of the Work, provided they 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. If, however, any such loss or damage requires reconstruction and Contractor is placed in charge thereof, Contractor shall be paid for service a fee proportionate to that stated in paragraph 11.9.2.

11.7.5.7 The cost of utilities, fuel and sanitary facilities at the site.

11.7.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.7.5.9 Cost of premiums for additional Bonds and Insurance required because of changes in the Work.

11.8 The terms Cost of the Work shall not include any of the following:

11.8.1 Payroll costs and other compensation of Contractor's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by Contractor whether at the site of the Work or in his principal or a branch office for general administration for the Work and not specifically included in the agreed upon schedule of job classifications referred to in subparagraph 11.7.1, all of which are to be considered administrative costs covered by the Contractor's Fee.

11.8.2 Expenses of Contractor's principal and branch offices other than Contractor's office at the site of the Work.

11.8.3 Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the work and charges against Contractor for delinquent payments.

11.8.4 Cost of premiums for all Bonds and for all Insurance whether or not Contractor is required by the Contract Documents to purchase and maintain the same (except for additional Bonds and insurance required because of changes in the Work).

11.8.5 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.

11.8.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.7. Contractor's Fee:

11.9 The Contractor's Fee allowed to Contractor for overhead and profit shall be determined as follows:

11.9.1 A mutually acceptable fixed fee; or if none can be agreed upon,

11.9.2 A fee based on the following percentages of the various portions of the Cost of the Work:

11.9.2.1 For costs incurred under paragraphs 11.7.1 and 11.7.2, the Contractor's Fee shall be ten percent.

11.9.2.2 For costs incurred under paragraph 11.7.3, the Contractor's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall be ten percent.

11.9.2.3 No fee shall be payable on the basis of costs itemized under paragraphs 11.7.4, 11.7.5 and 11.8.

11.10 The amount of credit to be allowed by Contractor to Owner for any such change which results in a net decrease in cost will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

#### Substantiation of Cost of Work:

11.11 Whenever the cost of any Work is to be determined pursuant to paragraphs 11.7 and 11.8, Contractor will submit in form acceptable to Engineer an itemized cost breakdown together with supporting data.

#### Application for Progress Payment:

11.12 Contractor shall on a monthly basis submit to Engineer for review and approval an Application for Payment filled out and signed by Contractor covering the Work completed through the prior month interval and accompanied by such supporting documentation as is required by the Contract Documents and also as the Engineer may reasonably require. Materials purchased by the Contractor for the Work and located on the site of the Work may be included in the Contractor's invoice if they are itemized and if the Contractor provides evidence of payment for the materials; such materials are subject to the provisions of Paragraph 11.13. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

#### Contractor's Warranty of Title:

11.13 Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Work or not, will pass to Owner at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in the General Conditions referred to as "Liens").

#### Review of Applications for Progress Payment:

11.14 Engineer will, within five (5) days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Pay Request 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. Owner shall, within thirty (30) days subsequent to presentation to him of the Application for Payment with Engineer's recommendation, pay Contractor the amount recommended.

11.14.1 Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's on-site observation of the Work in progress as an experienced and qualified professional and on Engineer's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of Engineer's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work being functional upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the recommendation), and that Contractor is entitled to payment of the amount recommended. However, by recommending any such payment, Engineer will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work, or that the means, methods, techniques, sequences, and procedures of construction have

been reviewed or that any examination has been made to ascertain how or for what purpose Contractor has used the monies paid or to be paid to Contractor on account of the Contract Amount, or that title to any Work, materials or equipment has passed to Owner free and clear of any Liens.

11.14.2 Engineer's recommendation of final payment will constitute an additional representation by Engineer to Owner that the conditions precedent to Contractor's being entitled to final payment as set forth in Paragraph 11.19 have been fulfilled to the best of Engineer's knowledge.

11.15 Engineer may refuse to recommend the whole or any part of any payment if, in his opinion, it would be incorrect to make such representations to Owner. He may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

11.15.1 The Work is defective, or completed Work has been damaged requiring correction or replacement.

11.15.2 Written claims have been made against Owner or Liens have been filed in connection with the Work.

11.15.3 The Contract Amount has been reduced because of Modifications.

11.15.4 Owner has been required to correct defective Work or complete the Work in accordance with paragraph 8.6.

11.15.5 Contractor's failure to make payment to Subcontractors, or for labor, materials or equipment.

Partial Payments:

11.16 No progress payment except final payment will be made for a sum of less than \$1,000.00. The estimates will be approximate only, and all partial or monthly estimates and payments shall be subject to correction in the estimate rendered following discovery of an error in any previous estimates. Should any defective Work or material be discovered, or should a reasonable doubt arise as to the integrity of any part of the Work completed previous to the final payment, there will be deducted from the first estimate rendered after the discovery of such Work an amount equal in value to the defective or questioned work, and this Work will not be included in a subsequent estimate until the defects have been remedied or the causes for doubt removed.

Final Inspection:

11.17 Upon written notice from Contractor that the Work is complete, Engineer will 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 remedy such deficiencies.

Final Application for Payment:

11.18 After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents and other documents, all as required by the Contract Documents, and after Engineer has indicated that the Work is acceptable, Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents and such other data and schedules as Engineer may reasonably require, together with complete and legally effective releases or waivers (satisfactory to Owner) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by Owner, Contractor may furnish receipts or releases in full; and affidavit of Contractor that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or his property might in any way be responsible, have been paid or otherwise satisfied; and consent of the Surety, if any, to final payment. If any Subcontractor, manufacturer, fabricator, supplier or distributor fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.



#### Final Payment and Acceptance:

11.19 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, all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor has fulfilled all of his obligations under the Contract Documents, Engineer will, within five (5) days after receipt of the final Application for Payment, indicate in writing his recommendation of payment and present the Application to Owner for payment. Thereupon Engineer will give written notice to Owner and Contractor that to the best of Engineer's knowledge the Work is acceptable subject to continuing obligations under the Contract Documents. Otherwise, Engineer will return the Application 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. All prior partial estimates and progress payments shall be subject to correction in the final estimate and payment. If the Application and accompanying documentation are appropriate as to form and substance, and acceptable to Owner, Owner shall, within thirty (30) days after receipt thereof, cause publication to commence of Notice of Final Settlement in accordance with Owner's statutory requirements.

In the event no claims are made against Contractor in response to said publication, Owner shall pay Contractor the amount of final payment recommended by the Engineer in accordance with the Notice of Final Settlement. In the event claim(s) are made against Contractor, Owner shall withhold double the amount of any asserted claim(s) against Contractor until said claims have been resolved; however, Owner shall pay Contractor the balance of the final payment. The acceptance by the Contractor of the final payment shall operate as and shall be a release to the Owner from all claims or liability arising from the prosecution of the Work under the Contract.

#### Contractor's Continuing Obligation:

11.20 Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by Engineer, nor any payment by Owner to Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by Owner, nor any act of acceptance by Owner nor any failure to do so, nor the issuance of a notice of acceptability by Engineer pursuant to Paragraph 11.19, nor any correction of defective Work by Owner shall constitute an acceptance of Work not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents.

#### Change of Contract Amount:

11.21 The Contract Amount may only be changed by written Modification. When Contractor and Owner agree upon a price for extra or changed Work by way of a written Modification, Contractor and Owner agree that the price set forth in the Modification shall include the cost of the extra or change plus any direct, indirect, and impacted costs attributable to the change or extra.

**END ARTICLE 11**

## ARTICLE 12

### WARRANTY AND GUARANTEE; ACCESS TO WORK; CONTINUATION OF WORK; PARTIAL UTILIZATION

#### Warranty and Guarantee:

12.1 Contractor warrants and guarantees to Owner and Engineer that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in the Contract Documents.

#### Access to Work:

12.2 Engineer and Engineer's representatives, other representatives of Owner, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspection and testing. Contractor shall provide proper and safe conditions for such access.

#### Continuing the Work:

12.3 Contractor shall carry on the Work and maintain 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 Contractor and Owner may otherwise agree to in writing.

#### Partial Utilization:

12.4 Use by Owner of completed portions of the Work may be accomplished prior to Completion of all the Work subject to the following:

12.4.1 Owner at any time may request Contractor in writing to permit Owner to use any part of the Work which Owner believes to be substantially complete and which may be so used without significant interference with execution of the other parts of the Work. If Contractor agrees, Contractor will certify to Owner and Engineer that said part of the Work is substantially complete. Within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of that part of the Work to determine its status of completion. Prior to Owner's use, Engineer will deliver to Owner and Contractor a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance and warranty period for that part of the Work which is binding upon Owner and Contractor as to that part of the Work, unless Owner and Contractor shall have otherwise agreed in writing and have so informed Engineer, or shall object to the Engineer in writing within fifteen (15) days of receiving Engineer's recommendations. Owner shall have the right to exclude Contractor from any part of the Work which Owner uses, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list of defective or deficient items.

12.4.2 In lieu of the provisions of paragraph 12.4.1, Owner may take over utilization of the Work or constituting part of the Work whether or not it is substantially complete if such Work is functionally and separately useable; provided that prior to any such takeover, Owner and Contractor have agreed as to the division of responsibilities between Owner and Contractor for security, operation, safety, maintenance, warranty period, heat, utilities and insurance with respect to such Work.

12.4.3 No occupancy of part of the Work or taking over of operations of the Work will be accomplished prior to acknowledgment from the insurers providing the property insurance on the Work that notice of such occupancy has been received and that said insurers, in writing, have effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent to such use or occupancy by endorsement on the policy or policies, but the property insurance shall not be canceled or lapse on account of any such partial use or occupancy.

#### Warranty Period:

12.5 After the date of final payment as set forth in paragraph 11.19, but prior to completion of the Warranty Period, if any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective Work, or, if it has been rejected by Owner, remove it from the Work

and replace it with nondefective Work. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor. Contractor shall also pay for any damage done to other Work, other property or persons which occurred as a result of the defective Work within the Warranty Period.

The duration of the Warranty Period is provided in the Supplementary Conditions.

Acceptance of Defective Work:

12.6 If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, also Engineer) prefers to accept it, Owner may do so. In such case, if acceptance occurs prior to Engineer's recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Amount; or, if the acceptance occurs after such recommendation, an appropriate amount shall be paid by Contractor to Owner.

**END ARTICLE 12**

## ARTICLE 13

### WORK BY OTHERS

13.1 Owner may perform additional work related to the Work by himself, or have additional work performed by entities other than the Contractor, or let other direct contracts therefore which shall contain General Conditions similar to these.

Contractor shall afford the other entities who are parties to such direct contracts (or Owner, if Owner is performing the additional work with the Owner's employees) reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.

13.2 If any part of Contractor's Work depends for proper execution or results upon the work of any such other entity (or Owner), Contractor shall inspect and promptly report to Engineer in writing any patent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. Contractor's failure so to report shall constitute an acceptance of the other work as fit and proper for integration with Contractor's Work, except for latent or nonapparent defects and deficiencies in the other work.

13.3 Contractor shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected.

13.4 If the performance of additional work by other entities or Owner was not noted in the Contract Documents, written notice thereof shall be given to Contractor prior to starting any such additional work.

**END ARTICLE 13**

ARTICLE 14

MISCELLANEOUS

Giving Notice:

14.1 Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if 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 if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

General:

14.2 Should Owner or Contractor suffer injury or damage to his person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

14.3 The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor and all of the rights and remedies available to Owner and Engineer thereunder, shall be in addition to, and shall not 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 law or Agreement, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph shall 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. All representations, warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Agreement.

Titles and Headings:

14.4 The titles and headings used in the Contract Documents are for guidance and convenience and are not intended to control over the specific language contained in the body of the paragraphs in the event a conflict, error or discrepancy occurs. Further, titles and headings shall not limit the scope of an article or paragraph.

**END ARTICLE 14**

**SECTION 00800**

**SUPPLEMENTARY CONDITIONS**

1.0 Minimum Insurance Coverage and Limits

Insurance coverage is required in accordance with Article 5 of the General Conditions. Specific coverage and limits shall be as indicated below.

1.1 General Liability

1.1.1 Limits

|   |                    |
|---|--------------------|
| a. General Aggregate                              | <u>\$2,000,000</u> |
| b. Products/Completed Operations Hazard Aggregate | <u>\$1,000,000</u> |
| c. Personal & Advertising Injury                  | <u>\$1,000,000</u> |
| d. Each Occurrence                                | <u>\$1,000,000</u> |
| e. Fire Damage (any one fire)                     | <u>\$ 50,000</u>   |
| f. Medical Expense (any one person)               | <u>\$ 5,000</u>    |

1.1.2 In order to ensure that there are no impaired aggregates, a per job aggregate is required.

1.1.3 All coverages shall be continuously maintained to cover all liability, claims, demands and other obligations assumed by the Contractor pursuant to this Agreement. A claims-made policy may satisfy these insurance requirements, provided that the necessary retroactive dates and extended reporting periods are procured by the Contractor to maintain such continuous coverage.

1.2 Automobile Liability

1.2.1 Comprehensive, owned, hired, and non-coverages required (combined single limit). \$1,000,000

1.3 Excess Liability (umbrella form) \$2,000,000  
(each occurrence) \$3,000,000  
(aggregate)

1.4 Builders Risk \$500,000  
(aggregate)

2.0 The Owner and Engineer shall be named as additional insured and shall be indemnified, per Section 00700, Article 5.

3.0 Warranty Period - The duration of time after the date stated in the Certificate of Final Payment or as stated in the Certificate of Substantial Completion for which the Contractor shall warranty the Work in accordance with paragraph 12.5 of the General Conditions, is two (2) years, or a longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents or by any specific provision of the Contract Documents.

4.0 The Contractor further agrees to pay, as liquidated damages, all cost incurred from collecting, pumping and hauling waste water resulting from not having an operational sewer by substantial completion.

## **DIVISION 1**

### **SECTION 01010 - SUMMARY OF WORK**

#### **1.0 Grey Fox Sewer Improvements**

##### **1.1 WORK COVERED**

Furnish and install all labor and materials for: Grey Fox Sewer Improvements  
(See plans for more complete details)

- A. The work will involve the repair of a small tributary channel and bedding of a sewer main that was eroded out during the 2013 flood event. Work will include installation of temporary erosion control for construction, re-bedding the exposed sewer main, grading, placement of geo fabric and riprap along the drainage channel and placement of erosion control fabric as noted on bid schedule and on plans.

##### **1.2 WORK SEQUENCE**

The work sequence is to be submitted as part of the construction schedule. No work is to commence until the construction schedule and work sequence is approved. All work in roadways shall be conducted in compliance with the traffic control plan(s) and in a manner so as to create a minimum disruption of traffic.

##### **1.3 NOTICE TO PRIVATE OWNERS AND AUTHORITIES**

- A. The Contractor shall notify property owners and residents of when construction of new mains, service lines, and disruption of service will take place.
- B. Give notification sufficiently in advance to enable affected persons to provide for their needs when it is necessary to temporarily deny access or services.
- C. Contact utilities and other appropriate agencies at least 48 hours prior to working on streets, roads, highways, or other traffic areas or when excavating near underground utilities or pole lines.
- D. The Contractor assumes all responsibility for contacting these agencies and verification of telephone numbers.

##### **1.4 WORK SCHEDULE**

- A. Construction is anticipated to begin after June 19, 2016
- B. Project completion July 30, 2016 with actual construction to be completed within a 30 day period.

**END OF SECTION**

## **DIVISION 1**

### **SECTION 01025 - MEASUREMENT AND PAYMENT**

#### **PART 1 - GENERAL**

The entire cost of the work and the material necessary to complete all items shown or implied on the Drawings or specified herein shall be included and merged into the pay items shown in Section 00310, Proposal Schedules. All payments shall be subject to the conditions of these specifications.

All pay items shall include materials, transportation expenses to the job site, cost of installation and maintenance during construction, guarantees and warranties, if applicable, profit, sales tax, license, permits, and other taxes required for the completion of the project in place for each item in the bid schedules.

No additional compensation will be allowed for any item completed beyond the limits as shown on the Contract Drawings without the prior written approval of the Engineer.

#### **PART 2 - MEASUREMENT AND PAYMENT**

##### Item 1 - Mobilization

This item shall be paid on a lump sum basis and shall include moving onto the site of all equipment and materials; providing a sanitary facilities at the site and installation of other construction facilities as required by the specifications.

##### Item 2 – Traffic Control

This item shall be paid on a lump sum basis and shall include all of the costs for labor, materials and equipment necessary to provide for traffic control for entering and exiting the State Highway 7 including but not limited to the following: Obtaining a State Highway Right of Way Permit, signage and all appurtenances either shown or implied in the Contract Documents to provide a complete and safe access into the work area.

##### Item 3 – Grading.

This item shall be paid on a lump sum basis and shall include all of the costs for labor, materials and equipment required for complete regrading and construction of the stream channel including but not limited excavation, hauling, multiple handling, dust control, dewatering, shaping and offsite disposal of excess material and all other items shown or implied on the Construction Drawings in accordance with the plans and specifications

##### Item 4 - Geofabric Mirafi 110N

This item shall be paid on a square yard basis and shall include all of the costs for labor, materials and equipment necessary to complete the installation of the fabric including but not limited to the following: installation, staking, securing and all appurtenances either shown or implied in the Contract Documents and manufactures recommendations to provide a complete and functional facility.

##### Item 5 – Erosion Control Blanket

This item shall be paid on a square yard basis and shall include all of the costs for labor, materials and equipment necessary to complete the installation of the fabric including but not limited to the following: installation, staking, securing and all appurtenances either shown or implied in the Contract Documents and manufactures recommendations to provide a complete and functional facility.

##### Item 6 – Bedding Sewer Main

This item shall be paid on a per item basis and shall include all of the costs for labor, materials and equipment necessary to complete the backfill, compaction, site grading and all appurtenances either shown or implied in the Contract Documents to provide a complete and functional facility.



Item 7 – Seeding & Re-vegetation

This item shall be paid on a lump sum basis and shall include all of the costs for labor, materials and equipment necessary to complete the re-vegetation work including but not limited to the following: top soil, fine grading, seeding, mulching, landscaping, and all items either shown or implied in the Contract Documents to complete the site

Item 8 – Riprap  $D_{50} = 3"$

This item shall be paid on a cubic yard basis and shall include all of the costs to furnish all equipment, labor, and materials for the complete subgrade excavation and installation of the riprap as required, including but not limited to, earthwork, all bedding, filter fabrics, transportation, loading, unloading, placing, shaping the bedding to fill all voids and undermining created from erosion below the structure, and return disturbed areas to existing conditions, including grading. Work for this bid item will include any incidental items associated with the complete installation as specified herein or shown on the drawings.

Item 9 – Riprap  $D_{50} = 9"$

This item shall be paid on a cubic yard basis and shall include all of the costs to furnish all equipment, labor, and materials for the complete subgrade excavation and installation of the riprap as required, including but not limited to, earthwork, transportation, loading, unloading, placing, shaping the bedding to fill all voids and undermining created from erosion below the structure, and return disturbed areas to existing conditions, including grading. Work for this bid item will include any incidental items associated with the complete installation as specified herein or shown on the drawings.

Item 10 - Erosion Control

This item shall be paid on a lump sum basis and shall include all of the costs for labor, materials and equipment necessary to preform measures required to control erosion and sedimentation and water pollution including but not limited to the following: Straw erosion bales, stakes, silt fence, check dams, trash removal, tracking pads and all items either shown or implied in the Contract Documents or determined in order to maintain sediment runoff from the site.

## **DIVISION 1**

### **SECTION 01160 - SITE CONDITIONS**

#### **PART 1 - SITE INVESTIGATIONS AND REPRESENTATION**

- 1.01 The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions, particularly those bearing upon access to the site; handling, storage, and disposal of materials; availability of water, electricity and roads; uncertainties of weather, river stages, or similar physical conditions at the site; the conformation and conditions of the ground; the equipment and facilities needed preliminary to and during the execution of the work; and all other matters which can in any way affect the work or the cost thereof under this Contract.
- 1.02 The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials to be encountered from his inspection of the site and from reviewing any available records of exploratory work furnished by the Owner or included in these Documents. Failure by the Contractor to acquaint himself with the physical conditions of the site and all the available information will not relieve him from responsibility for properly estimating the difficulty or cost of successfully performing the work.
- 1.03 The Contractor warrants that as a result of his examination and investigation of all the aforesaid data that he can perform the work in a good and workmanlike manner and to the satisfaction of the Owner. The 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 therefore is assumed by the Owner.

#### **PART 2 - INFORMATION ON SITE CONDITIONS**

- 2.01 Any information obtained by the 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 the Engineer upon request. Such information is offered as supplementary information only. Neither the Engineer nor the 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 these Documents, and differing materially from those ordinarily encountered and generally recognized as inherent in the character of work covered in these Contract Documents, the Contractor shall promptly, and before such conditions are disturbed, notify the Engineer in writing of such changed conditions.
    2. The Engineer will investigate such conditions promptly and following this investigation, the Contractor shall proceed with the work, unless otherwise instructed by the Engineer. If the Engineer finds that such conditions do so materially differ and cause an increase or decrease in the cost of or in the time required for performing the work, the Engineer will recommend to the Owner the amount of adjustment in cost and time he considers reasonable. The Owner will make the final decision on all Change Orders to the Contract regarding any adjustment in cost or time for completion.

B. UNDERGROUND UTILITIES

1. 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 the Contractor only, and no responsibility is assumed by either the Owner or the Engineer for their accuracy or completeness.

**PART 3 - CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE**

3.01 GENERAL

- A. Where the Contractor's operations could cause damage or inconvenience to railway, telegraph, telephone, television, oil, gas, electricity, water, sewer, or irrigation systems, the operations shall be suspended until all arrangements necessary for the protection of these utilities and services have been made by the Contractor.
- B. Notify all utility offices which are affected by the construction operation at least 48 hours in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities.
- C. The Contractor shall protect all utility poles from damage. If interfering power poles, telephone poles, guy wires, or anchors are encountered, notify the Engineer and the appropriate utility company at least 48 hours in advance of construction operations to permit the necessary arrangements for protection or relocation of the interfering structure.
- D. The Contractor shall be solely and directly responsible to the Owner and operators of such properties 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 the Owner nor its officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the work.
- F. If the Contractor while performing the Contract discovers utility facilities not identified in the Drawings or Specifications, he shall immediately notify the Owner, utility, and the 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, promptly notify the proper authority. Cooperate with said authority in the restoration of service as promptly as possible and bear all costs of repair. In no case shall interruption of any water or utility service be allowed to exist outside working hours unless prior approval is granted.
- H. The Contractor shall replace, at his own 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 the Engineer.

3.02 INTERFERING STRUCTURES

- A. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, 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 simply as a guide to avoid known possible difficulties.

### 3.03 FIELD RELOCATION

- A. During the progress of construction, it is expected that minor relocations of the work will be necessary. Such relocations shall be made only by direction of the Engineer. If existing structures are encountered that prevent the construction, and that are not properly shown on the Drawings, notify the Engineer before continuing with the construction in order that the Engineer may make such field revision as necessary to avoid conflict with the existing structures. If the Contractor shall fail to so notify the Engineer when an existing structure is encountered, and shall proceed with the construction despite the interference, he shall do so at his own risk.

### 3.04 EASEMENTS

- A. Where portions of the work are located on public or private property, easements and permits will be obtained by the Owner. Easements will provide for the use of the property for construction purposes to the extent indicated on the easements. Copies of these easements and permits are available upon request to the Owner. It shall be the Contractor's responsibility to determine the adequacy of the easement obtained in every case and to abide by all requirements and provisions of the easement. The Contractor shall confine his construction operations to within the easement limits or make special arrangements with the property owners or appropriate public agency for the additional area required. Any damage to property, either inside or outside the limits of the easements provided by the Owner, shall be the responsibility of the Contractor as specified herein. The Contractor shall remove, protect, and replace all fences or other items encountered on public or private property. Before final payment will be authorized by the Engineer, the Contractor will be required to furnish the Owner with written releases from property owners or public agencies where side agreements or special easements have been made by the Contractor or where the Contractor's operations, for any reason, have not been kept within the construction right-of-way obtained by the Owner.
- 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, the Contractor shall schedule and perform the work around these areas until such a time as the easement or permit has been secured.

### 3.05 LAND MONUMENTS

- A. The Contractor shall notify the Engineer of any existing Federal, State, Town, County, and private land monuments encountered. Private monuments shall be preserved, or replaced by a licensed surveyor at the Contractor's expense. When Government monuments are encountered, the Contractor shall notify the Engineer at least two (2) weeks in advance of the proposed construction in order that the Engineer will have ample opportunity to notify the proper authority and reference these monuments for later replacement.

**END OF SECTION**

## **DIVISION 1**

### **SECTION 01503 - PRESERVATION, RESTORATION, AND CLEAN-UP**

#### **PART 1 - GENERAL**

##### **1.01 SITE RESTORATION AND CLEAN-UP**

At all times during the work, keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment and leave the project free of rubbish or excess materials of any kind.

Stockpile excavated materials in a manner that will cause the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences regardless of whether these are on private property, or on Town, State, or County rights-of-way. Remove all excavated materials from grassed and planted areas, and leave these surfaces in a condition equivalent to their original condition.

All existing drainage ditches and culverts shall be reopened and grade and natural drainage restored. Restore culverts broken or damaged to their original condition and location.

Upon completion of pipe laying and backfilling operations, hand-rake and drag all former grassed and planted areas, leaving all disturbed areas free from rocks, gravel, clay or any other foreign material. The finished surface shall be free-draining and free from holes, ruts, rough spots, or other surface features detrimental to a seeded area.

##### **1.02 TREE REMOVAL**

No trees, except those specifically shown on the Drawings to be removed, shall be removed without the express acceptance of the Engineer.

##### **1.03 FINISHING OF SITE, BORROW, AND STORAGE AREAS**

Upon completion of the project, all areas used by the Contractor shall be properly cleared of all temporary structures, rubbish, and waste materials and properly graded to drain and blend in with the abutting property. Areas used for the deposit of waste materials shall be finished to properly drain and blend with the surrounding terrain.

##### **1.04 REMOVAL OF ROCK FROM FINISHED SURFACES**

Remove and dispose of all loose rock and boulders larger than 2-inch diameter occurring on the finished surfaces as a result of the construction operations.

##### **1.05 STREET CLEAN-UP DURING CONSTRUCTION**

Thoroughly clean all spilled dirt, gravel, or other foreign material caused by the construction operations from all streets and roads at the conclusion of each day's operation.

##### **1.06 DUST PREVENTION**

Give all unpaved streets, roads, detours, or haul roads used in the construction area an approved dust-preventive treatment or periodically water to prevent dust. Applicable environmental regulations for dust prevention shall be strictly followed.

**END OF SECTION**

## **DIVISION 1**

### **SECTION 01510 - TEMPORARY CONSTRUCTION UTILITIES AND FACILITIES**

#### **PART 1 - WATER**

##### 1.01 Temporary Water

The Contractor shall coordinate a place of connection for temporary water with the applicable water authority. The Contractor shall provide all temporary piping required to bring the water to the point of use and remove it when no longer needed. The Contractor shall obtain water only from a metered source. The Owner will pay for all temporary water through a bulk water permit.

#### **PART 2 - TEMPORARY ELECTRIC POWER**

##### 2.01 General

Electric power may not be available at or near the site. The Contractor shall determine the type and amount available and make arrangements for obtaining a separate electric power service and pay all costs for the electric power used during the contract period, except as specifically provided for utilities used by the Owner on portions of the work designated in writing by the Engineer as "Substantially Complete".

##### 2.02 Safety Requirements for Temporary Electric Power

Temporary electric power installation shall meet the construction safety requirements of OSHA, State and other governing agencies.

##### 2.03 Owner will pay Utility Costs After Start-Up

Upon acceptance of the work, or a defined portion of the work, and the Owner commences full-time successful operation of the facility or portion thereof, the Owner will pay the cost for utilities used for the Owner's operation. The Contractor shall continue to pay for utilities used until final acceptance of the work, except as provided herein.

#### **PART 3 - SANITARY FACILITIES**

##### 3.01 General

The Contractor shall provide sanitary facilities for his employees and his subcontractors' employees and maintain the facility in a sanitary condition at all times. The facility shall conform to code requirements and be acceptable to the sanitary authorities. Upon completion of the work, the sanitary facility shall be removed and the area restored to its original condition.

#### **PART 4 - PRODUCT DELIVERY, STORAGE AND HANDLING**

##### 4.01 Productive Delivery

Schedule delivery of products or equipment as required to allow timely installation and to avoid excessive on-site storage. Delivery of products or equipment to be in manufacturers original unbroken cartons or other containers, clearly and fully marked and identified as to manufacturer, item, location where to install, and instructions for assembly, use and storage.

The Contractor shall inspect all products or equipment delivered to the site prior to their unloading and shall reject all products or equipment that are damaged, used, or in any other way unsatisfactory for use on project.

#### 4.02 Storage and Handling

Store products or equipment off ground and protected from weather. Provide additional protection as required by manufacturer until the time that the item is to be installed. While storing, take care to avoid creating a humidity chamber by venting area.

Store products or equipment in location to avoid physical damage to items while in storage, and to facilitate prompt inspection.

Handle products or equipment in accord with manufacturer's recommendations and instructions.

Delicate instruments and materials subject to vandalism shall be placed under locked cover, and if necessary, provided with temperature control as recommended by manufacturer.

All hazardous and/or toxic materials shall be stored in conformance with Federal, State and local regulations.

### **PART 5 - ACCESS**

#### 5.01 General

If construction access is required in addition to the entrance shown on the Drawings, project construction entrance shall be approved by the Engineer prior to construction.

**END OF SECTION**

## **DIVISION 2**

### **SECTION 02100 - MOVE IN AND SITE PREPARATION**

#### **PART 1 - GENERAL**

1.01 WORK INCLUDED:

- A. Prepare the site for construction.
- B. Move in personnel and equipment.
- C. Set up temporary offices, buildings, facilities and utilities.

1.02 RELATED WORK: General Conditions and Division 1 - General Requirements.

1.03 SITE CONDITIONS:

The Owner has provided the right-of-way, easement or project site for all permanent access or permanent construction for the project. Any additional access, access right-of-way, construction areas, or additional needed land which may be involved in the construction of this project shall be the responsibility of the Contractor.

The land owned by the Owner may be used as site headquarters, storage yard, or base of operations provided that the use of said land meets with all of the requirements and restrictions imposed by the owner at the time of usage.

1.04 SITE PREPARATION FOR CONTRACTOR OCCUPANCY:

The Contractor shall provide all temporary facilities as required for performing the work. The Contractor shall secure and maintain proper storage areas for equipment and materials in locations he may deem necessary for the proper execution of the job as approved by the Engineer. No storage yard or project headquarters site may be utilized in conflict with objections from the adjacent property owners unless the Contractor obtains from the Owner specific written permission for such objectionable use. No objectionable material will be allowed to blow from, wash off or drain off of any storage yard on to adjacent property.

The Contractor shall maintain all storage yards in as neat and orderly manner as possible, allowing no accumulation of waste materials or disposal piles. The Contractor may construct a temporary security fence for the protection of materials, tools, and equipment. The fence shall be maintained during the construction period. Upon completion of work, the security fence shall be removed from the site. The Contractor shall provide adequate parking facilities within the designated area for personnel working on the project.

The Contractor shall obtain the necessary permits for connection to necessary services provided by utility companies serving the project area.

Materials, equipment, and work required for temporary storm water management during the construction period shall be provided by the Contractor as required to ensure public safety and to protect the work in progress and materials stored on site.

1.05 DAMAGE OR USE-FEE CLAIMS

Any damage or use-fee claims filed against the Contractor may become a part of the final settlement of this project and may be cause for delay of final acceptance or delay of final payment.

#### **PART 2 - NOT USED**

#### **PART 3 - EXECUTION**

3.01 CONSTRUCTION STAKING:

The Contractor shall stake out the construction, establish temporary benchmarks, lines, levels, batterboards, reference points, centerlines, and verify all dimensions in relation to connection with existing facilities. The Contractor shall be solely responsible for all errors in connection with this work.



Prior to commencement of the work, the Contractor shall report to the Engineer any inconsistencies in the proposed lines, levels, grades, dimensions, or locations shown on the Drawings.

3.02 OBSTRUCTIONS:

The location of some utilities and obstructions may not be shown. Bidders are advised to carefully inspect the existing facilities before preparing their proposals. The removal and replacement of minor obstructions such as electrical conduits, air, water, and waste piping, and similar items shall be anticipated and accomplished, even though not shown or specifically mentioned. Major obstructions encountered that are not shown on the Contract Drawings or could not have been foreseen by visual inspection of the site prior to bidding should immediately be brought to the attention of the Engineer. The Engineer will make a determination for proceeding with the work. If the Engineer finds that the obstruction adversely affects the Contractor's costs or schedule for completion, a proper adjustment to the Contract will be made in accordance with the General Conditions.

3.03 CUTTING AND DEMOLITION:

Any pipes or existing structures encountered during construction shall be preserved until accepted for removal by the Engineer. The Contractor shall be required to repair pipes or structures in use that are damaged during construction at no cost to the Owner. The removal of abandoned pipes shall be accepted by the Engineer.

3.04 REMOVAL AND SALVAGE OF MATERIALS:

The Contractor shall carefully remove materials specified to be reused or salvaged so as not to damage the material. Reuse by the Contractor of salvaged material will not be permitted, except as specifically shown or specified herein. Existing materials to be removed or replaced and not specifically designated for salvage shall become the property of the Contractor. Provide and maintain dusttight temporary partitions, bulkheads, or other protective devices during the construction to permit normal operation of the existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material.

3.05 CLEARING THE SITE:

All areas underlying new structures, paved areas, site fills and embankments shall be cleared of stumps, shrubs, brush, and other vegetative growth.

Any material containing roots, grasses and other deleterious or organic matter generally found in the top six inches of undisturbed natural terrain shall be stripped from all areas requiring excavation, grading, trenching, subgrade preparation for foundations and embankment work. The Engineer will require stripped top soil deemed suitable for spading over the finished grades to be stockpiled and preserved until the finished grading operation, at which time it shall be spread uniformly over areas to be seeded or sodded.

Upon completion of the project, completion of a particular phase of the project, or termination of the use of any particular area, site, storage yard right-of-way or easement, the Contractor shall promptly and neatly clean up the area and re-establish the ground to the contours required by the project or conditions prior to project commencement.

**END OF SECTION**

## DIVISION 2

### SECTION 02200 - EARTHWORK

#### PART 1 - GENERAL

1.01 WORK INCLUDED:

- A. Extent of earthwork is indicated on the Contract Drawings and includes excavation and backfill.

1.02 RELATED WORK:

- A. General Conditions and Division 1 - General Requirements
- B. Section 02100 - Move In and Site Preparation

1.03 GENERAL EXCAVATION:

The Contractor shall perform all excavation regardless of the type, nature, or condition of material encountered, as specified, shown, or required in order to accomplish the construction.

1.04 SUBMITTALS: Not applicable.

1.05 JOB CONDITIONS:

A geotechnical investigation may have been performed for the Owner in order to obtain relative data concerning the character of material in and upon which the project is to be built. If an investigation has been performed, the information will be available to the Contractor for information purposes only, and is not to be considered a part of the Contract Documents. The Contractor shall satisfy himself as to the kind and type of soil to be encountered and any water conditions which might affect the construction of the project.

The location of existing utilities are shown in an approximate way only and not all utilities may be shown. The Contractor shall determine the exact location of all existing utilities prior to commencing work. The Contractor shall be fully responsible for any and all damages which might be occasioned by his failure to exactly locate and preserve any and all utilities. If utilities are to remain in place, the Contractor shall provide adequate means of support and protection during construction.

Should drawn, or incorrectly drawn piping or other utilities be encountered during excavation, the Contractor shall advise the Engineer within thirty (30) minutes of encountering the utility. The Contractor shall cooperate with the Engineer and utility companies in keeping respective services and facilities in operation to the satisfaction of the respective owners. The owners reserve the right to perform any and all work required should the Contractor fail to cooperate with the respective companies, and back charge the Contractor for any and all expenses.

The Contractor shall provide barricades and signs in accordance with the Uniform Manual of Traffic Control Devices where applicable. The Contractor shall maintain all devices in a working manner.

## **PART 2 - MATERIALS**

### **2.01 SOIL MATERIALS:**

Coarse-grained soils free from debris, roots, organic material, and non-mineral matter containing no particles larger than 4-inch size and classified as either:

- A. Sands with fines (SM, SC) and less than 25 percent of the soil particles passing the No. 200 sieve, or
- B. Clean sands (SW, SP)
- C. Native soils as determined acceptable by the Soils Engineer.

## **PART 3 - EXECUTION**

### **3.01 EARTHFILL CONSTRUCTION:**

The Contractor shall construct earthfills to lines and grades shown or specified. The fill shall be placed in continuous horizontal layers not exceeding 8-inches in loose thickness. Where hand operated compaction equipment is used, the layers shall not exceed 6-inches in loose thickness.

The Contractor shall protect the fill against freezing when atmospheric temperature is less than 35 deg. F. (1 deg. C).

### **3.02 COMPACTION:**

The Contractor shall meet minimum percentage density specified for each area classification as follows;

Percentage of Maximum Density Requirements:

Compact soil to not less than the following percentages of maximum density relationship determined in accordance with ASTM D 698.

- A. Foundations, Paved Areas and Sidewalks - 95 percent
- B. Unpaved Areas - 90 percent

Moisture Control:

Control moisture content within 2% of optimum moisture content as determined by ASTM D 698. Where subgrade or layer of soil material is too dry to permit compaction to the specified density, uniformly apply water to surface of cut area, subgrade, or loosely placed layer of soil material. Mix soil and applied by blading, discing, or other methods to achieve uniform moisture content throughout the soil mass to be compacted.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

### **3.03 GRADING:**

The Contractor shall perform all grading to the lines and grades as shown on the Drawings and/or established by the Engineer, with 1-inch allowance for topsoil where specified or shown. Shape, trim, and finish slopes of channels to conform with the lines, grades, and cross sections as shown

or approved. All slopes shall be free of all exposed roots and stones exceeding 3-inch diameter which are loose and liable to fall. Tops of banks shall be rounded to circular curves not less than 6-feet in radius.

Rounded surfaces shall be neatly and smoothly trimmed. Top soil shall be replaced to a depth of 4-inches in areas to be revegetated.

3.04 SETTLEMENT:

Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, the Contractor shall scarify the ground surface, re-shape, and compact to required density prior to further construction.

Any settlement in backfill, fill, or in structures built over the backfill or fill, which may occur within the guarantee period in the General Conditions will be considered to be caused by improper compaction methods and shall be corrected at no cost to the Owner. Any structure damaged by settlement shall be restored to their original condition by the Contractor at no cost to the Owner.

3.05 DISPOSAL OF EXCESS EXCAVATION AND WASTE MATERIALS AND SPECIAL REQUIREMENTS:

The Contractor shall dispose of all excess excavated material not required for fill on-site, as directed by the Engineer.

The Contractor shall remove and be responsible for legally disposing of excess fill material not placed on-site, waste materials, trash and debris.

The Contractor shall conduct all site grading operations and other construction activities to minimize erosion of site soil materials. He shall be responsible to maintain streets daily removing any spillage of dirt, rocks or debris from equipment entering or leaving the site.

3.06 BLASTING:

Not Used

**END OF SECTION**

**DIVISION 2**

**SECTION 02274 - RIPRAP**

**PART 1 - GENERAL**

1.01 WORK INCLUDED:

- A. All labor, equipment and materials necessary for excavating, placing and grouting of riprap, complete and in-place.
- B. Extent of riprap is indicated on the Contract Drawings.

1.02 RELATED WORK:

- A. Section 02140 - Dewatering
- B. Section 02200 - Earthwork

1.03 SUBMITTALS:

The Contractor shall provide samples of the riprap material, when required for color verification, to the Engineer for approval prior to delivery to the site. Gradation test results and mix design will be submitted for bed course material and grout, respectively.

**PART 2 - MATERIALS AND EQUIPMENT**

2.01 BED COURSE MATERIAL:

Bed course material for slope protection, or riprap filter blanket, shall be a porous free draining material consisting of sand, gravel, crushed stone or other approved free draining material. This material shall meet the following gradation requirements:

**GRADATION FOR GRANULAR BEDDING**

| <u>Sieve Size</u> | <u>% by Weight passing Square Mesh Sieves</u> |                |
|-------------------|---|----------------|
|                   | <u>Type I</u>                                 | <u>Type II</u> |
| 2"                | ---   | 90 - 100       |
| 1-1/2"            | ---   | ---            |
| 3/4"              | ---   | 20 - 90        |
| 3/8"              | 100   | ---            |
| #4                | 95 - 100                                      | 0 - 20         |
| #16               | 45 - 80                                       | ---            |
| #50               | 10 - 30                                       | ---            |
| #100              | 2 - 10  | ---            |
| #200              | 0 - 2   | 0 - 3          |

2.02 RIPRAP:

The stone shall have a specific gravity of at least 2.65. Riprap shall consist of igneous or metamorphic rock fragments which shall be dense, sound and resistant to abrasion; shall be free from cracks, seams, and other defects that would tend to unduly increase their destruction by water and frost actions. Asphalt, broken concrete, concrete slabs or other materials not classified as rock will not be allowed for use as riprap material. Riprap shall meet the following requirements:

CLASSIFICATION AND GRADATION OF ORDINARY RIPRAP

| Riprap Designation | % Smaller Than Intermediate Rock Given Size by Weight | Dimension (Inches) | d <sub>50</sub> * (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             | 100   | 30                 | 18                         |
|                    | 50 - 70   | 24                 |                            |
|                    | 35 - 50   | 18                 |                            |
|                    | 2 - 10  | 6                  |                            |
| Type VH            | 100   | 42                 | 24                         |
|                    | 50 - 70   | 33                 |                            |
|                    | 35 - 50   | 24                 |                            |
|                    | 2 - 10  | 9                  |                            |

\*d<sub>50</sub> = Mean particle size

\*\*Bury Types VL and L with native top soil and revegetate to protect from vandalism.

Grouted riprap should meet all requirements for ordinary riprap except that the smallest rock fraction should be eliminated from the gradation.

2.03 NON-SHRINK GROUT:

**Not Used**

**PART 3 - EXECUTION**

3.01 EXCAVATION:

The Contractor shall excavate to the lines and grades shown on the Contract Drawings.

3.02 PLACING BED COURSE MATERIAL:

Bed course material shall be placed beneath the riprap to the prescribed thickness as shown on the Contract Drawings.

The Contractor shall handle and place the material in a manner to prevent segregation. The bedding need not be compacted, but shall be placed in such a manner as will result in uniform layers of the specified thickness.

3.03 PLACING RIPRAP:

Riprap shall be placed to the lines and thicknesses indicated on the Contract Drawings. The larger size stones composing the riprap material shall be placed first and roughly arranged in close contact. The spaces between the larger stones shall then be filled with smaller stone of suitable sizes, so placed as to leave the surface evenly stepped, conforming to the contour required. The material may be machine-placed with sufficient hand work to accomplish the requirements of this specification.

3.04 PLACING NON-SHRINK GROUT:  
Not Used

**END OF SECTION**

## **SECTION 02677**

### **AGGREGATE BASE COURSE**

#### **PART 1 GENERAL**

##### 1.1 WORK INCLUDED

- A. The work to be performed includes the preparation of the aggregate base course foundation; the production, stockpiling, hauling, placing and compacting aggregate base course.
- B. Re-cycled concrete for aggregate base course is unacceptable.

##### 1.2 QUALITY STANDARDS

- A. AASHTO M 147 - Materials for Aggregates and Soil-subbase, Base and Surface Courses
- B. AASHTO T 89 - Determining the Liquid Limit of Soils
- C. AASHTO T 90 - Determining the Plastic Limit and Plasticity Index of Soils
- D. ASTM D 698 - Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup>)
- E. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup>).
- F. ASTM C 136 - Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
- G. ASTM C 535 - Test Method to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- H. ASTM C 131 - Test Method to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- I. ASTM C 142 - Test Method for Clay Lumps and Friable Particles in Aggregates
- J. ASTM D 75 (AASHTO T 2) Practices for Sampling Aggregates

##### 1.3 SUBMITTALS

- A. The CONTRACTOR shall submit laboratory tests to the ENGINEER detailing conformance with the relevant specifications.

#### **PART 2 MATERIALS**

##### 2.1 AGGREGATES

- A. 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.
- B. The requirements for the Los Angeles wear test shall not apply to Class 1, 2 and 3.



- C. Aggregates for bases shall meet the grading requirements as called out in the Drawings.
- D. The liquid limit shall be as shown in the table and the plasticity index shall be  $\leq$  six.

## 2.2 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   | ---      | ---     | 100      | ---      | ---     | ---     |
| 2 inch            | 95 - 100  | ---      | ---     | 100      | ---      | ---     | ---     |
| 1 1/2 inch        | ---   | ---      | ---     | 90 - 100 | 100      | ---     | ---     |
| 1 inch            | ---   | ---      | ---     | ---      | 95 - 100 | ---     | 100     |
| 3/4 inch          | ---   | ---      | ---     | 50 - 90  | ---      | 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  |

**TABLE 1**

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

## 2.2 EQUIPMENT

- A. 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.
- B. Any equipment that is used in an improper manner may be cause for rejection of the work if in the opinion of the ENGINEER the work fails to meet the requirements of this specification.
- C. 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

### 3.1 PREPARATION OF FOUNDATION

- A. 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.
- B. 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.

- C. 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 12 inches of the subgrade shall be scarified and compacted to a minimum of 95 percent of ASTM D 698. On-site material may be used as accepted by the ENGINEER, for compacted fill for the aggregate base course. Fill shall be placed with two percent of optimum moisture content and compacted to a minimum of 95 percent ASTM D 698.
- D. Aggregate base course used as a foundation for pavements shall be placed on the subgrade within two percent of optimum moisture and compacted to a minimum of 100 percent ASTM D1557. The top six inches of topsoil shall be stripped within the area to be aggregate surfaced. Following stripping of the topsoil, the upper 12 inches of the subgrade shall be scarified and compacted to a minimum of 95 percent of ASTM D 698. On-site material may be used, as accepted by the ENGINEER, for compacted fill for the aggregate base course. Fill shall be placed with two percent of optimum moisture content and compacted to a minimum of 95 percent ASTM D 698. Deviations in aggregate base course under pavements of more than 1/4 inch in 10 feet, measured with a 10-foot straight edge, shall be corrected prior to pavement construction
- E. 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.
- F. 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.
- G. Areas of yielding or unstable material shall be excavated and backfilled with stabilization rock as determined by the 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.
- H. The ENGINEER shall direct the 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.

### 3.2 EARTH SUBGRADE

- A. 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.
- B. Stones over six inches in greatest dimension shall be removed.

### 3.3 PLACEMENT

- A. 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 inches, the base shall be constructed in two or more layers of approximate equal thickness.
- B. The maximum compacted thickness of any one layer shall not exceed six inches.

- C. Each layer shall be constructed as far in advance of the succeeding layer as the 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.
- D. 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.

### 3.4 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 of Section 3.1 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.
- C. 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.
- D. The surface of each layer shall be kept true and smooth at all times.

### 3.5 MIXING

- A. Unless otherwise specified, the CONTRACTOR shall mix the aggregate by any one of the three following methods.
  - 1. Stationary Plant Method
    - a. Aggregate base course and water shall be mixed in an approved mixer.
    - b. 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.
  - 2. Travel Plant Method
    - a. 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.
  - 3. Road Mix Method
    - a. 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.

### 3.6 SHOULDER CONSTRUCTION

- A. Shoulders shall be constructed with base course material to conform to the elevation and section shown in the Drawings.
- B. No equipment shall be used which by its design or through its manner of operation that will damage the pavement or curbs.
- C. Insofar as practicable, the base course material shall be placed directly on the shoulder area.
- D. Materials that are deposited outside the shoulder area, if not contaminated, shall be recovered and placed within the required limits. The CONTRACTOR will not be compensated for materials not recovered as determined by the ENGINEER.
- E. Materials shall not be deposited on the pavement or surfacing during placing unless specifically permitted by the ENGINEER.
- F. The base course material as placed shall be spread and compacted to the required density in layers not exceeding six 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**

**SECTION 02900**

**SITE REVEGETATION, LANDSCAPING AND IRRIGATION**

**PART 1 - GENERAL**

1.01 WORK INCLUDED:

The work covered by this specification includes the furnishing of all materials and application of fertilizer, seed and mulch to areas defined in the plans or required by field conditions. The work shall be completed in accordance with these specifications, accepted horticultural practice, and with the plans.

**PART 2 - MATERIALS**

2.01 SOIL ADDITIVES (FERTILIZER):

Not Applicable

2.02 GRASS SEED

- A. Grass seed shall be of the latest crop available. Seed shall meet Colorado Department of Agriculture Seed Laws, Chapter 35, Article 27.

The seeding mixture shall be applied at a pure live seed (PLS) rate per acre per the drawings:

The Contractor shall compensate for percentage of purity and germination by furnishing sufficient additional seed to equal the specified pure live seed product. The formula for determining the quantity of pure live seed (PLS) shall be:

$$\text{Pounds of Seed (Bulk) X Purity X Germination} = \text{Pounds of Pure Live Seed (PLS)}$$

The Contractor shall present to the Engineer a certificate of the PLS test of the grass seed which he intends to use. All grass seed furnished shall be delivered in sealed bags showing weight, analysis and vendor's name.

- B. Use the following seed mixture of pure live seed at rate shown. Broadcast seeding is not allowed.

| COMMON NAME          | BOTANICAL NAME                | POUNDS PLS/ACRE |
|----------------------|-------------------------------|-----------------|
| Slender Wheatgrass   | Elymus Trachycaulus v. Pryor  | 7               |
| Sheep Fescue         | Festuca Ovina v. Covar        | 3               |
| Western Wheatgrass   | Pascopyrum Smithii v. Rosanna | 7               |
| Idaho Fescue         | Festuco Idahoensis            | 3               |
| Sandberg Bluegrass   | Poa Sandbergii                | 2               |
| Blue Grama           | Bouteloua Gracilis v. Hachita | 2               |
| Black-eyed Susan     | Rudbeckia Hirta               | 0.1             |
| Rocky Mtn. Penstemon | Penstemon Strictus            | 1.5             |
| Gaillardia           | Gaillardia Aristata           | 1               |
| Blue Flax            | Linum Lewisii                 | 0.5             |
| Flanders Poppy       | Papaver Rhoeads               | 0.1             |
|                      | <b>TOTAL</b>                  | 27.20           |

2.03 MULCH

Material for mulching shall consist of straw or oats, wheat, barley or rye, and shall be free of noxious weed seeds. Straw in a state of advanced decomposition will not be accepted. At least 50% of the mulch by weight shall be uniform in length.

2.04 TOPSOIL

Not Applicable

2.05 STRAW BALES

Not Applicable

2.06 BALLED, BURLAPPED AND CONTAINER-GROWN PLANTS

Not Applicable

2.07 ORNAMENTAL AND SHADE TREES

Not Applicable

2.08 MISCELLANEOUS MATERIALS

Not Applicable

**PART 3 - EXECUTION**

3.01 GENERAL:

Not Applicable

3.02 SOIL PREPARATION

This work shall consist of preparing the soil for seeding. Preparation of the soil shall include harrowing and scarifying to a depth of 4 inches by mechanical and hand methods in order to establish a uniform and acceptable seed bed surface. Areas that have been eroded or rutted to a degree will require the placement of topsoil, graded and compacted to a uniform and acceptable seed bed surface.

Water shall be applied for compaction purposes to the topsoil in a fine spray by nozzles in such a manner that it will not wash or erode the newly placed soil.

Care shall be exercised during the soil preparation on all embankments so as not to disturb established ground cover. Areas disturbed during the soil preparation will be fertilized, seeded and mulched at the discretion of the Engineer in accordance with these documents.

No special payment for soil preparation or corrective work will be made.

3.03 FERTILIZATION:

Not Applicable

### 3.04 SEEDING:

#### A. GENERAL

All seeding shall be installed by the drilling method. Seeding shall not be undertaken in adverse weather and unsuitable ground conditions. Examples of these respective conditions may be wind, precipitation, frozen or untillable ground or conditions detrimental to the effectiveness of the application.

#### B. DRILLING

Not Applicable

#### C. HAND SEEDING (as approved by the Engineer for areas inaccessible for drilling)

Seeding shall be accomplished by hand broadcasting seed over the area. Special care shall be taken to assure the proper seeding rate is used on these areas. After broadcasting of the seed has been accomplished, the seed shall be raked into the soil to a depth of 1/4" to 3/4" and rolled. The seeding mixture shown in the Materials Section applies at twice the pure live seed (PLS) rate per acre.

#### D. MULCHING

Mulch will be applied to areas seeded or as designated on the Plans. Embankments are to be hydromulched, all other areas are to be mulched by mechanical or hand methods depending on the accessibility of equipment. All new seeded areas, except embankments, shall be mulched and crimped within 48 hours after seeding. Areas not mulched and crimped within 48 hours after seeding will be reseeded in accordance with the specified seed mix at the Contractor's expense prior to mulching and crimping.

All seeded areas shall receive a uniform layer of straw mulch applied at the rate of 2 tons per acre, crimped with a crimper or other approved methods.

#### E. WATERING

Immediately after the completion of seeding, the Contractor shall water the seeded areas sufficiently to a depth of two (2) inches, and in such a manner so that erosion does not take place and gullies are not formed. The surface shall be wetted twice at three day intervals following completion of the above, for a period sufficient to ensure a uniform stand of grass.

#### F. GUARANTEE

All plant material and work accomplished under this section shall be guaranteed to provide a stand of grass acceptable to the Owner at the end of one year.

#### G. RE-SEEDING

Areas that require re-fertilization, re-seeding and re-mulching will be designated by the Engineer at least 15 days prior to the guarantee period. Re-fertilization, re-seeding and re-mulching shall be with the seed and rates specified herein before for seeding and shall be accomplished in a manner that will cause a minimum of disturbance to the existing stand of grass.

#### H. AREAS TO BE SEEDED

All areas that have been damaged or disturbed by the Contractor's operation shall be reseeded according to these specifications and as indicated on the landscape plan.

3.05 STRAW BALE EROSION CONTROL BARRIERS:

Not Applicable

3.06 TREE PLANTING

A. Ornamental trees

Plant in pits 12 inches larger than tree ball, backfill with five parts topsoil and one part peat.

B. Shade trees

1. Stake locations for approval by Engineer.
2. Plant in pits 2'-0" greater in diameter than root bales or to edge of tree leave-outs in paved areas. Remove excavated solid from site.
3. Backfill to depths of root balls with five parts topsoil and one part peat. Carefully settle by watering to prevent pockets.

3.07 TREE WRAPPING

Extend wrapping from ground to a point immediately below lowest branch of each tree or as directed. Securely fasten in place with tacks or staples so wrapping will remain in place for two years.

3.08 PRUNING OF NEW TREES

Prune trees to preserve natural character of plant in a manner appropriate to its particular requirements in the landscape design as directed by the Engineer. In general, remove at least one-third of wood by thinning. Do not cut back terminal branches. Remove sucker growth and broken or badly bruised branches. Thin native trees heavier than nursery stock.

3.09 TREE SAUCERS

Form a four inch high saucer around each new tree for deep watering. Contractor is responsible for deep watering until final acceptance.

3.10 TREE GUYING AND STAKING

Stake ornamental trees and guy shape trees immediately following planting operation. Take precautions during guying operation to prevent damage or injury to branches and roots. Orient all stakes within each cluster or row of trees in the same direction or as directed by the Engineer.

**END OF SECTION**



Construction  
Erosion Control

**UTSD SEWER MAIN REPAIR/ BANK STABILIZATION  
Lot 4, Grey Fox Sewer Estates**

**Construction Erosion Control**

A) BMP's for Stormwater Pollution Prevention

1) Structural Practices

- A silt fence is to be placed around the downhill side of all onsite stock pile material.
- Erosion Logs, silt fence and/or straw bales are to be set intercepting the proposed channel flowline to intercept sediment runoff from the site.
- Erosion mat is to be installed as shown on the plans with grass seed immediately following construction.

2) Non-Structural Practices

- All disturbed slopes outside the area noted for regrading are to be returned to their pre-construction grade.
- Disturbed slopes exceed 33% are to have soil erosion mats installed.
- All areas of disturbance are to be graded so water shall be dispersed into sheet flow and directed off the area of disturbance.
- Up on project completion all disturbed areas are to be seeded and mulched with native seed. Seeding and mulching is to be as specified in the construction plans on specifications.

B) Final Stabilization and Long Term Stormwater Management

- Stabilization will not be considered final until all surfaced areas have received their final surface; uniform vegetative cover has been established with a density of at least 70% of pre-disturbance levels or equivalent permanent, physical erosion reduction materials has been employed. Additional erosion control measures may be required upon site inspection for specific operations as conditions warrant.

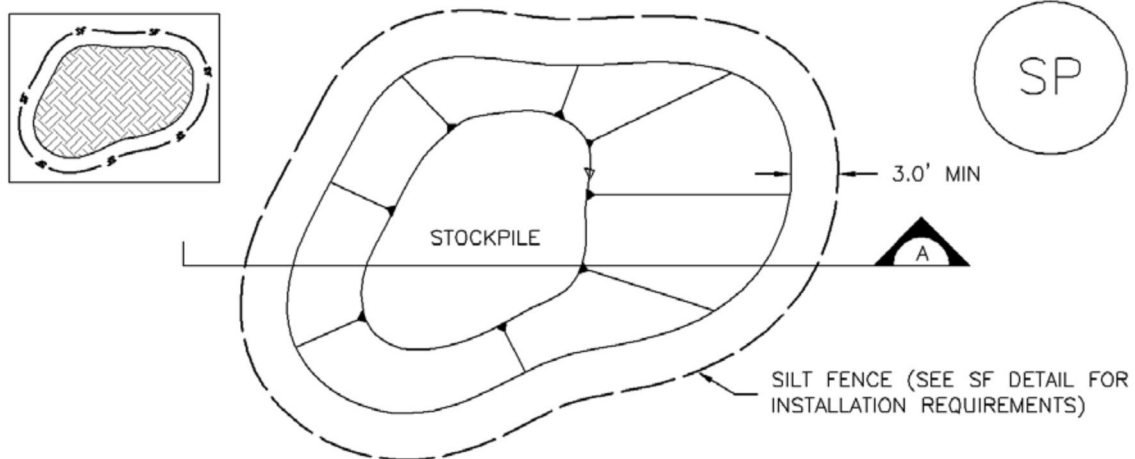
C) Other Controls

- Off-site tracking of material shall be controlled to minimize the tracking. Streets shall be cleaned when earth materials are tracked, spilled or washed onto the streets as directed by the owner or owner's representative. When cleaning streets, they shall not be washed until they have been scraped and swept and inlet protection has been properly installed.

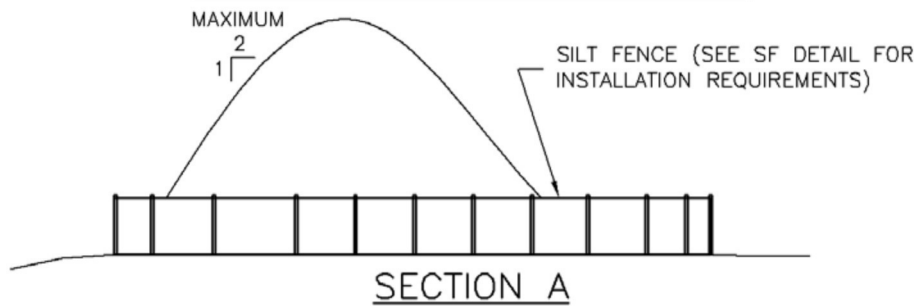
D) Inspection and Maintenance

- Any deficiencies observed during inspections are to be corrected with in one (1) days of observance or prior to any storm event that would cause pollutants to degrade waters of the United States.
- If drainage, erosion or sediment problems become apparent during construction, such as when off-site sedimentation occurs, the erosion control methods shall be re-evaluated and reimplemented in an effective manner.

UTSD SEWER MAIN REPAIR/ BANK STABILIZATION  
Lot 4, Grey Fox Sewer Estates



## STOCKPILE PROTECTION PLAN



## SP-1. STOCKPILE PROTECTION

### STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
  - LOCATION OF STOCKPILES.
  - TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

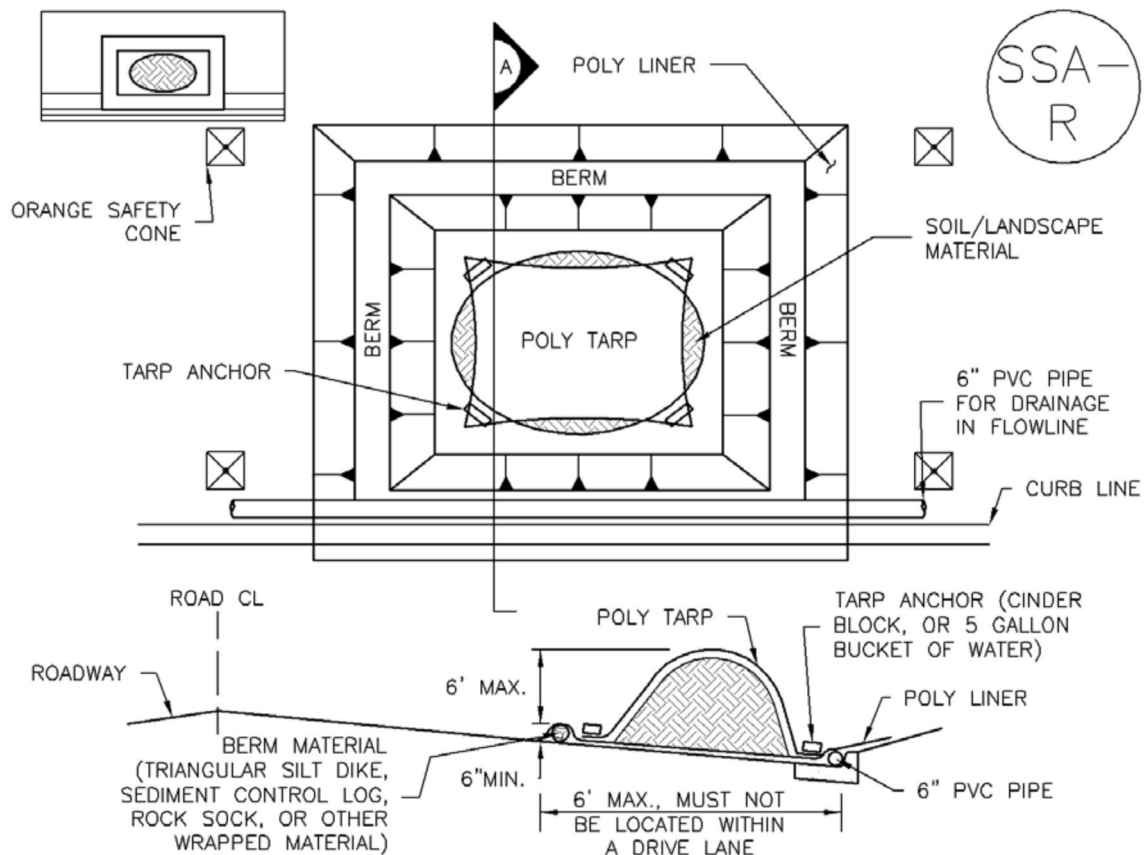
STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



## SP-2. MATERIALS STAGING IN ROADWAY

### MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

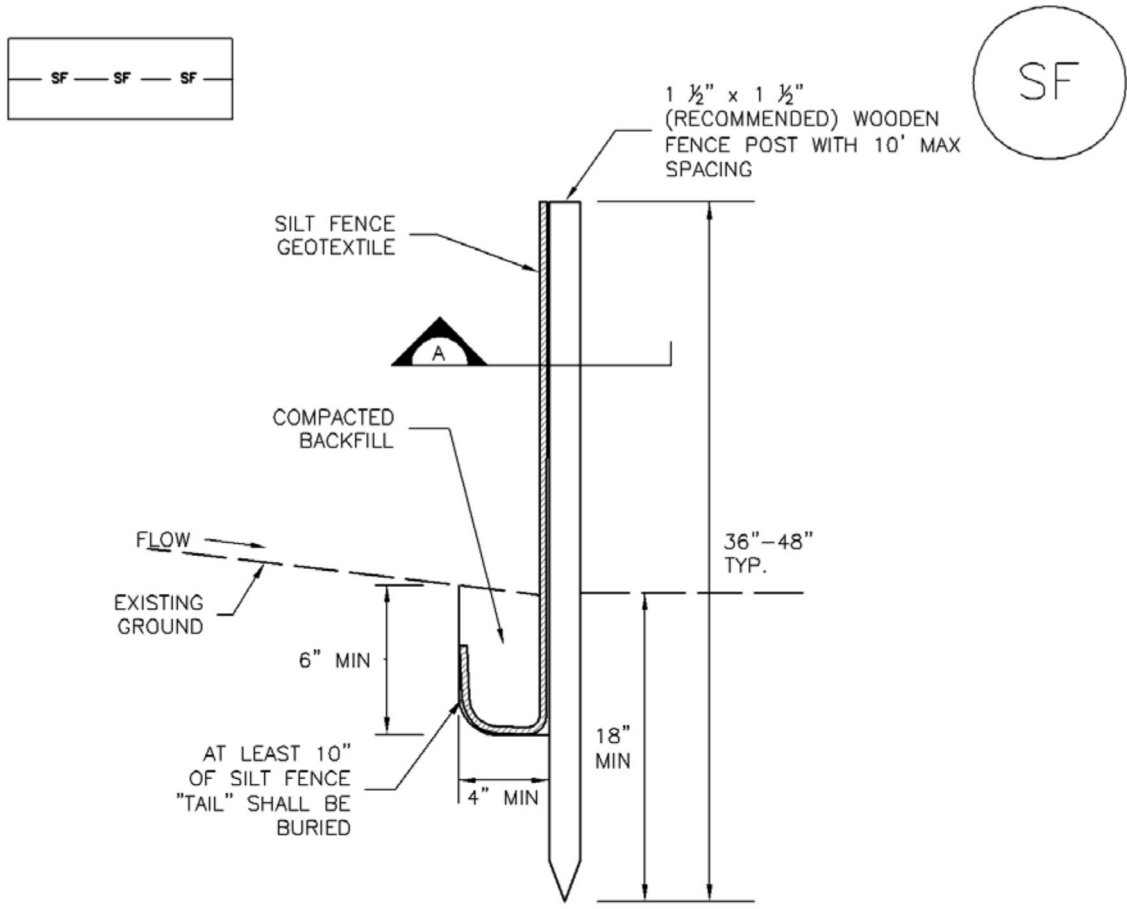
1. SEE PLAN VIEW FOR
  - LOCATION OF MATERIAL STAGING AREA(S).
  - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.
3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.
4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.
5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.
6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.
7. THIS FEATURE CAN BE USED FOR:
  - UTILITY REPAIRS.
  - WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
  - OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

MATERIALS STAGING IN ROADWAY MAINTENANCE NOTES

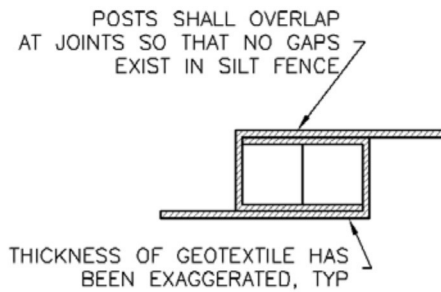
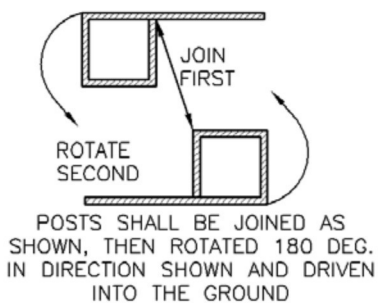
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.
5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM AURORA, COLORADO)



## SILT FENCE



## SECTION A

## SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

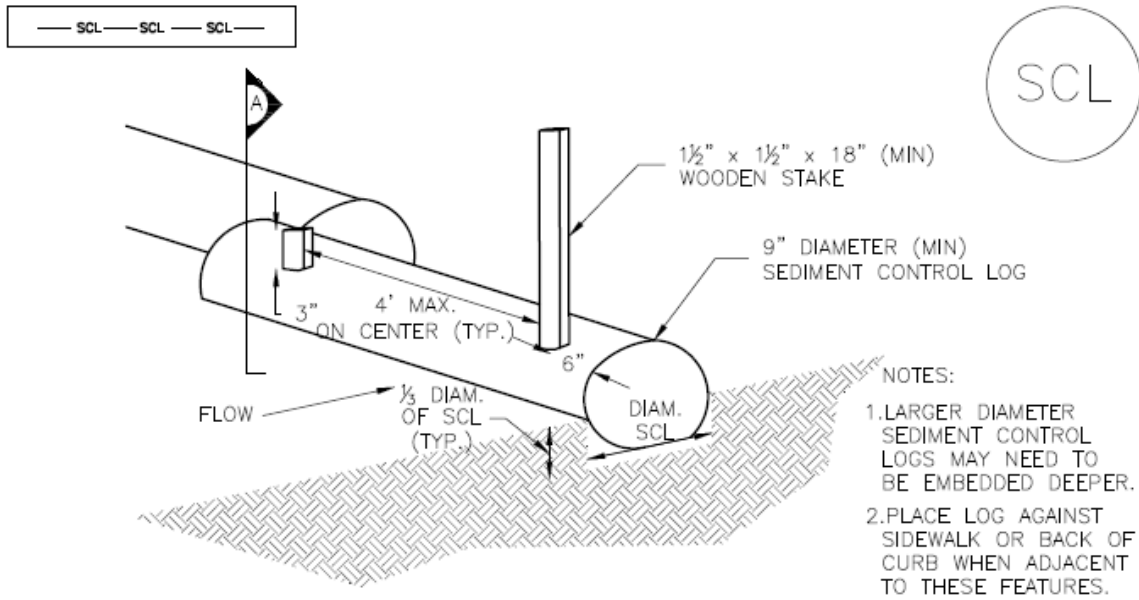
SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

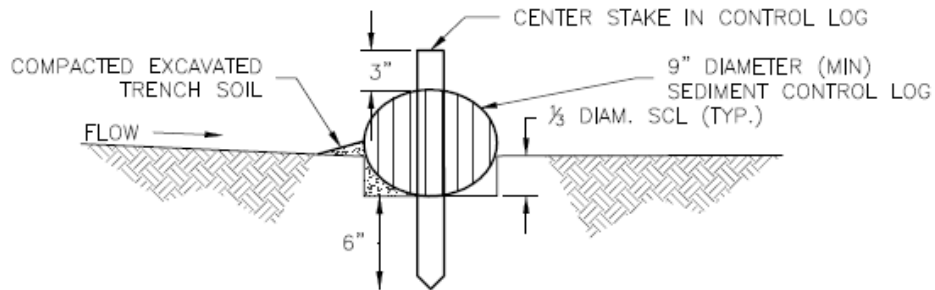
(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

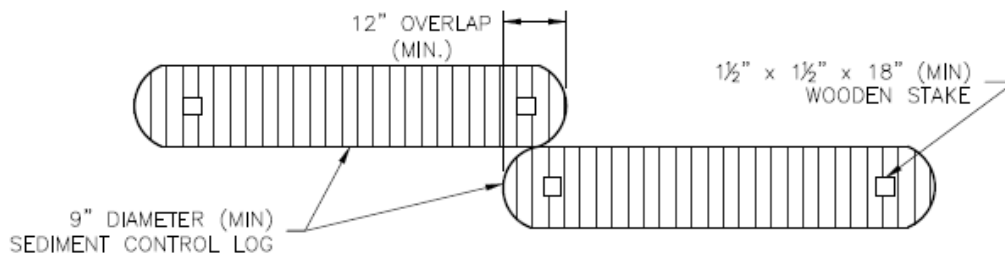




## TRENCHED SEDIMENT CONTROL LOG

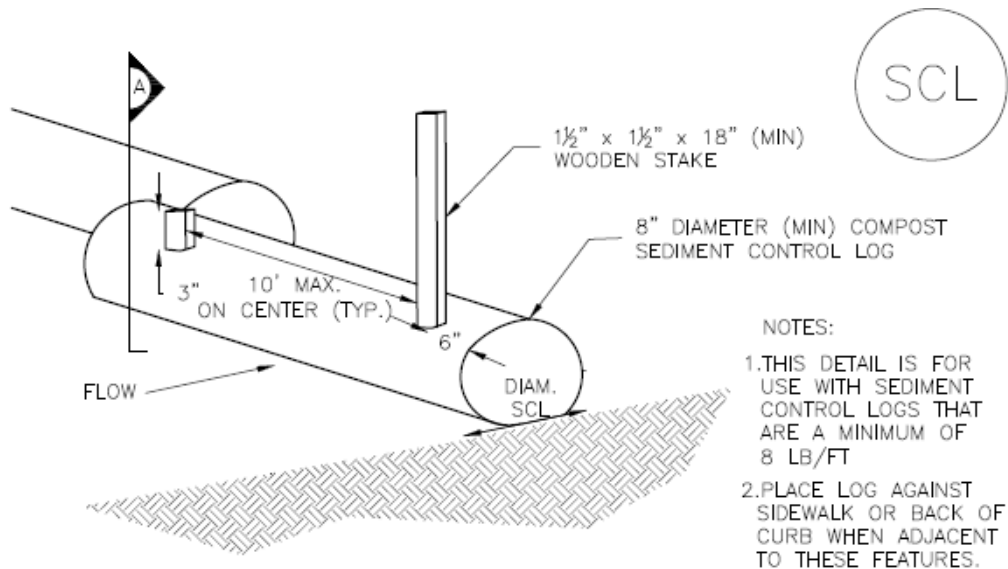


## SECTION A TRENCHED SEDIMENT CONTROL LOG

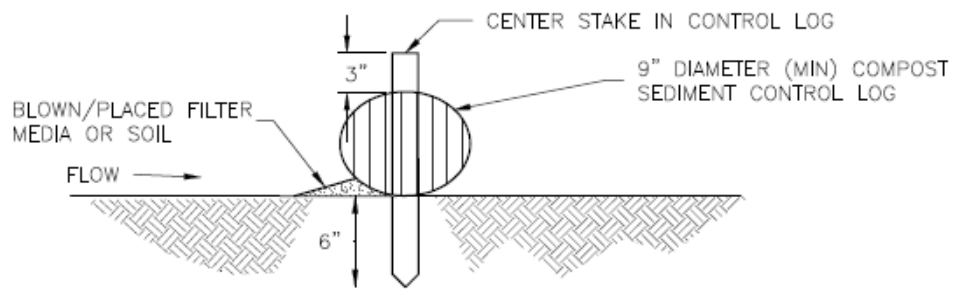


## LOG JOINTS

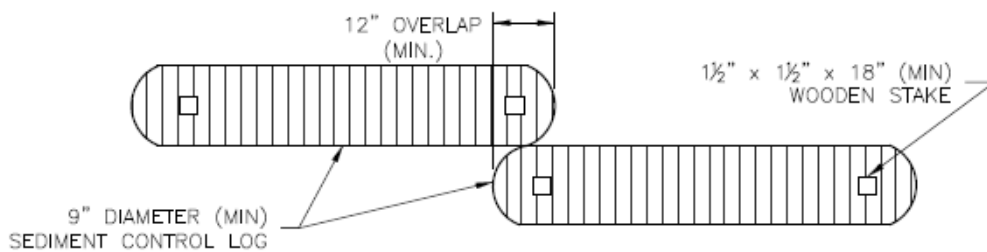
## SCL-1. TRENCHED SEDIMENT CONTROL LOG



COMPOST SEDIMENT CONTROL LOG (WEIGHTED)

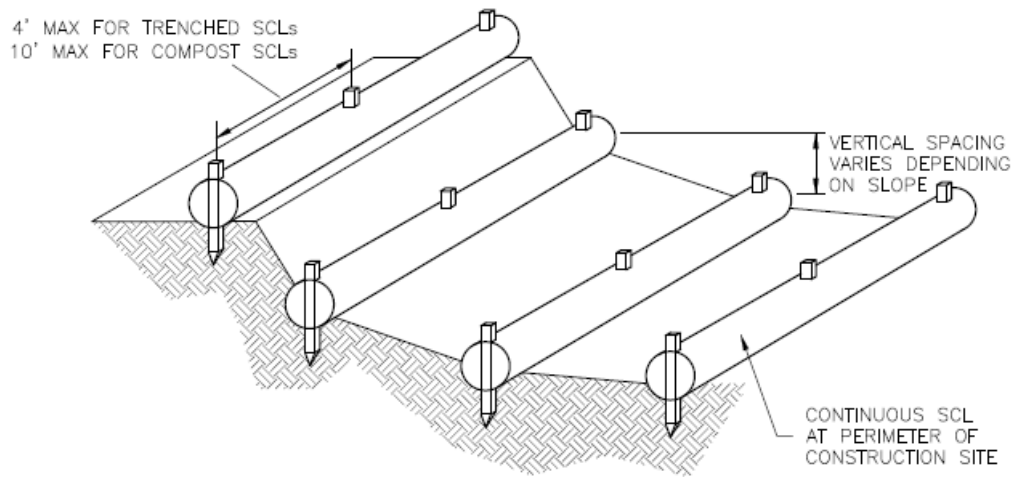


SECTION A  
COMPOST SEDIMENT CONTROL LOG (A)



LOG JOINTS

SCL-2. COMPOST SEDIMENT CONTROL LOG (WEIGHTED)



SCL-3. SEDIMENT CONTROL LOGS TO CONTROL SLOPE LENGTH

SEDIMENT CONTROL LOG INSTALLATION NOTES

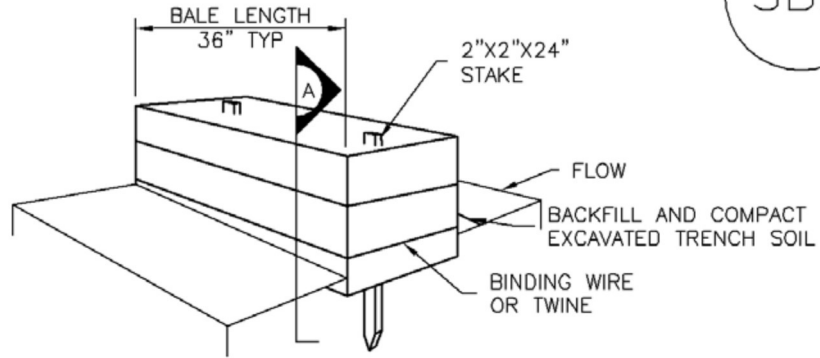
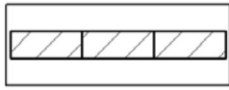
1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.
2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.
3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.
5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY  $\frac{1}{3}$  OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.
6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.
7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

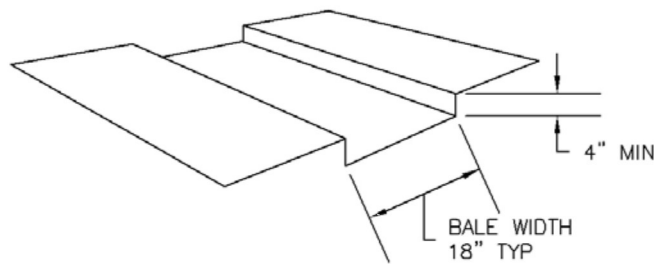
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY  $\frac{1}{2}$  OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION. COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

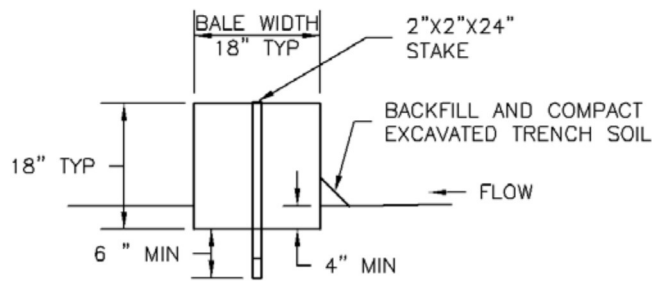
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



STRAW BALE



TRENCH FOR STRAW BALE



SECTION A

SBB-1. STRAW BALE

## STRAW BALE INSTALLATION NOTES

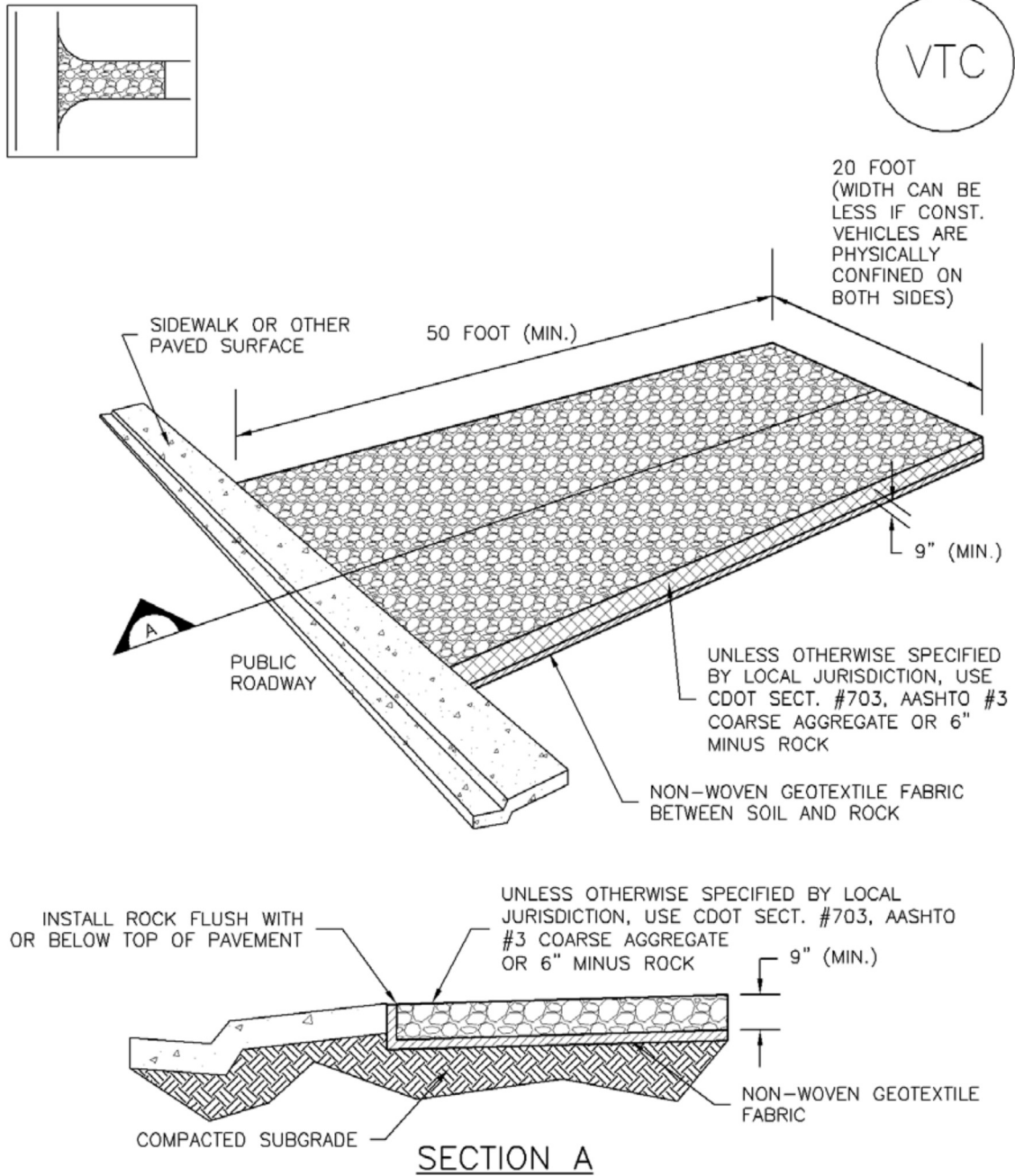
1. SEE PLAN VIEW FOR:  
-LOCATION(S) OF STRAW BALES.
2. STRAW BALES SHALL CONSIST OF CERTIFIED WEED FREE STRAW OR HAY. LOCAL JURISDICTIONS MAY REQUIRE PROOF THAT BALES ARE WEED FREE.
3. STRAW BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF STRAW OR HAY AND WEIGH NOT LESS THAN 35 POUNDS.
4. WHEN STRAW BALES ARE USED IN SERIES AS A BARRIER, THE END OF EACH BALE SHALL BE TIGHTLY ABUTTING ONE ANOTHER.
5. STRAW BALE DIMENSIONS SHALL BE APPROXIMATELY 36"X18"X18".
6. A UNIFORM ANCHOR TRENCH SHALL BE EXCAVATED TO A DEPTH OF 4". STRAW BALES SHALL BE PLACED SO THAT BINDING TWINE IS ENCOMPASSING THE VERTICAL SIDES OF THE BALE(S). ALL EXCAVATED SOIL SHALL BE PLACED ON THE UPHILL SIDE OF THE STRAW BALE(S) AND COMPACTED.
7. TWO (2) WOODEN STAKES SHALL BE USED TO HOLD EACH BALE IN PLACE. WOODEN STAKES SHALL BE 2"X2"X24". WOODEN STAKES SHALL BE DRIVEN 6" INTO THE GROUND.

## STRAW BALE MAINTENANCE NOTES

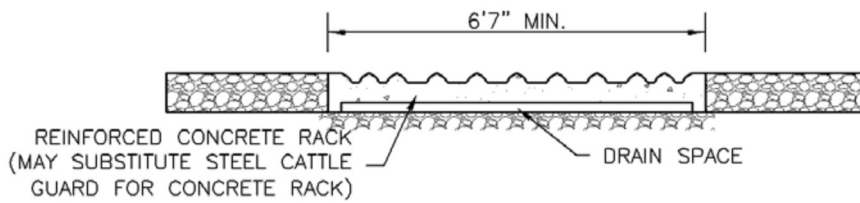
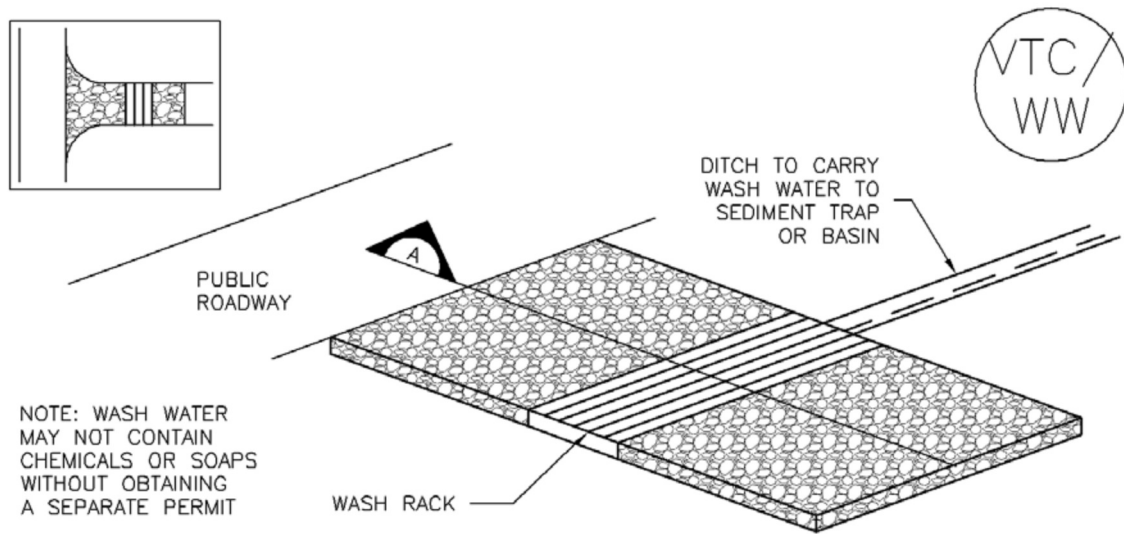
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. STRAW BALES SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, ROTTEN, OR DAMAGED BEYOND REPAIR.
5. SEDIMENT ACCUMULATED UPSTREAM OF STRAW BALE BARRIER SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY  $\frac{1}{4}$  OF THE HEIGHT OF THE STRAW BALE BARRIER.
6. STRAW BALES ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
7. WHEN STRAW BALES ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



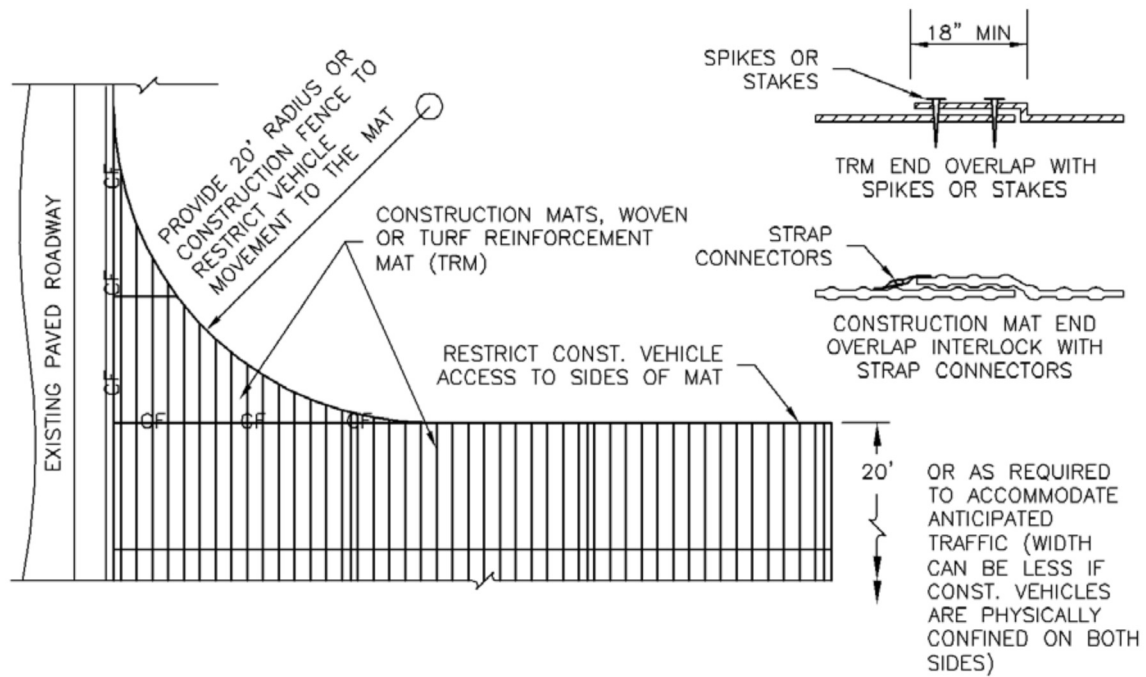
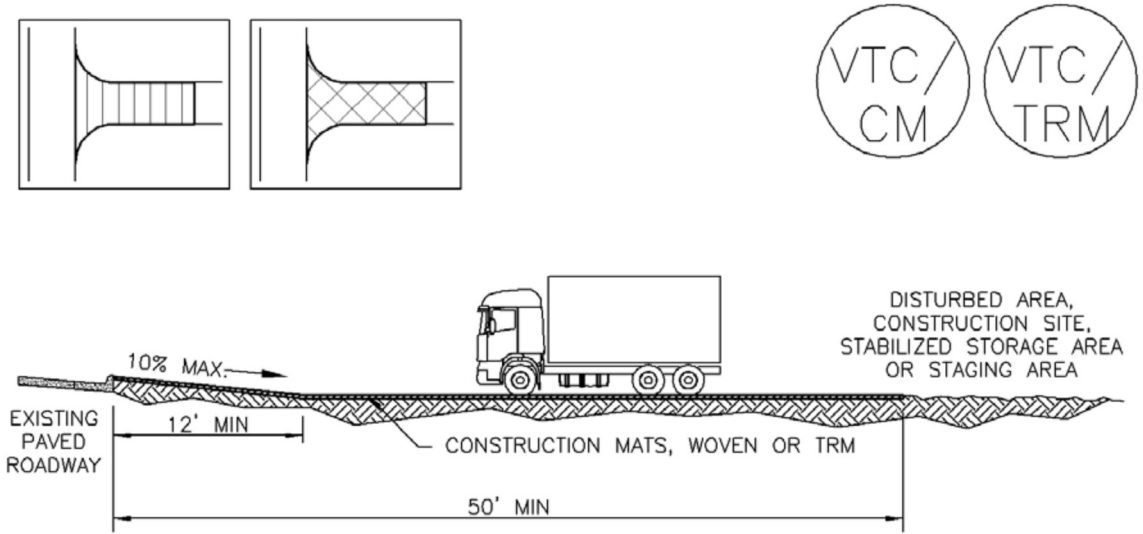
## VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



SECTION A

VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK





### VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
  - LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
  - TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).
2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

## APPENDIX C

Upper Thompson Sanitation  
District Rules and Regulations  
Sample UTSD Warranty, January 2011

## **APPENDIX C WASTEWATER COLLECTION SYSTEM SPECIFICATIONS**

**C-1 GENERAL.** Local facilities are considered to be engineered improvements which are designed for specific applications. All designs, drawings and specifications must be prepared by, or under the direction of a Professional Engineer registered in the State of Colorado, whose seal must be on a record set of documents. The standard details and specifications contained herein are minimum design standards which the District will accept in order to facilitate perpetual operation and maintenance procedures. In addition, the engineer must also design in accordance with the minimum standards of other regulatory agencies, including the Colorado Department of Public Health and Environment (CDPHE) Design Criteria Considered in the Review of Wastewater Treatment Facilities (Policy 96-1). Review and approval of the design of local facilities by the District shall not relieve the engineer of record from responsibility for adequate design.

The District reserves the right to impose different requirements for sewer mains than those set forth herein. Any such determination by the District, shall be made by the District, in its sole discretion, and shall be based upon the totality of circumstances regarding the situation presented. All trees are required to be planted a minimum of ten feet (10') from the outside of all wastewater collection system lines that are to be owned and maintained by the District. Waivers may be granted by the District on an individual basis for smaller trees.

**C-2 DRAWINGS.** Unless otherwise approved by the District, all design drawings shall be on twenty-four inch by thirty-six inch (24" x 36") mylar, using ink for all background information and permanent work. Drawing scale for area plans shall be one inch equal to forty feet (1" = 40'). The cover sheet for each drawing set shall have an approval block. The original mylars shall be delivered to the District prior to final acceptance. Prior to the construction or installation of any local facilities, the customer shall submit design documents to the District for review and approval. Each construction drawing set shall have an "approval block" affixed thereto which provides for the signatures of authorized representatives of the District. The customer shall also provide a complete set of as-built drawings for the local facilities. The as-built drawings shall show adequate dimensioned ties to surface features for all buried facilities to allow for future locating. The as-built drawings shall be provided to the District on mylar transparencies suitable for blue line reproductions and in a digital format, suitable for use with AutoCAD. The District will provide the minimum AutoCAD version at the time of submittal.

**C-3 REQUIRED EASEMENTS.** Where local facilities are to be located out of the public right-of-way, the customer shall be responsible for obtaining easements required for the construction, maintenance and operation of the local facilities. The legal description for the easements shall be prepared by a Professional Land Surveyor registered in the State of Colorado. Easements shall be in a form acceptable to the District and shall be shown on the construction drawings. The District will not approve the construction until all required easements have been deeded to the District. In general, the minimum width of easements shall be fifteen feet (15 ft) for sewer mains. Temporary construction easements shall have a minimum width of thirty feet (30 ft). Wider easements may be required for deep sections of sewer mains, multiple sewer mains, or where otherwise required by the District.

## **C-4 WASTEWATER COLLECTION SYSTEM.**

**C-4.1 Minimum Sewer Design Criteria.** Wastewater collection system design is intended to provide for all gravity service. The wastewater collection system shall be designed to carry not less than the projected peak flow rates flowing half full (safety factor = 2.0), unless otherwise approved by the District. The minimum size of sewer mains shall be eight inches (8 in) in diameter. Sewer mains shall generally be designed with sufficient depth to serve basements by gravity. The minimum cover shall be four feet (4 ft) from top of the sewer to finished grade. Manholes shall be located at a maximum spacing of four hundred feet (400 ft) center-to-center and also at changes in alignment and/or grade and at the end of each sewer main. Sewer mains shall be laid with uniform slope between manholes. The wastewater collection system shall be so designed and constructed to give mean velocities, when flowing full, of not less than two feet per second (2.0 ft/sec).

**C-4.2 Minimum Lift Station Design Criteria.** Wastewater lift stations will not be permitted unless specifically authorized by the District. If authorized by the District, lift stations shall comply with the following minimum design criteria:

1. A minimum of two pumps shall be provided, with the lift station being capable of pumping the maximum hourly flow rate with the largest pump out of service.
2. Provision shall be made for emergency storage of raw wastewater or portable pumping in the event of an extended power outage or electrical or mechanical failure.
3. Pump sizing should allow for a flow velocity of at least two feet per second (2.0 ft/sec) in the force main.
4. Pumps should be capable of passing spheres of at least 3 inches in diameter unless other equipment is provided to prohibit such solids from entering the suction side of the pump.
5. Adequate ventilation shall be provided for all pump stations.
6. Power supply must be available from at least two independent generating sources, or emergency power equipment shall be provided.
7. Alarm systems shall be provided for all lift stations. The alarm shall be activated in case of power failure, pump failure, or any cause of lift station malfunction. An audiovisual device shall be installed at the lift station for external observation unless disallowed by local ordinance.
8. All submerged equipment shall be capable of withstanding extended exposure to wastewater.

### **C-4.3 Materials.**

**Sewer Mains.** Sewer mains and fittings shall be PVC, SDR 35 minimum thickness conforming to ASTM D3034. Joints shall be of the "slip on" type with integrally cast bell having an

elastomeric gasket. Sewer mains shall be green in color (or other District-approved color). Sewer mains may be Class 51 or 53 ductile iron pipe if approved by the District. Minimum grade and slopes shall maintain a minimum velocity of 2 feet per second and shall be as follows:

| <b>Sewer Diameter</b> | <b>Minimum Slope (feet per 100-feet)</b> |
|-----------------------|--|
| 8 inches              | 0.40                                     |
| 10 inches             | 0.28                                     |
| 12 inches             | 0.22                                     |
| 14 inches             | 0.17                                     |
| 15 inches             | 0.15                                     |
| 16 inches             | 0.14                                     |
| 18 inches             | 0.12                                     |
| 21 inches             | 0.10                                     |
| 24 inches             | 0.08                                     |
| 27 inches             | 0.067                                    |

1. **Manhole Structures:** Manholes shall be precast concrete units. Manholes shall be constructed and installed in accordance with Standard Details 2610, 2611, or 2612, as applicable, and in accordance with the following specifications.

- a. Minimum drop through manholes shall be as follows:

| <b>Flow Through Manhole</b> | <b>Minimum Drop (feet)</b> |
|-----------------------------|----------------------------|
| Straight                    | 0.10                       |
| Bend                        | 0.15                       |

- b. Manhole sections. Provide manhole sections reinforced in compliance to ASTM C478. Provide a minimum section wall thickness of 5 inches. Adjust final minimum 6 inches to maximum 18 inches distance to grade by using precast adjuster rings. Provide the following components for each manhole structure:
  - i. Precast manhole bases
  - ii. Precast Bottom Section
  - iii. Precast Barrel Section(s)
  - iv. Precast Transition Section (Concentric or Eccentric)
  - v. Precast Adjuster Ring(s)
- c. Provide manhole section with minimum 60-inches in diameter for lines 12-inches to 30-inches in diameter, and provide manhole sections with a minimum 48-inches in diameter for lines 10-inches in diameter and smaller.
- d. Cast-In-Place Manhole Bases meeting the following minimum requirements may be acceptable under certain conditions with prior approval by the District.
  - i. 28-day Compressive Strength: 3000 psi
  - ii. Type II, per ASTM C150, Modified Sulfate Resistant Concrete, tricalcium aluminate content limited to 4% or less.
  - iii. Cast-in-place manhole bases shall have a minimum of 6 inches of concrete below all pipes and 3 inches above all pipes.
- e. Frames and Cover
  - i. The manhole covers shall be per Standard Detail 2609.

- ii. Manhole frames and covers shall be cast iron with "Sewer" cast on the cover.
  - iii. Provide cast or ductile iron frame and covers made of material meeting ASTM A48, Class 35 (minimum).
  - iv. Use only cast or ductile iron of best quality, free from imperfections and blow holes.
  - v. Furnish frame and cover of heavy-duty construction, a minimum total weight of 400 pounds.
  - vi. Machine all horizontal surfaces.
  - vii. Furnish unit with solid non-ventilated lid with concealed pickholes. Coordinate lettering for covers with Owner.
  - viii. Ensure minimum clear opening of 24-inch diameter.
  - ix. Buried manholes: Neenah R1915 series or equal, bolted lid with neoprene gasket. Place layer of 8-mil polyethylene over manhole cover prior to backfill.
  - x. Exposed manholes: Neenah R1915 series or equal, bolted lid with neoprene gasket. Provide anchor bolt holes and anchor bolts. Anchor bolts shall be Hilti series HVA, 1/2-inch diameter, 4.25 inch minimum embedment.
- f. Manhole Steps
- i. Provide each manhole with extruded aluminum manhole steps with a safety tread. Furnish spacing and dimensions of steps complying to OSHA requirements for fixed ladders. Copolymer polypropylene coated steel steps (MA Industries Model PS-2-PF) are also acceptable.
  - ii. Ensure maximum distance from surface to first rung is not greater than 16 inches and that maximum spacing on remaining steps is 12 inches on center. Locate step such that center of rung is nominal 6 inches clear of wall.
  - iii. Minimum step width of 14 inches and minimum cross section of 0.875 inch of solid material.
  - iv. Embed a minimum of 3 inches and anchor integrally into manhole or structure walls.
- g. Flexible Pipe-to-Manhole Connector
- i. A flexible pipe-to-manhole connector shall be used in the connection of pipes to precast manholes.
  - ii. The connector shall be Kor-N-Seal as manufactured by NPC Inc., or equal.
  - iii. Internal expander assembly and external pipe clamp shall be Type 316 stainless steel.
  - iv. O-ring shall be EPDM.
- h. Coating
- i. Coat the exterior of all manholes with Conseal Sealants, Inc., C5-55 or approved equal.
2. **Granular Bedding Material.** Graded aggregate product (Pea Gravel) which will all pass a 3/8 inch sieve and not more than 3 percent of which will pass a No. 200 sieve. Gravel bedding (1 1/2-inch) may be used by contractors for all bedding materials. Gravel bedding (1 1/2-inch) shall be required for areas of high ground water and other wet areas as determined by the District during construction.

**3. Backfill Material.** Free of rock cobbles, roots, sod or other organic matter, and frozen material. No material larger than 6 inches in diameter shall be allowed. Moisture content at time of placement to be as follows:

- a. Under roadway crossings or pavements, moisture content to be 3 percent plus/minus of optimum moisture content.
- b. In all other areas of trench construction, the moisture content will be adjusted by either the drying of the material or wetting of the material to a percentage required to obtain the compaction as specified.
- c. On site materials may be used for backfill if it meets these requirements.

**4. Crushed Stone.** Material shall conform to ASTM C33 No. 467 and exhibit the following gradation:

| Sieve Size | Percent Finer (by weight) |
|------------|---------------------------|
| 2 inch     | 100                       |
| 1-1/2 inch | 95-100                    |
| ¾ inch     | 35-70                     |
| #4         | 0-5                       |

**5. Special Considerations.** Water and road crossings may require the use of: pipe encasement (Detail 2525); cut-off walls (Detail 2530); impervious clay barriers (Detail 2618); and bore casings (Detail 2625). Steep grades may require the use of reinforced concrete slope anchors (Detail 2740).

**C-4.4 Installation.** The wastewater collection system shall be installed in accordance with the design documents that have been approved by the District. The minimum bedding and backfill requirements shall be as shown on Standard Details 2220A or 2220B, as applicable. Sewer mains shall have a ten feet (10') minimum horizontal separation from water lines, raw water lines and water structures. Where sewer mains cross above or less than 18 inches below water lines, raw water lines or water structures, one length of new sewer main at least 18 feet long shall be centered over the water line, raw water line or water structure such that both joints are as far as possible from the water line, raw water line or water structure. Joints between the new sewer main and the water line, raw water line or water structure shall be concrete encased in accordance with Standard Detail 2525, with the encasement extending at least six inches (6") on each side of the joint(s). Where this separation is impractical, the District may permit concrete encasement of the sewer main, in accordance with CDPHE standards and Standard Detail 2525. Sewer mains shall also have a three feet (3') minimum horizontal separation from gas lines, and a five feet (5') minimum horizontal separation from all other utilities.

All existing utilities shall remain in service during and after construction. Existing utilities shall be field located, protected and supported as required during construction. Any damage to existing utilities shall be repaired to the satisfaction of the District and the utility owner. When a sewer main crosses beneath existing utilities, the sewer main embedment material shall extend from beneath the sewer main to an elevation of six inches (6") above the crossed utility.



The contractor shall flush the sewer main, as the work progresses by means that are in accordance with good practice, to insure that earth, sand, rocks or other foreign materials are removed from the interior of the sewer main. During the construction of the manholes, the contractor shall, in accordance with good practice, insure that no earth, sand, rocks or other foreign material exists on the joint surface during assembly of the sections.

**1. Trench Excavation.**

- a. Excavate trenches by open cut method to depth necessary to accommodate work.
- b. Open trench outside buildings, units, and structures shall be no more than the distance between two manholes, structures, units, or 400 lineal feet, whichever is greater. Trenching limitations may be field adjusted by District as weather conditions dictate. Trenching within buildings, units, or structures shall be limited to no more than 100 lineal feet at any one time.
- c. Do not open greater length of trench than can be effectively utilized under existing conditions. Schedule work and order materials so that trenches are not left open for a longer period than is reasonably necessary. Any trench or portion of trench, which is opened and remains idle for two calendar days, or longer, as determined by the District, may be directed to be immediately refilled, without completion of work. Said trench may not be reopened until District is satisfied that work associated with trench will be prosecuted with dispatch.
- d. Observe following trenching criteria
  - 1) Trench size. Excavate only sufficient width to accommodate free working space with a minimum clearance of 6 inches on each side of the pipe. In no case shall trench width at top of pipe or conduit exceed outside diameter of utility service by the following dimensions.

| <u>Overall Diameter of Sewer</u> | <u>Excess Dimension</u> |
|----------------------------------|-------------------------|
| Less than 8 inches               | 12 inches               |
| 8 inches to 32 inches            | 16 inches               |
| More than 33 inches              | 24 inches               |

- 2) Where soil conditions permit, cut trench walls vertically from bottom of trench to 1 foot above top of pipe, conduit, or utility service.
- 3) Keep trenches free of water.
- 4) Brace and sheet trenches as soil conditions dictate and in full compliance with OSHA requirements. Do not remove sheeting until backfilling has progressed to the stage that no damage to piping, utility service, or conduit will result due to removal.
- 5) Brace trenches running near walls or columns, to prevent any settlement or other disturbance of walls or columns.

**2. Preparation of Foundation For Pipe Laying.**

- a. If over-excavation occurs, backfill with bedding material.

- b. In case of rock excavation, carry excavation minimum of 6 inches below required grade and backfill to required grade with granular bedding material. Form bell holes in trench such that only barrel of pipe is supported by bedding material.
- c. Stabilization: Provide stabilization when required due to unstable trench bottom in accordance with these specifications. Observe the following requirements when unstable trench bottom materials are encountered.
  - 1) Notify District when unstable materials are encountered and define by drawing station locations and limits. District will evaluate the trench conditions and determine the quantity of stabilization.
  - 2) Remove unstable trench bottom and replace with stable material.

### **3. Backfilling**

- a. Do not backfill until tests to be performed on system show system is in full compliance to specified requirements.
- b. Material greater than 3 inches in diameter shall not be placed within 1 foot of the pipe.
- c. Methods: Provide backfill and compaction methods of following types.
  - 1) Bedding (pipe zone) material. Furnish compacted bedding up to 12 inches above top of pipe or conduit. Comply with the following:
    - (a) Place backfill in lifts not exceeding 6 inches (loose thickness).
    - (b) Hand place, shovel slice, and pneumatically tamp all bedding (pipe zone) material.
    - (c) Observe specific pipe or conduit manufacturer's recommendations regarding methods of backfilling and compaction.
    - (d) Ensure compaction of each lift to requirements stated in these specifications.
  - 2) Compacted backfill. Perform remaining backfill in accordance with the following:
    - (a) Place backfill in lift thicknesses capable of being compacted to densities specified.
    - (b) Observe specific pipe or conduit manufacturer's recommendations regarding methods of backfilling and compaction.
    - (c) Exercise extreme care in backfilling operations to avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion. Repair damages, distortions or misalignments to full satisfaction of District.
    - (d) Water flushing for consolidation will not be permitted.

### **4. Compaction**

- a. Compaction requirements: Place and ensure backfill and fill materials to achieve an equal or "higher" degree of compaction than undisturbed native materials adjacent to the work; however, in no case shall degree of compaction be less than "Minimum Compaction" specified.
- b. Unless noted otherwise on drawings or specified by other sections of these specifications, comply with following trench compaction criteria.

## MINIMUM COMPACTION REQUIREMENTS

| LOCATION   | DENSITY  |
|--|--|
| 1. Bedding (pipe zone) materials - all areas   | 95 percent of maximum dry density by ASTM D698 |
| 2. Compacted Backfill:<br>Under pavements, roadways surfaces, within highway right-of-ways | 95 percent of maximum dry density by ASTM D698 |
| Under turfing, sodded, plant seeded, non-traffic areas.                                    | 90 percent of maximum dry density by ASTM D698 |
| Around structures  | 95 percent of maximum dry density by ASTM D698 |

c. Perform in place moisture density tests to ensure trench backfill complies with specified requirements. Where backfill compaction does not meet moisture density test requirements and after backfill has been removed and situation corrected, perform additional tests until compaction meets or exceeds requirements.

1) Moisture density tests are to be taken at a minimum of one test every 24 inches lift per 75 lineal feet of trench.

### C-4.5 Testing.

1. **General.** During the preliminary design approval process, the contractor shall request that the District provide the testing protocol required for sewer system improvements. Testing shall be conducted by one of two methods as follows:

A. District Performed Testing: The District will perform the following testing procedures to determine if the sewer main meets the District's minimum quality standards. The District will inform the contractor regarding acceptable methods of repair in the event one or more sections fail to pass any test.

1. Sewer Mains: District staff will televise the sewer main upon notification by the contractor that the sewer main is complete and ready for testing.

2. Manholes: The District shall visually check each manhole, both exterior and interior, for flaws, cracks, holes or other inadequacies which might affect the operation or watertight integrity of the manhole. Should any inadequacies be found, the contractor shall make any repairs deemed necessary by the District. District staff will test all manholes for leakage upon notification by the contractor that the manholes are complete and ready for testing. The leak test shall be conducted in the following manner:

a. All sewer mains leading into or out of the manhole shall be tightly plugged.

a. The manhole shall be filled with water to a level at least two inches (2") above the uppermost step. The water shall be allowed to stand for two (2) hours to

allow for normal water absorption into the manhole material. At the end of the two (2) hour stabilization period, if the water level in the manhole has dropped below the top step, additional water will be added to bring the level above the step as before. A one (1) hour test period shall then commence. Any visible external leakage or drop in water level noted within the one (1) hour test period shall constitute failure and the contractor shall repair or replace the defective work and retest.

B. Contractor Performed Testing: The contractor will perform all or a portion of the following testing procedures, as determined by the District, to determine if the sewer main meets the District's minimum quality standards.

1. Alignment and Grade. Sewer mains will be checked by both the District and contractor to determine whether any displacement of the sewer main has occurred after the trench has been bedded. The test shall be as follows:

A light shall be flashed between manholes, or if the manholes have not as yet been constructed, between the locations of the manholes, by means of a flashlight or by reflecting sunlight with a mirror. If the illuminated interior of the sewer main shows poor alignment, displaced pipe, earth or other debris in the pipe, or any other kinds of defects, the defects, determined by the District, shall be remedied by the contractor. The test will be repeated following completion of backfilling and any poor alignment, displaced pipe or other defects, determined by the District, shall be corrected by the contractor.

2. Pressure Testing. Types of pressure testing and inspection to be employed include hydrostatic pressure testing, for pressure pipes and low pressure air testing and hydrostatic exfiltration/infiltration testing for gravity pipes. Pressure testing forms for hydrostatic pressure testing and low pressure air testing are included at the end of this Appendix.

a. Hydrostatic pressure testing for pressure pipes.

1) Perform testing after backfill and proper compaction of trenches. Where lines are installed under roadways and parking areas, perform tests after completion of final grade preparation and prior to application of surface courses. Notify District at least 48 hours prior to testing. Provide temporary restraints for expansion joints for additional pressure load under test. Isolate equipment in piping system with rated pressure lower than pipe test pressure by valves or blind flanges.

2) The allowable leakage of buried piping systems shall be determined as follows:

(i) Polyvinyl chloride (PVC) pressure pipe systems: Test PVC pressure pipe in accordance with the latest version of AWWA C605. Per AWWA

C605, the allowable leakage in gallons per hour from buried PVC pressure pipe systems shall be less than the number of joints in the length of pipeline tested, times the nominal diameter of the pipe in inches, times the square root of the average test pressure during the leakage test in pounds per square inch (gauge), divided by 7,400. The duration of each leakage test shall be two hours. The equation for computing the allowable leakage is:

$$L = \frac{N D \sqrt{P}}{7,400}$$

Where :

L = allowable leakage , in gallons per hour

N = number of joints in the length of the pipeline tested

D = nominal diameter of the pipe, in inches

P = average test pressure during the leakage test , in psi

- (ii) Ductile iron pipe systems: Test ductile iron pipe in accordance with the latest version of AWWA C600. Per AWWA C600, the allowable leakage in gallons per hour from buried ductile iron pipe systems shall be less than the length of pipeline tested in feet, times the nominal diameter of the pipe in inches, times the square root of the average test pressure during the leakage test in pounds per square inch (gauge), divided by 133,200. The duration of each leakage test shall be two hours. The equation for computing the allowable leakage is:

$$L = \frac{SD\sqrt{P}}{133,200}$$

Where :

- L = allowable leakage , in gallons per hour
- S = length of the pipe tested, in feet
- D = nominal diameter of the pipe, in inches
- P = average test pressure during the leakage test, in psi

(iii) Unless otherwise specified, the allowable leakage in gallons per hour from other buried liquid piping systems shall be less than the length of pipeline tested in feet, times the nominal diameter of the pipe in inches, times the square root of the average test pressure during the leakage test in pounds per square inch (gauge), divided by 133,200. The duration of each leakage test shall be two hours. The equation for computing the allowable leakage is:

$$L = \frac{SD\sqrt{P}}{133,200}$$

Where :

- L = allowable leakage , in gallons per hour
- S = length of the pipe tested, in feet
- D = nominal diameter of the pipe, in inches
- P = average test pressure during the leakage test, in psi

- b. Low pressure air test for gravity pipes
  - 1) Check pneumatic plugs for proper sealing.
  - 2) Place plugs in line at each manhole and inflate to 25 PSIG.
  - 3) Introduce low pressure air into sealed line segment until air pressure reaches 4 PSIG greater than ground water that may be over the pipe. Use test gauge conforming to ANSI B40.1 with 0 to 15 PSI scale and accuracy of 1 percent of full range.
  - 4) Allow 2 minutes for air pressure to stabilize.
  - 5) After stabilization period (3.5 PSIG minimum pressure in pipe) discontinue air supply to line segment.
  - 6) Acceptable time for loss of 0.5 PSIG of air pressure in plastic pipe shall be as follows:

| Pipe Size | Minimum Time for 0.5 PSIG Loss in Plastic Pipe<br>(minutes:seconds) |          |          |          |          |          |          |          |          |
|-----------|---|----------|----------|----------|----------|----------|----------|----------|----------|
|           | ≤ 100 Feet  | 150 Feet | 200 Feet | 250 Feet | 300 Feet | 350 Feet | 400 Feet | 450 Feet | 500 Feet |
| 8"        | 3:47  | 3:47     | 3:47     | 3:47     | 3:48     | 4:26     | 5:04     | 5:42     | 6:20     |
| 10"       | 4:43  | 4:43     | 4:43     | 4:57     | 5:56     | 6:55     | 7:54     | 8:54     | 9:53     |
| 12"       | 5:40  | 5:40     | 5:42     | 7:08     | 8:33     | 9:58     | 11:24    | 12:50    | 14:14    |
| 15"       | 7:05  | 7:05     | 8:54     | 11:08    | 13:21    | 15:35    | 17:48    | 20:02    | 22:16    |
| 18"       | 8:30  | 9:37     | 12:49    | 16:01    | 19:14    | 22:26    | 25:38    | 28:51    | 32:03    |
| 21"       | 9:55  | 13:05    | 17:27    | 21:49    | 26:11    | 30:32    | 34:54    | 39:16    | 43:38    |
| 24"       | 11:24   | 17:57    | 22:48    | 28:30    | 34:11    | 39:53    | 45:35    | 51:17    | 56:59    |
| 27"       | 14:25   | 21:38    | 28:51    | 36:04    | 43:16    | 50:30    | 57:42    | 64:54    | 72:07    |
| 30"       | 17:48   | 26:43    | 35:37    | 44:31    | 53:25    | 62:19    | 71:13    | 80:07    | 89:02    |

*NOTE: If there has been no (zero psi) drop after 1 hour of testing, the test section shall be accepted and the test complete.*

- 7) For pipe lengths not shown in the above table, use the two nearest pipe lengths to estimate the minimum time necessary for a 0.5 PSIG loss.
- c. Hydrostatic Exfiltration/Infiltration Test for gravity pipes
- 1) Hydrostatic Exfiltration Test (groundwater level is below the top of pipe)
    - (a) Leakage rate: 50 gallons per inch diameter per mile of pipe per day.
  - 2) Hydrostatic Infiltration Test (groundwater level is above the top of pipe)
    - (a) Allowable leakage rate: 50 gallons per inch diameter per mile of pipe per day.
3. Dielectric Testing Methods and Criteria. Provide electrical check between metallic non-ferrous pipe or appurtenances and ferrous elements of construction to assure discontinuity has been maintained. Wherever electrical contact is demonstrated by such test, locate the point or points of continuity and correct the condition. Check the integrity of each cadwelding connection using a light hammer blow at a 45 degree angle.
  4. Mandrel Test. No sooner than 30 days after placement and compaction of backfill, but prior to placement of permanent surface materials, clean and mandrel each line to detect obstructions (deflections, joint offsets, lateral pipe intrusions, etc.). Use a rigid mandrel with diameter of at least 95% of the pipes specified average inside diameter and a length of the mandrel circular portion at least equal to the nominal pipe diameter. Pull the mandrel through the pipe by hand. All pipe exceeding the 5% deflection shall be relaid or replaced by the contractor.

5. Testing Manholes.

- a. Visual Examination. The District shall visually check each manhole, both exterior and interior, for flaws, cracks, holes or other inadequacies which might affect the operation or watertight integrity of the manhole. Should any inadequacies be found, the contractor shall make any repairs deemed necessary by the District.
- b. Leakage Test. All manholes shall be tested for leakage and all tests shall be witnessed by the District. The leakage test shall be conducted prior to backfilling around the manhole and shall be carried out in the following manner:
  - 1) All sewer mains leading into or out of the manhole shall be tightly plugged.
  - 2) The manhole shall be filled with water to a level at least two inches (2") above the uppermost step. The water shall be allowed to stand for two (2) hours to allow for normal water absorption into the manhole material. At the end of the two (2) hour stabilization period, if the water level in the manhole has dropped below the top step, additional water will be added to bring the level above the step as before. A one (1) hour test period shall then commence. Any visible external leakage or drop in water level noted within the one (1) hour test period shall constitute failure and the contractor shall repair or replace the defective work and retest.
- c. Vacuum Testing. At the option of the contractor, vacuum testing of the installed manholes may be used instead of the leakage test. All vacuum tests shall be witnessed by the District. All sewer mains entering and exiting the manhole shall be temporarily plugged, taking care to securely brace the sewer mains and plugs to prevent them from being drawn into the manhole. The test head shall be placed at the top of the manhole and the seal inflated in accordance with the manufacturer's recommendation. A vacuum of 10-inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head shall be closed, and the vacuum pump shut-off. The time shall be measured for the vacuum to drop to 9-inches of mercury. The manhole will be declared unacceptable if the time to drop from 10- inches of mercury to 9- inches of mercury is less than the time shown in the following table:



**VACUUM TESTING OF MANHOLES:  
MINIMUM TIME REQUIRED FOR 1-INCH OF MERCURY PRESSURE DROP**

| DEPTH (feet)<br>(Vertical Length of<br>Manhole) | TIME (seconds) |              |              |
|---|----------------|--------------|--------------|
|   | 48" Diameter   | 60" Diameter | 72" Diameter |
| 8   | 20             | 26           | 33           |
| 10  | 25             | 33           | 41           |
| 12  | 30             | 39           | 49           |
| 14  | 35             | 46           | 57           |
| 16  | 40             | 52           | 67           |
| 18  | 45             | 59           | 73           |
| 20  | 50             | 65           | 81           |
| 22  | 55             | 72           | 89           |
| 24  | 59             | 78           | 97           |
| 26  | 64             | 85           | 105          |
| 28  | 69             | 91           | 113          |
| 30  | 74             | 98           | 121          |

6. Alternative procedures meeting or exceeding the intent of these procedures, as determined by the District, are acceptable. In any case, however, alternative testing procedures must be included in the design plans and specifications. The contractor shall notify the District, no less than forty-eight (48) hours prior to the desired test time. The District shall witness all tests and verify the accuracy and acceptability of the equipment utilized. The District will inform the contractor regarding acceptable methods of repair in the event one or more sections fail to pass any test. The following general notes apply to all testing procedures:

- a. Isolate equipment which may be damaged by the specified test conditions.
- b. Perform testing using calibrated pressure gauges and calibrated volumetric measuring equipment to determine leakage rates. Select each gauge so that the specified test pressure falls within the upper half of the gauge's range.
- c. Completely assemble and test new piping systems prior to connection to existing pipe systems.
- d. Acknowledge satisfactory performance of tests and inspections in writing to District prior to final acceptance.
- e. Provide all necessary equipment and perform all work required in connection with the tests and inspections.

## GRAVITY SEWER AIR TEST RESULTS

Project Name: \_\_\_\_\_  
 Project Number : \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Pipe Location: From: \_\_\_\_\_  
 To: \_\_\_\_\_  
 Pipe Size: \_\_\_\_\_ Inches  
 Pipe Length: \_\_\_\_\_ Feet  
 Test Pressure:  0.5 psi  1.0 psi

### Test Data

| Start Time<br>(hr:min:sec) | Beginning<br>Pressure<br>(psi) | End Time<br>(hr:min:sec) | Ending<br>Pressure<br>(psi) | Actual<br>Pressure<br>Loss<br>(psi) | Test Duration<br>(min:sec) | Allowable<br>Time to Lose<br>Test Pressure |
|----------------------------|--------------------------------|--------------------------|-----------------------------|-------------------------------------|----------------------------|--|
|                            |                                |                          |                             |                                     |                            |  |
|                            |                                |                          |                             |                                     |                            |  |
|                            |                                |                          |                             |                                     |                            |  |

Note: The line passed if the test duration is less than the allowable time to lose test pressure

Observations: \_\_\_\_\_  
 \_\_\_\_\_

This test was in accordance with testing procedure in:  ASTM F1417 (PVC)  
 ASTM C924 (RCP)  
 \_\_\_\_\_ (Other)

**Test Status:**  **Passed**  **Failed**

We hereby certify that the testing completed on the above referenced pipeline(s) is in accordance with the requirements of the Rules and Regulations.

Test Performed By: \_\_\_\_\_  
 \_\_\_\_\_ (Company)

Witnessed By: \_\_\_\_\_  
 \_\_\_\_\_ (Company)

## HYDROSTATIC PIPELINE LEAKAGE TEST FOR DIP

(Based on AWWA C-600)

Project Title: \_\_\_\_\_

Project Number: \_\_\_\_\_

Date of Test: \_\_\_\_\_

Pipeline Service: \_\_\_\_\_

Pipeline Description: \_\_\_\_\_

Test Point: \_\_\_\_\_

Test Duration: \_\_\_\_\_ hour(s)      Test Pressure (P) : \_\_\_\_\_ psi

Pipe Diameter (D): \_\_\_\_\_ Inches      Pipe Length (S) : \_\_\_\_\_ feet

Allowable Leakage (L): \_\_\_\_\_ gal/hr       $L = \frac{(S)(D)\sqrt{P}}{133,200}$

### Test Data

| Time | Pressure (psi) | Meter Reading (gal) | Water Added (gal) | Comments |
|------|----------------|---------------------|-------------------|----------|
|      |                |                     |                   |          |
|      |                |                     |                   |          |
|      |                |                     |                   |          |
|      |                |                     |                   |          |
|      |                |                     |                   |          |

Actual Loss: \_\_\_\_\_ gals/hr or \_\_\_\_\_ ounces/hr

**Test Status:**     **Passed**                       **Failed**

Was this Test in accordance with AWWA C600 testing procedures?     Yes     No

We hereby certify that the testing completed on the above referenced pipeline(s) is in accordance with the requirements of the Rules and Regulations.

Test Performed By: \_\_\_\_\_  
 \_\_\_\_\_ (Company)

Witnessed By: \_\_\_\_\_  
 \_\_\_\_\_ (Company)



**APPLICATION FOR SEWER ACCEPTANCE FORM**

I/We, hereby request the acceptance of Sewer Number \_\_\_\_\_

\_\_\_\_\_ (total footage) \_\_\_\_\_

Constructed by \_\_\_\_\_ in accordance with the Upper  
(Contractor)

Thompson Sanitation District's specifications, at a total cost of \$\_\_\_\_\_. As the customer of the above subdivision, I do certify that said sewer line and all appurtenants are free of all debts, liens, or mortgages, and that all costs for the construction of said line are paid in full. I also certify that \_\_\_\_\_

(Customer)

Are the sole and only owners of the above described sewer lines. I further certify that \_\_\_\_\_

(Customer)

has made no contracts with any persons relating to future work to be done on the sewers or on the easement premises.

\_\_\_\_\_

Date

\_\_\_\_\_

Customer

Sewer Number \_\_\_\_\_

\_\_\_\_\_ (total footage) \_\_\_\_\_ L.F. and all

appurtenants such as manholes, tapping wye's and stubouts have been inspected by the Upper Thompson Sanitation District and are found to conform to the District's specifications for the construction of sewers. By acceptance of said sewer, the District assumes ownership and full responsibility of said sewer, including all maintenance from this date forth.

The Upper Thompson Sanitation District hereby accepts Sewer Number \_\_\_\_\_

\_\_\_\_\_ (total footage) \_\_\_\_\_ L.F. and its

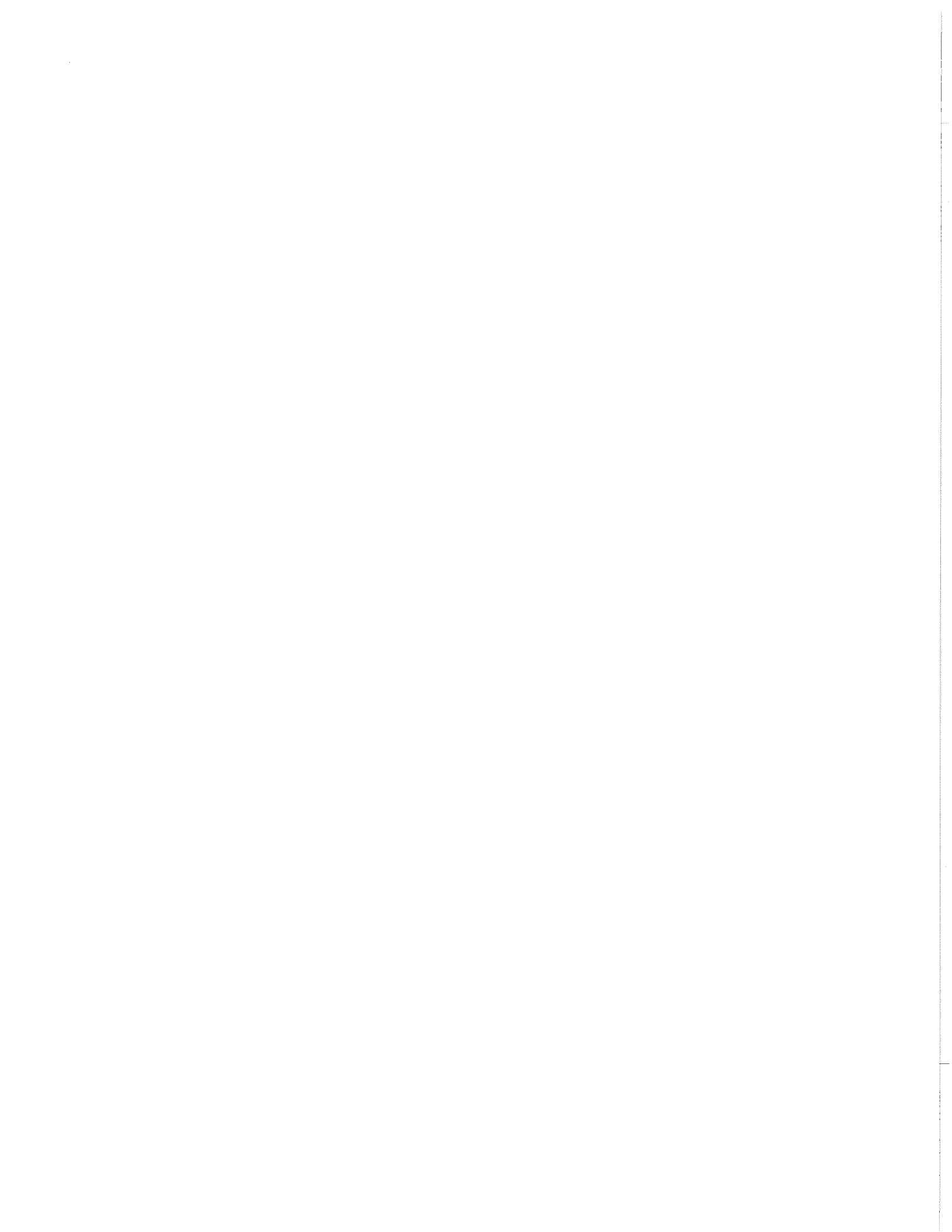
appurtenances.

\_\_\_\_\_

Date

\_\_\_\_\_

Upper Thompson Sanitation District



**WARRANTY**

\_\_\_\_\_ guarantees all  
(Contractor)  
materials and work performed for a period of two (2) years ending \_\_\_\_\_, 20\_\_\_\_  
in regard to the installation of a sewer in the \_\_\_\_\_  
(Sewer Location)  
area, in accordance with our agreement.

\_\_\_\_\_ also  
(Contractor)  
warrants and guarantees for a period of two (2) years ending \_\_\_\_\_, 20\_\_\_\_, that  
the completed system is free from all defects due to faulty materials or workmanship, and the  
contractor shall promptly make such corrections as may be necessary by reason of such defects,  
including the repairs of any damage or other parts of such defects, including the repairs of any  
damage or other parts of the system resulting from such defects. The Upper Thompson  
Sanitation District will give notice of observed defects with reasonable promptness. In the event  
that \_\_\_\_\_ should fail to make such repairs, adjustments, or  
(Contractor)  
other work that may be necessary by such defects, the Upper Thompson Sanitation District may  
do so and charge \_\_\_\_\_ the cost there incurred.  
(Contractor)

**Contractor**

**Upper Thompson Sanitation District**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

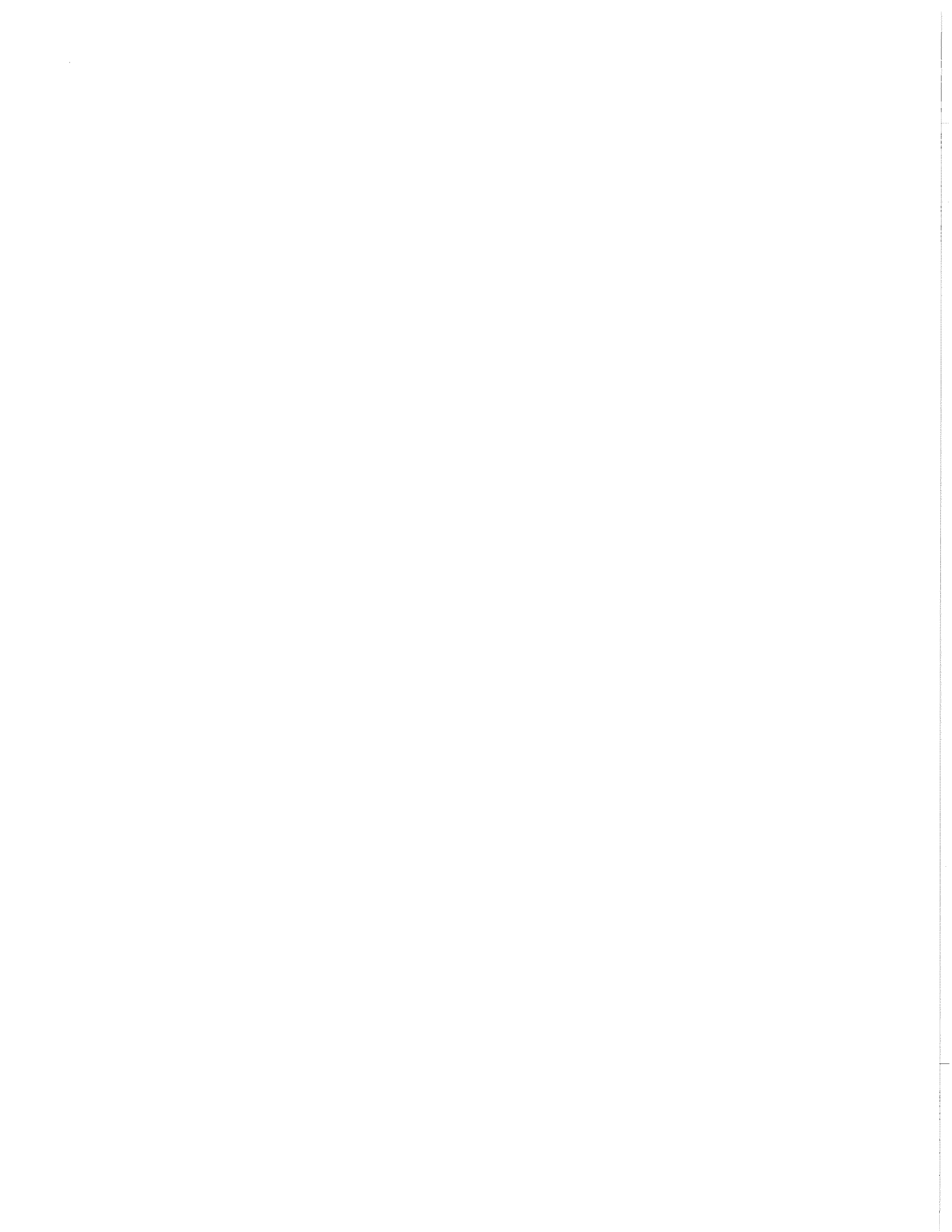
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date

Date

This formed approved by UTSD Board of Directors

9/96





## **APPENDIX G CONTRACTOR REQUIREMENTS**

Any contractor or company that performs construction, maintenance or other services on District-owned equipment, property, easements or rights-of-way that are the responsibility of the District, shall provide the District with the following documents and comply with the following requirements:

1. Certificate of Insurance specifying liability coverage and naming the District as an additional insured, where the limit is \$1,000,000 each occurrence/aggregate.
2. Certificate of Insurance specifying Minimum State Statute Workers Compensation coverage.
3. Proof of insurance on equipment and trucks.
4. Where needed or required, OSHA-approved safety equipment shall be utilized at all times and the proper number of personnel required for the safe operation of the equipment shall be utilized in the operation of this safety equipment at all times. Examples include, but are not limited to, accessing manholes, open cut trenches and electrical cabinets.
5. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs.
6. Contractor shall comply with all applicable laws and regulations of any public body have jurisdiction, including the District.