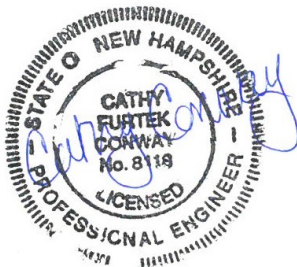


# CONTRACT DOCUMENTS

**TOWN OF ENFIELD**  
CS-334167-07 SEWER IMPROVEMENTS  
SRF & ARPA  
ENFIELD, NEW HAMPSHIRE

OCTOBER 2024





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34 SCHOOL STREET • LITTLETON, NH 03561 • PHONE 603-444-4111 • FAX 603-444-1343 • [www.horizonsengineering.com](http://www.horizonsengineering.com)

**CONTRACT DOCUMENTS  
FOR  
TOWN OF ENFIELD  
CS-334167-07 SEWER IMPROVEMENTS  
SRF & ARPA**

**ENFIELD, NEW HAMPSHIRE**

**OCTOBER 2024**

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Horizons Engineering, Inc.

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## Section A: Bidding Documents

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## Advertisement for Bids

Owner Name: Town of Enfield		Project Number: 220236		
Project Address:	Enfield (Multiple Locations)	Enfield	NH	3748
	<i>Street # and name</i>	<i>City/Town</i>	<i>State</i>	<i>ZIP</i>

Separate sealed BIDS for the construction of: Town of Enfield Sewer Improvements including: 10 manhole requiring minor repair, 13 manholes to be raised to grade, 5 segments(1,005 LF) requiring cleaning and CCTV scans, 16 segments(2,120 LF) requiring cured in place pipe lining, and 2 open cut repairs. will be received by Horizons Engineering at the office of 34 School St, Littleton NH 03561 until 4:00 AM. Local Time on 12/04/2024 and then at said office publicly opened and read aloud.

1. Completion time for the project will be calculated as calendar days from the date specified in the "Notice to Proceed" as follows:

- 120 calendar days for substantial completion.
- 150 calendar days for final completion

Liquidated damages will be in the amount of ~~\$\$~~\$200.00, for each calendar day of delay from the date established for substantial completion, and ~~\$\$~~\$200.00 for each calendar day of delay from the date established for final completion.

2. Each General Bid shall be accompanied by a Bid Security in the amount of 5% of the Total Bid Price.
3. The successful Bidder must furnish 100% Performance and Payment Bonds and will be required to execute the Contract Agreement within 10 days following notification of the acceptance of their Bid.
4. Any contract or contracts awarded under this Advertisement for Bids are expected to be funded in whole or in part by: **(Select all appropriate.)**
- A loan from the NH Clean Water State Revolving Fund.
  - A loan from the NH Drinking Water State Revolving Fund.
  - A loan from the NH Drinking Water and Groundwater Trust Fund.
  - A grant from the NH Drinking Water and Groundwater Trust Fund.
  - A State Aid Grant from the NH Department of Environmental Services (SAG).
  - A grant from the American Rescue Plan Act from the NH Department of Environmental Services (ARPA).
  - A loan or grant from USDA Rural Development.
  - A Community Development Block Grant (CDBG) from the NH Community Development Finance Authority.

**Include paragraphs 5-8 below if project is funded in whole or in part by a loan under the CWSRF and/or DWSRF programs.**

5. The successful Bidder on this work is required to comply with the President's Executive Order No. 11246 entitled "Equal Employment Opportunity" as amended by Executive Order 11375, and amendments or supplements thereto, and as supplemented in Department of Labor Regulations (41 CFR Part 60). The requirements for bidders and contractors under this order are explained in the **Information for Bidders**.
6. Utilization of Minority and Women's Business Enterprises (MBEs and WBEs). The successful Bidder on this work must demonstrate compliance with the U.S. Environmental Protection Agency's MBE/WBE rule in order to be deemed a responsible bidder. The requirements for bidders and contractors covered by this rule are explained in the Information for Bidders.
7. The successful Bidder on this work is subject to U.S. Department of Labor's Davis Bacon wage provisions.
8. The successful bidder on this work is subject to the "**American Iron and Steel (AIS)**" requirements of the CWSRF and DWSRF programs.
9. No Bidder may withdraw a Bid within 60 days after the actual date of opening thereof.
10. Non mandatory Pre-Bid Conference: 74 Lockhaven Rd, Enfield NH ( 11/12/2024 ).

The Contract Documents may be examined at the following locations:



Horizons Engineering, Inc. at 34 School Street, Littleton, NH 03561 or Horizons Engineering Website:  
horizonsengineering.com

Copies of the Contract Documents may be obtained from Horizons Engineering Inc. upon payment of a fee of \$0.00 per set, which will not be refunded. Partial sets will not be distributed. All requests for mailed documents must be accompanied by an additional fee of \$100.00 to cover the cost of postage and handling.

## Information for Bidders All Contracts

Bids will be received by: Town of Enfield herein called the "OWNER" at:

Address: 34 School St Littleton NH 03561

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Each BID must be submitted in a sealed envelope, addressed to:  
Horizons Engineering at 34 School Street, Littleton, NH 03561.

Each sealed envelope containing a BID must be plainly marked on the outside as BID for Town of Enfield Sewer Improvements and the envelope should bear on the outside the BIDDER's name, address and license number if applicable and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at 34 School Street, Littleton, NH 03561.

All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one copy of the BID form is required.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID SCHEDULE by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve them from fulfilling any of the conditions of the contract.

Each BID must be accompanied by a BID BOND payable to the OWNER in the amount of five percent (5%) of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three lowest responsive BIDDERS. When the AGREEMENT is executed, the bonds of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

A PERFORMANCE BOND and a PAYMENT BOND, each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign BID BONDS or PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the contract is awarded will be required to execute the AGREEMENT and obtain the PAYMENT BOND and PERFORMANCE BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary AGREEMENT and BOND forms. In case of failure of the BIDDER to execute the AGREEMENT, the OWNER may at their option consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable PAYMENT BOND, PERFORMANCE BOND and AGREEMENT signed by the party to whom the AGREEMENT was awarded shall sign the AGREEMENT and return to such party an executed duplicate of the AGREEMENT. Should the OWNER not execute the AGREEMENT within such period, the BIDDER

may by WRITTEN NOTICE withdraw their signed AGREEMENT. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued within ten (10) days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the AGREEMENT without further liability on the part of either party.

The OWNER may make such investigations as Owner deems necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER 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 by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the AGREEMENT and to complete the WORK contemplated therein.

A conditional or qualified BID will **not** be accepted.

Award will be made to the lowest responsive and responsible BIDDER.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to complete any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to their BID.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when requested to do so by the OWNER.

### **MANUFACTURER'S EXPERIENCE**

Wherever it may be written that an equipment manufacturer must have a specified period of experience with their product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide a bond or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure.

### **PROJECT SIGN**

The Contractor shall construct a sign in accordance with the Detail included in these specifications. The sign shall be erected in a location selected by the Engineer or Owner in coordination with NHDES. The Contractor shall maintain the sign throughout the duration of the contract.

### **SAFETY AND HEALTH REGULATIONS**

This project is subject to all the Safety and Health Regulations (CFR 29 Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Contractors shall comply with the requirements of these regulations.

### **NONDISCRIMINATION IN EMPLOYMENT**

Contracts for work under this proposal will obligate the contractors and sub-contractors not to discriminate in employment practices.

### **STATE INSPECTION**

Work performed on this project shall be subject to inspection by representatives of the New Hampshire Department of Environmental Services (NHDES). Such inspection shall in no sense make the State Government a party to this contract, unless said Government is also the Owner, and will in no way interfere with the rights of either party hereunder.

Representatives of NHDES shall be given Right of Access to all portions of the proposed work, including but not limited to actual work site, storage yards, offsite manufacturing and fabricating location and job records.

## **COPIES OF THE CONTRACT**

There shall be at least five (5) executed copies of the Contract to be distributed as follows:

- a) One (1) copy each to the Owner, Engineer and Contractor.
- b) One electronic copy in PDF format to NHDES.
- c) Additional copies as required for other federal or state agencies contributing to or participating in project costs.

## **NON-RESIDENT CONTRACTORS**

The successful bidder, if a corporation established under laws other than the State of New Hampshire, shall file, at the time of the execution of the contract, with the Owner, notice of the name of its resident attorney, appointed as required by the laws of the State of New Hampshire.

The successful bidder, if not a resident of New Hampshire, and not a corporation, shall file, at the time of execution of the contract, with the Owner a written appointment of a resident of the state of New Hampshire, having an office or place of business therein, to be their true and lawful attorney upon whom all lawful processes in any actions or proceedings against them may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any lawful process against them which is served on said attorney shall be of the same legal force and validity as if served on them and that the authority shall continue in force so long as any liability remains outstanding against them in New Hampshire.

The power of attorney shall be filed in the office of the Secretary of State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

A Non-resident Contractor shall be deemed to be:

- a) A person who is not a resident of the State of New Hampshire.
- b) Any partnership that has no member thereof resident of the State of New Hampshire.
- c) Any corporation established under laws other than those of the State of New Hampshire.

## **BIDDERS' QUALIFICATIONS**

No award will be made to any Bidder who cannot meet all of the following requirements:

- A. The Bidder shall not have defaulted nor turned the work over to the bonding company on any contract within three years prior to the bid date.
- B. The Bidder shall maintain a permanent place of business.
- C. The Bidder shall have adequate personnel and equipment to perform the work expeditiously.
- D. The Bidder shall have suitable financial status to meet obligations incidental to the work.
- E. The Bidder shall have appropriate technical experience satisfactory to the Engineer and the Division in the class of work involved.
- F. The Bidder shall be registered with the Secretary of State to do business in New Hampshire.
- G. The Bidder shall have performed to the satisfaction of the Engineer and the Division on previous contracts of a similar nature.
- H. The Bidder shall not have failed to complete previous contracts on time, including approved time extensions.

## **WITHDRAWAL OF BIDS**

Prior to Bid Opening, bids may be withdrawn upon written or telegraphic request of the Bidder provided confirmation of any telegraphic withdrawal over the signature of the Bidder is placed in the mail and postmarked prior to the time set for Bid Opening. Bid documents and security of any Bidder withdrawing their bid in accordance with the foregoing conditions will be returned.

## SRF Contracts

### AMERICAN IRON AND STEEL (AIS) PROVISIONS

The successful bidder on this work is subject to the "**American Iron and Steel (AIS)**" requirements of the CWSRF and DWSRF programs, which require the use of iron and steel products that are produced in the United States.

The **BIDDER'S AMERICAN IRON AND STEEL ACKNOWLEDGEMENT** shall be completed and signed by each Bidder and included with each bid. Additionally, CONTRACTOR shall certify and document to OWNER with each Application for Payment, and upon completion of the project that all iron and steel goods subject to this provision have been produced in the United States.

Bidders shall refer to [PART D - FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS](#) for additional information and guidance on AIS requirements.

### DBE RULE PROGRAM REQUIREMENTS (MBEs and WBEs)

Bidders on this project are required to demonstrate compliance with the US Environmental Protection Agency's MBE/WBE rules in order to be deemed responsive. The existing Fair Share Goals are 2.25% MBE and 8.31% WBE. The MBE/WBE documentation, DBE Subcontractor Utilization Form and DBE Subcontractor Performance Forms shall be submitted with the bid.

The requirements for bidders and contractors are as follows:

State Revolving Fund loan recipients **and their contractors** must comply with the following DBE Rule requirements throughout the SRF loan project period:

- 1) Fair share objectives (MBE/WBE goals).
- 2) Good Faith Efforts.
- 3) Annual Reporting of MBE/WBE accomplishments.
- 4) Contract Administration Requirements.
- 5) Bidders List Requirements.
- 6) Record Keeping.

Bidders shall refer to [PART D - FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS](#) for additional information on MBE/WBE requirements.

### SRF and SRF/ARPA Contracts

Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the GENERAL CONDITIONS.

Bidders shall, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of contract.

Successful bidders shall, if requested, submit a list of all subcontractors who will perform work on the project, and written signed statements from authorized agents of labor pools with which they will or may deal for employees on the work together with supporting information to the effect that such labor pools' practices and policies are in conformity with Executive Order No. 11246; that they will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the contract or, a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish them prior to award of the contract.

Successful bidders must be prepared to comply in all respects with the contract provisions regarding non-discrimination.

### DAVIS-BACON WAGE RATES (Applies to all SRF and SRF/ARPA contracts)

This project is funded in whole or in part by a loan available through NHDES' Clean Water and/or Drinking Water SRF programs and hence is subject to federal Davis-Bacon wage provisions.

All laborers and mechanics employed by contractors or subcontractors on this project shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the U.S. Department of Labor (DOL) in accordance with Subchapter IV of Chapter 31 of Title 40, United States Code.

**A copy of the applicable DOL wage determination(s) is included in Attachment B in [PART D- FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS](#) in these project documents.**

If the applicable wage determination does not provide a rate for a classification of work to be performed, the Contractor must request additional classifications and wage rates to be added in conformance to the contract wage determination after contract award. You can find additional information on [DBA Conformances](#) in the US Department of Labor Learning Center.

See Section D for Davis Bacon Wage Decision

If multiple wage determinations apply, the Contractor shall be responsible for keeping track of all work performed under each wage rate determination. The Contractor is responsible for designating which wage rates are applicable to each employee on each certified payroll, including subcontractor payrolls.

Bidders shall refer to the above-referenced PART D for additional information on Davis-Bacon requirements.

## **SUSPENSION AND DEBARMENT**

Bidders and contractors shall fully comply with Subpart C of 2 C.F.R. Part 180 entitled, "Responsibilities of Participants Regarding Transactions Doing Business With Other Persons," as implemented and supplemented by 2 C.F.R. Part 1532. subrecipient is responsible for ensuring that any lower tier covered transaction, as described in Subpart B of 2 C.F.R. Part 180, entitled "Covered Transactions," and 2 C.F.R. § 1532.220, includes a term or condition requiring compliance with 2 C.F.R. Part 180, Subpart C. Bidders and contractors are responsible for further requiring the inclusion of a similar term and condition in any subsequent lower tier covered transactions. Bidders and contractors acknowledge that failing to disclose the information required under 2 C.F.R. § 180.335 to NHDES may result in the delay or negation of this assistance agreement, or pursuance of administrative remedies, including suspension and debarment. Bidders and contractors may access the System for Award Management (SAM) exclusion list at "[System for Award Management \(SAM\)](#)" database to determine whether an entity or individual is presently excluded or disqualified.

By entering into this agreement, the Bidders and contractors certify that the Bidder and contractor is not debarred or suspended. Furthermore, the Bidder and contractors certify that no part of this contract will be subcontracted to a debarred or suspended person or firm.

Bidders shall refer to [PART D – FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS](#) for additional information on suspension and debarment requirements.

## **PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

This term and condition implements 2 CFR 200.216 and is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020. Bidders/contractors and their subcontractors must comply with the above provision when procuring or obtaining equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system.

Bidders shall refer to [PART D - PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT](#) for additional information on procuring or obtaining equipment, services, or systems using covered telecommunications equipment or services.

## **CIVIL RIGHTS COMPLIANCE**

The sub-grantee, contractor, subcontractor, successor, transferee, and assignee shall comply, and shall include in every contract or agreement funded with these funds this same requirement to comply, with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of, or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with "Limited English Proficiency" in any program or activity receiving federal financial assistance, 42 U.S.C. § 2000d et

seq., as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement.

**ARPA Only Contracts (non-SRF)**

**Bid**

Proposal of \_\_\_\_\_ [company](hereinafter called the "BIDDER", organized and existing under the laws of the State of \_\_\_\_\_ doing business as Corporation, Partnership, or Individual to the \_\_\_\_\_ [owner name](herein after called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK For the construction of \_\_\_\_\_ [project name] in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to their own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to the BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to complete the PROJECT within:

\_\_\_\_\_ calendar days for substantial completion.

\_\_\_\_\_ calendar days for final completion

Liquidated damages will be in the amount of \$ \_\_\_\_\_ for each calendar day of delay from the date established for substantial completion and \$ \_\_\_\_\_ for each calendar day of delay from the date established for final completion, as provided in Section 18 of the General Conditions.

BIDDER acknowledges receipt of the following ADDENDUM:

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_

The Bidder shall state below what works of a similar character to that of the proposed contract they have performed and provide such references as will enable the Owner to judge their experience, skill, and business standing.

All questions must be answered, and the data given must be clear and comprehensive. This statement must be notarized. If necessary, add separate sheets.

Bidder Name:		
Permanent Main Office Address:		
	<i>Street # and name</i>	<i>City/Town State ZIP</i>
When was it organized?	Where incorporated?	
Is the bidder registered with the Secretary of State to do business in NH? <input type="checkbox"/> Yes <input type="checkbox"/> No		
For how many years has your firm engaged in the contracting business under its present name?		
Please list previous firm names and dates if applicable.		
<b>Years</b>	<b>Previous Name</b>	
-		
-		
-		
Contracts on hand, attach a schedule or list showing gross amount of each contract and the approximate anticipated dates of completion.		
Describe the general character of work performed by your company.		
<input type="checkbox"/> Yes    Have you ever failed to complete any work awarded you in the scheduled contract time, including approved time extensions? <input type="checkbox"/> No      If so where and why?		
<input type="checkbox"/> Yes    Have you ever defaulted on a contract? <input type="checkbox"/> No      If so where and why?		
<input type="checkbox"/> Yes    Have you ever had liquidated damages assessed on a contract? <input type="checkbox"/> No      If so where and why?		
List the more important contracts recently executed by your company:		
Recent Contract Name	Approximate Cost	Month/Year Completed
List your major equipment <b>available for this contract:</b> (Attach additional sheets as necessary.)		
List your key personnel <b>available for this contract:</b> (Attach additional sheets as necessary.)		
Staff Name	Role (i.e. Project Superintendent, Foreman)	



List any subcontractors whom you would expect to use for the following (unless this work is to be done by your own organization)
Civil Engineering:
Utility Installation:
Other please describe:
Please list banks with whom you conduct business.
<input type="checkbox"/> Yes <input type="checkbox"/> No      Do you grant the Engineer permission to contact this (these) institutions?

**NOTE:** Bidders may be required to furnish their latest financial statement as part of the award process.

<p>Respectfully Submitted:</p> <p>Signature: _____ Date: _____</p> <p>Printed Name: _____ Title: _____</p> <p>Street # and name _____ City/Town _____ State ZIP _____</p> <p>_____ [Signed Name] Being duly sworn, deposes and says that they are _____ [Position Title] of _____ [Organization] and all the answers to the foregoing questions and all statement contained therein are true and correct.</p> <p style="text-align: center;">Sworn to before me this    day of _____,</p> <p style="text-align: center;">_____, Notary Public</p> <p style="text-align: center;">My Commission Expires _____</p> <p style="text-align: center;">Seal</p>
--

Attest:
BIDDER agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

**NOTE:** BIDS shall include sales tax and all other applicable taxes and fees.

## Bid Schedule

**BASE BID**

\*\*\*\*\*

Item No.	Brief Description; Unit or Lump Sum Price (both words and numbers)	Quantity and Units	Item Price
*****			
1.	General Conditions and Miscellaneous Work, Per Lump Sum:  _____ Dollars And _____ Cents (\$_____)	1 LS	\$ _____
2.	Sewer Manhole Minor Repairs (Brick Replacement, Root Removal, Inspection, Raise to Grade), Per Each:  _____ Dollars And _____ Cents (\$_____)	22 EA	\$ _____
3.	Sewer Main Clean & CCTV Scan (8" & 12" Piping), Per Linear Foot:  _____ Dollars And _____ Cents (\$_____)	1,005 LF	\$ _____
4.	Sewer Main Cured in Place Piping (8" to 18" Piping), Per Linear Foot:		
4A.	(18" Ductile Iron Piping)  _____ Dollars And _____ Cents (\$_____)	325 LF	\$ _____
4B.	(15" Ductile Iron Piping)  _____ Dollars And _____ Cents (\$_____)	450 LF	\$ _____
4C.	(12" Ductile Iron Piping)  _____ Dollars And _____ Cents (\$_____)	445 LF	\$ _____
4D.	(10" PVC Piping)  _____ Dollars And _____ Cents (\$_____)	240 LF	\$ _____
4E.	(8" PVC Piping)  _____ Dollars And _____ Cents (\$_____)	795 LF	\$ _____

4F. (8" Ductile Iron Piping)

\_\_\_\_\_ Dollars  
And \_\_\_\_\_ Cents (\$ \_\_\_\_\_)      160 LF      \$ \_\_\_\_\_

5. Open-Cut 8" Pipe Repair/Replacement (2 Separate Repairs on a single run),  
Per Linear Foot:

\_\_\_\_\_ Dollars  
And \_\_\_\_\_ Cents (\$ \_\_\_\_\_)      20 LF      \$ \_\_\_\_\_

---

**Total Base Bid Price in Words**

Add the following for projects using CWSRF and/or DWSRF funding (not necessary for ARPA Only funded projects):

The BIDDER hereby certifies, by checking the boxes below, that the following documents are included with this bid proposal:

- [DBE Subcontractor Utilization Form NHDES Form #NHDES-W-09-059.](#)
- [DBE Subcontractor Performance Forms NHDES-09-NHDES-W-09-058](#) Submit one form for each DBE subcontractor.
- Bidder's American Iron and Steel acknowledgement.

All of these forms are in the SRF Federal Provisions: [Section D](#) of the front-end documents.

## Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned as \_\_\_\_\_ Principal, and as \_\_\_\_\_ Surety, are hereby held and firmly bound unto \_\_\_\_\_ as OWNER in the penal sum of \_\_\_\_\_ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this \_\_\_ day of \_\_\_\_\_ in the year \_\_\_\_\_.

The condition of the above obligation is such that whereas the Principal has submitted to \_\_\_\_\_ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the \_\_\_\_\_

NOW, THEREFORE,

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

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

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

---

Principal Signature:

Witnessed By:

---

Surety Signature:

Witnessed By:

**IMPORTANT**-Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state of New Hampshire.

NHDES Front End Documents  
Section B: Contract

Section B: Contract

Notice of Award .....	1
Acknowledgement of Notice .....	2
Agreement .....	3
Payment Bond.....	5
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Certificate of Substantial Completion.....	11
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# NOTICE OF AWARD

Dated \_\_\_\_\_

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

ADDRESS: \_\_\_\_\_  
Street Address City/Town State ZIP

Project Number Owner Contract Number

Project : Contract For:

Insert the name of the contract as it appears on the bid documents

You are notified that your bid dated \_\_\_\_\_ for the above contract has been considered. You are the apparent successful bidder and have been awarded a contract for:

(Indicate total Work, alternates or sections of Work awarded)

The Contract Price of your contract is \_\_\_\_\_ dollars (\$ \_\_\_\_\_). \_\_\_\_\_ copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. The same number of sets of the drawings will be delivered separately or otherwise made available to you immediately.

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

1. You must deliver to the OWNER all of the fully executed counterparts of the Agreement including all the Contract Documents. This includes the sets of drawings. Each of the Contract Documents must bear your signature on (the cover) (every) page.
2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Information for Bidders and General Conditions.
3. (List all other conditions of precedent.)

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

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

Within 10 days after receipt of acceptable performance **BOND**, payment **BOND** and agreement signed by the party to whom the Agreement was awarded, the **OWNER** will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

\_\_\_\_\_  
(OWNER)

\_\_\_\_\_  
(Authorized Signature)

\_\_\_\_\_  
(Title)

**ACKNOWLEDGEMENT OF NOTICE**

Receipt of the above NOTICE OF AWARD is hereby acknowledged:

By: \_\_\_\_\_, The \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ by  
\_\_\_\_\_ title \_\_\_\_\_.

Copy to ENGINEER (Use Certified Mail, Return Receipt Requested)



## AGREEMENT

**THIS AGREEMENT**, made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by and between \_\_\_\_\_, hereinafter called "**OWNER**" and doing business as \_\_\_\_\_ (an individual, a partnership or a corporation) hereinafter called "**CONTRACTOR**".

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

1. The **CONTRACTOR** will commence and complete the construction of \_\_\_\_\_.
2. The **CONTRACTOR** will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the **PROJECT** described herein.
3. The **CONTRACTOR** will commence the work required by the **CONTRACT DOCUMENTS** within 7 calendar days after the date of the **NOTICE TO PROCEED** unless the period for completion is extended otherwise by the **CONTRACT DOCUMENTS**. Completion time for the project will be calculated as calendar days from the date specified in the **NOTICE TO PROCEED** as follows:

60calendar days for substantial completion.

90calendar days for final completion.

Liquidated damages will be in the amount of \$200 for each calendar day of delay from the date established for the substantial completion and \$200 for each calendar day of delay from the date established for final completion.

4. The **CONTRACTOR** agrees to perform all of the **WORK** described in the **CONTRACT DOCUMENTS** and comply with the terms therein for the sum of \$\_\_\_\_\_ or as shown in the **BID** schedule.
5. The term "**CONTRACT DOCUMENTS**" means and includes the following:
  - a. ADVERTISEMENT FOR BIDS
  - b. INFORMATION FOR BIDDERS
  - c. BID
  - d. BID BOND
  - e. NOTICE OF AWARD
  - f. AGREEMENT
  - g. PAYMENT BOND
  - h. PERFORMANCE BOND
  - i. CERTIFICATE OF INSURANCE
  - j. NOTICE TO PROCEED
  - k. CHANGE ORDER(S)
  - l. CERTIFICATION OF SUBSTANTIAL COMPLETION
  - m. CERTIFICATION OF FINAL COMPLETION
  - n. CONTRACTOR'S AFFIDAVIT
  - o. CONTRACTOR'S RELEASE
  - p. GENERAL CONDITIONS
  - q. SUPPLEMENTAL GENERAL CONDITIONS
  - r. SPECIAL CONDITIONS
  - s. FEDERAL PROVISIONS, RULES, REGULATIONS AND FORMS
  - t. DRAWINGS prepared by: Horizons Engineering, Inc. numbered \_\_\_\_\_ through \_\_\_\_\_ and dated \_\_\_\_\_, 20\_\_\_\_
  - u. SPECIFICATIONS prepared or issued by: Horizons Engineering, Inc. \_\_\_\_\_ and dated \_\_\_\_\_, 20\_\_\_\_
  - v. ADDENDA

No. \_\_\_\_\_ dated \_\_\_\_\_, 20\_\_\_\_

No. \_\_\_\_\_ dated \_\_\_\_\_, 20\_\_\_\_

No. \_\_\_\_\_ dated \_\_\_\_\_, 20\_\_

No. \_\_\_\_\_ dated \_\_\_\_\_, 20\_\_

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

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

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

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

NAME: \_\_\_\_\_

(SEAL)

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

NAME: \_\_\_\_\_

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

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

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

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

(SEAL)

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

NAME: \_\_\_\_\_

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

## PAYMENT BOND

**KNOW ALL MEN BY THESE PRESENTS:** that

\_\_\_\_\_, (contractor name),  
\_\_\_\_\_, (contractor address), a  
\_\_\_\_\_(corporation partnership, individual), hereinafter called  
Principal, and \_\_\_\_\_, (surety name),  
\_\_\_\_\_, (surety address) herein after called  
surety, are held and firmly bound unto \_\_\_\_\_,  
(owner name), \_\_\_\_\_, (owner address)  
hereinafter called OWNER and unto all persons, firms, and corporations who or which may furnish labor, or who furnish  
materials to perform as described under the contract and to their successors and assigns, in the total aggregate penal  
sum of \_\_\_\_\_dollars, (\$\_\_\_\_\_) in lawful money of the United States, for the payment  
of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns,  
jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION** is such that whereas, the Principal entered into a certain contract with the  
**OWNER**, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part  
hereof for the construction of \_\_\_\_\_.

**NOW, THEREFORE**, if the Principal shall promptly make payment to all persons, firms, and corporations furnishing  
materials for or performing labor in the prosecution of the **WORK** provided for in such contract, and any authorized  
extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke,  
repairs on machinery, equipment and tools, consumed or used in connection with the construction of such **WORK**, and  
for all labor cost incurred in such WORK including that be a subcontractor, and to any mechanic or materialman  
lienholder whether it acquires its lien by operation of State or Federal Law; then this obligation shall be void; otherwise  
to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the subcontractors, and persons, firms, and  
corporations having a direct contract with the PRINCIPAL or its SUBCONTRACTORS.

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

**PROVIDED, FURTHER** that no suit or action shall be commenced hereunder by any claimant: (a) Unless claimant, other  
than one having a direct contract with the PRINCIPAL shall have given written notice to any two of the following: The  
PRINCIPAL, the OWNER, or the SURETY above named within ninety (90) days after such claimant did or performed the  
last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial  
accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work  
or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail,  
postage prepaid, in an envelope addressed to the PRINCIPAL, OWNER, or SURETY, at any place where an office is  
regularly maintained for the transaction business, or served in any manner in which legal process may be served in the  
state in which the aforesaid project is located, save that such service need not be made by a public officer; (b) After the  
expiration of one (1) year following the date on which PRINCIPAL ceased work on said CONTRACT, it being understood,  
however, that if any limitation embodied in the BOND is prohibited by any law controlling the construction hereof, such  
limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

**PROVIDED, FURTHER**, that it is expressly agreed that this BOND shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the contract price more than 20 percent, so as to bind the PRINCIPAL and the SURETY to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this BOND and whether referring to this BOND, the contract or the loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

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

**IN WITNESS WHEREOF**, this instrument is executed in \_\_\_\_\_  
counterparts, each one of which shall be deemed an original this day of \_\_\_\_\_, 20\_\_

**ATTEST:**

BY: \_\_\_\_\_  
(Principal) Secretary

BY: \_\_\_\_\_  
Witness as to Principal  
\_\_\_\_\_  
(ADDRESS)

**ATTEST:**  
BY: \_\_\_\_\_  
Witness to Surety  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(PRINCIPAL)

BY: \_\_\_\_\_  
\_\_\_\_\_  
(ADDRESS)

\_\_\_\_\_  
(SURETY)

BY: \_\_\_\_\_  
(ATTORNEY in FACT)

\_\_\_\_\_  
(ADDRESS)  
\_\_\_\_\_  
\_\_\_\_\_

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

**IMPORTANT:** Surety companies executing **BONDS** must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire.

## PERFORMANCE BOND

**KNOW ALL MEN BY THESE PRESENTS:** that

\_\_\_\_\_, (contractor name),  
\_\_\_\_\_, (contractor address), a  
\_\_\_\_\_(corporation partnership, individual), hereinafter called  
Principal, and \_\_\_\_\_, (surety name),  
\_\_\_\_\_, (surety address) herein after called  
surety, are held and firmly bound unto \_\_\_\_\_, (owner name),  
\_\_\_\_\_, (owner address) hereinafter called  
**OWNER** in the total aggregate penal sum of \_\_\_\_\_ dollars, (\$ \_\_\_\_\_) in lawful money  
of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors,  
administrators, successors, and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION** is such that whereas, the Principal entered into a certain contract with the  
**OWNER**, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part  
hereof for the construction of \_\_\_\_\_.

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

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

**PROVIDED, FURTHER**, that it is expressly agreed that this **BOND** shall be deemed amended automatically and  
immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the  
contract price more than 20 percent, so as to bind the **PRINCIPAL** and the **SURETY** to the full and faithful performance of  
the Contract as so amended. The term "Amendment", wherever used in this **BOND** and whether referring to this **BOND**,  
the contract or the loan Documents shall include any alteration, addition, extension or modification of any character  
whatsoever.

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

**IN WITNESS WHEREOF**, this instrument is executed in \_\_\_\_\_ counterparts, each one of which shall be deemed an original this day of \_\_\_\_\_, 20\_\_

**ATTEST:**

BY: \_\_\_\_\_  
(Principal) Secretary

BY: \_\_\_\_\_  
Witness as to Principal  
\_\_\_\_\_  
(ADDRESS)

**ATTEST:**

BY: \_\_\_\_\_  
Witness to Surety  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(PRINCIPAL)

BY: \_\_\_\_\_  
\_\_\_\_\_  
(ADDRESS)  
\_\_\_\_\_

\_\_\_\_\_  
(SURETY)

BY: \_\_\_\_\_  
(ATTORNEY in FACT)  
\_\_\_\_\_  
(ADDRESS)  
\_\_\_\_\_  
\_\_\_\_\_

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

**IMPORTANT:** Surety companies executing **BONDS** must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of New Hampshire.

**NOTICE TO PROCEED**

Dated \_\_\_\_\_, 20\_\_

TO: \_\_\_\_\_  
(Insert Name of Contractor as it appears in the Bid Documents)

ADDRESS: \_\_\_\_\_

OWNER'S PROJECT NO. \_\_\_\_\_

PROJECT: \_\_\_\_\_

OWNER'S CONTRACT NO. \_\_\_\_\_

CONTRACT FOR: \_\_\_\_\_

You are notified that the Contract Time under the above contract will commence to run on \_\_\_\_\_, 20\_\_\_. By that date, you are to start performing your obligations under the Contract Documents. In accordance with paragraph 3 of the Agreement, the dates of Substantial Completion and Final Completion are \_\_\_\_\_, 20\_\_ and \_\_\_\_\_, 20\_\_\_, respectively.

Before you may start any Work at the site, paragraph 27 of the General Conditions provides that you and Owner must each deliver to the other (with copies to ENGINEER) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents. Also before you may start any Work at the site, you must:

Copy to ENGINEER  
(Use Certified Mail, return receipt Requested)

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

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

(Authorized Representative)

NAME: \_\_\_\_\_

(Title)

**ACKNOWLEDGEMENT OF NOTICE**

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

\_\_\_\_\_  
(Contractor)

This the \_\_\_\_\_, day of 20\_\_, by \_\_\_\_\_

Employee Identification Number: \_\_\_\_\_

## CHANGE ORDER

No. \_\_\_\_\_

PROJECT NAME: _____	DATE OF ISSUANCE: _____
OWNER: _____	OWNER PROJECT NO. _____
OWNER ADDRESS: _____	
Street Name	City/Town
State	ZIP
CONTRACTOR: _____	
CONTRACT FOR: _____	
ENGINEER: _____	ENG. PROJECT NO. _____
ENGINEER ADDRESS: _____	
Street Name	City/Town
State	ZIP

You are directed to make the following changes in the Contract Documents.

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

Purpose of Change Order: \_\_\_\_\_

Justification: \_\_\_\_\_

Attachments: (List documents supporting change)

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIME
Original Contract Price	Original Contract Time days     date
Previous Change Orders	Net change from previous Change Orders days     date
Contract Price prior to this Change Order	Contract Time prior to this Change Order days     date
Net Increase (Decrease) of this Change Order	Net Increase (decrease) this Change Order days     date
Contract Price with all approved Change Orders	Contract Time with all Change Orders days     date

This document will become a supplement to the CONTRACT and all provisions will apply hereto. The attached Contractor's Revised Project Schedule reflects increases or decreases in Contract Time as authorized by this Change Order.

Stipulated price and time adjustment includes all costs and time associated with the above described change. Contractor waives all rights for additional time extension for said change. Contractor and Owner agree that the price(s) and time adjustment(s) stated above are equitable and acceptable to both parties.

RECOMMENDED BY: _____	APPROVED BY: _____	APPROVED BY: _____	APPROVED BY: _____
Engineer	Owner	Contractor	NHDES
Date	Date	Date	Date





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

Executed by the Engineer on

\_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Engineer)

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

CONTRACTOR accepts this Certificate of Substantial Completion on \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Contractor)

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

OWNER accepts this Certificate of Substantial Completion on \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Owner)

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



CERTIFICATE OF FINAL COMPLETION
NHDES CLEAN WATER AND DRINKING WATER
STATE REVOLVING FUND



Owner Project No. \_\_\_\_\_ Engineer Project No. \_\_\_\_\_
Project: \_\_\_\_\_
Owner: \_\_\_\_\_
Contractor: \_\_\_\_\_
Engineer: \_\_\_\_\_
Agreement Date: \_\_\_\_\_
Notice to Proceed Date: \_\_\_\_\_
Contractual Substantial Completion date as modified by change orders: \_\_\_\_\_
Actual Substantial Completion date \_\_\_\_\_
Contractual final completion date as modified by Change Orders \_\_\_\_\_

The work to which this certificate applies has been inspected by authorized representatives of Owner, Contractor, Engineer and NHDES, the punch list has been completed and the work of the contract is hereby declared to be Finally Complete in accordance with the Contract Documents on \_\_\_\_\_ (Date of Final Completion)

This certificate does not constitute an acceptance of any work not in accordance with the Contract Documents nor is it a release of contractor's obligation to complete the work in accordance with the Contract Documents. The warranty for all work completed subsequent to the date of Substantial Completion expires one year from the date of this Final Acceptance.

Executed by Engineer on \_\_\_\_\_, 20\_\_

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

Contractor Accepts this Certificate of Final Completion on \_\_\_\_\_, 20\_\_

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

Owner Accepts this Certificate of Final Completion on \_\_\_\_\_, 20\_\_

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

NHDES Accepts this Certificate of Final Completion on \_\_\_\_\_, 20\_\_

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

**CONTRACTORS AFFIDAVIT**

STATE OF: \_\_\_\_\_

COUNTY OF: \_\_\_\_\_

Before me the undersigned a \_\_\_\_\_ (Notary Public, Justice of the Peace, Alderman) in and for said County and State Personally appeared \_\_\_\_\_ (Individual, partner or duly) who being duly sworn according to law deposes and says that the cost of all the Work, and outstanding claims and indebtedness of whatever nature arising out of the performance of the contract between \_\_\_\_\_ (Owner) and \_\_\_\_\_ (Contractor) of \_\_\_\_\_ (Contractor Address) dated \_\_\_\_\_ for the construction of the \_\_\_\_\_ (Project Name) and necessary appurtenant installations have been paid in full.

\_\_\_\_\_  
(Individual, Partner, or duly authorized representative of corporate contractor)

\_\_\_\_\_  
(Title)

Sworn to and subscribed before me  
this \_\_\_\_ day of \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Notary Public)

## CONTRACTOR'S FINAL RELEASE AND WAIVER OF LIEN

Project Name: \_\_\_\_\_  
Project Address: \_\_\_\_\_  
Street Name \_\_\_\_\_ City/Town \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_  
Owner Name: \_\_\_\_\_  
Contractor Name: \_\_\_\_\_  
Contractor Address: \_\_\_\_\_  
Street Name \_\_\_\_\_ City/Town \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

**TO ALL WHOM IT MAY CONCERN:**

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned Contractor hereby waives, discharges, and releases any and all liens, claims, and rights to liens against the above-mentioned project, and any and all other property owned by or the title to which is in the name of the above-referenced Owner and against any and all funds of the Owner appropriated and available for the construction of said project, and any and all warrants drawn upon or issued against any such funds or monies, which the undersigned Contractor may have or may hereafter acquire or process as a result of the furnishing of labor, materials and/or equipment, and the performance of work by the Contractor on or in connection with said project, whether under and pursuant to the above-mentioned contract between the Contractor and the Owner pertaining to said project or otherwise, and which said liens, claims or rights of lien may arise and exist.

The undersigned further hereby acknowledges that the sum of:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_) constitutes the entire **unpaid** balance due the undersigned in connection with said project whether under said contract or otherwise and that the payment of said sum to the contractor will constitute payment in full and will fully satisfy any and all liens, claims, and demands which the contractor may have or assert against the owner in connection with said contract or project.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_

\_\_\_\_\_  
(Contractor)

Witness to Signature

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

# NHDES Front End Documents Section C: General Conditions

## General Conditions

### Section C: General Conditions

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## General Conditions

### 1. Contract and Contract Documents.

The plans, information for bidders, bids, advertisement for bids, bid payment and performance bonds, agreements, change orders, notice to proceed, specifications and addenda, hereinafter enumerated in the agreement, shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

### 2. Definitions.

- 2.1 "Addenda" means written or graphic instruments issued prior to the execution of the agreement which modify or interpret the Contract Documents, drawings and specifications, by additions, deletions, clarifications or corrections. Such written or graphic instruments will be issued no less than five days before the bid opening.
- 2.2 "Bid" means the offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.
- 2.3 "Bidder" means any person, firm or corporation submitting a bid for the work.
- 2.4 "Bonds" means bid, performance, and payment bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.
- 2.5 "Change Order" means a written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.
- 2.6 "Contract Documents" means the Contract, including any advertisement for bids, information for bidders, bid, bid bond, agreement, payment bond, performance bond, notice of award, notice to proceed, change orders, drawings, specifications and addenda.
- 2.7 "Contract Price" means the total monies payable to the Contractor under the terms and conditions of the Contract Documents.
- 2.8 "Contract Time" means the number of calendar days stated in the Contract Documents for the completion of the work.
- 2.9 "Contractor" means the person, firm or corporation with whom the owner has executed the agreement.
- 2.10 "Division" means the state of New Hampshire Department of Environmental Services, Water Division.
- 2.11 "Drawings" mean the part of the Contract Documents which show the characteristics and scope of the work to be performed and which have been prepared or approved by the engineer.
- 2.12 "Engineer" means the person, firm or corporation named as such in the Contract Documents.
- 2.13 "Field order" means a written order effecting a change in the work not relating to an adjustment in the Contract price or an extension of the Contract time and issued by the engineer to the Contractor during construction.
- 2.14 "Notice of Award" means the written notice of the acceptance of the bid from the owner to the successful Bidder.

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- 2.15 "Notice to Proceed" means the written communication issued by the owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the work.
- 2.16 "Owner" means a public or quasi-public body or authority, corporation, association, partnership, or individual for whom the work is to be performed.
- 2.17 "Plans" means the Contract drawings or exact reproductions thereof which show the scope, character, dimensions and details of the work and which have been prepared or approved by the engineer.
- 2.18 "Project" means the undertaking to be performed as provided in the Contract Documents.
- 2.19 "Resident Project Representative" means the authorized representative of the owner who is assigned to the project site or any part thereof.
- 2.20 "Shop Drawings" means all drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated or installed.
- 2.21 "Special conditions" means revisions or additions to these general conditions, supplemental general conditions or specifications applicable to an individual project.
- 2.22 "Specifications" means a part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.
- 2.23 "Subcontractor" means an individual, firm or corporation having a direct Contract with the Contractor or with any other Subcontractor for the performance of a part of the work at the site.
- 2.24 "Substantial Completion" means that date as certified by the engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the project or specified part can be utilized for the purposes for which it is intended.
- 2.25 "Supplemental General Conditions" means modifications to these general conditions required by a federal agency for participation in the Project and approved by the agency in writing prior to inclusion in the Contract Documents, or such documents that may be imposed by applicable state laws.
- 2.26 "Supplier" means any person or organization who supplies materials or equipment for the work, including that fabricated to a special design, but who does not perform labor at the site.
- 2.27 "Work" means all labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the project.
- 2.28 "Written Notice" means any notice to any party of the agreement relative to any part of this agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the work.

### **3. Additional Instructions and Detail Drawings.**

The Contractor may be furnished additional instructions and detail drawings as necessary to carry out the work included in the Contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof.

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- 4. Shop or Setting Drawings.** Shop or setting drawings shall be in accordance with the following:
- 4.1 The Contractor shall furnish 6 copies of the manufacturer's shop drawings, specific design data as required in the detailed specifications, and technical literature covering all equipment and fabricated materials which he proposes to furnish under this Contract in sufficient detail to indicate full compliance with the specifications. Shop drawings shall indicate the method of installing, the exact layout dimensions of the equipment or materials, including the location, size and details of valves, pipe connections, etc.
  - 4.2 No equipment or materials shall be shipped until the manufacturer's shop drawings and specifications or other identifying data, assuring compliance with these specifications, are approved by the engineer.
  - 4.3 The Contractor shall check and verify all field measurements and shall be responsible for the prompt submission of all shop and working drawings so that there shall be no delay in the work.
  - 4.4 Regardless of corrections made in or approval given to such drawings by the engineer, the Contractor will nevertheless be responsible for the accuracy of such drawings and for their conformity to the plans and specifications. The Contractor shall notify the engineer in writing of any deviations at the time he furnishes such drawings. He shall remain responsible for the accuracy of the drawings showing the deviations but not for the acceptance of the deviations from the original design shown in the plans and specification. Approval by the engineer and the owner of any deviation in material, workmanship or equipment proposed subsequent to approval of the shop drawings or design data, shall be requested in writing by the Contractor.
  - 4.5 When submitted for the engineer's review, shop drawings shall bear the Contractor's certification that he has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents.
- 5. Materials, Services, Facilities and Workmanship** shall be furnished as follows:
- 5.1 Except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.
  - 5.2 Unless otherwise specifically provided for in the specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose.
  - 5.3 The Contractor shall furnish to the engineer for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing together with full information as to type, performance characteristics, and all other pertinent information as required.
  - 5.4 Materials which are specified by reference to the number or symbol of a specific standard, such as an ASTM standard, a federal specification or other similar standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the advertisement for bids, except as limited to type, class or grade, or modified in such reference. The standards referred to shall have full force and effect as though printed therein.
  - 5.5 For equipment or for materials, when requested by the engineer, the Contractor shall submit certificates of compliance from the manufacturer, certifying that the equipment or the materials comply with the requirements of the specifications or the standards.

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- 5.6 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.
- 5.7 Materials, supplies, and equipment shall be in accordance with samples submitted by the Contractor and approved by the engineer.

### **6. Contractor's Title To Materials.**

No material, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the owner. The provisions of this paragraph shall be inserted in all Subcontracts and material Contracts and notice of its provisions shall be given to all persons furnishing materials for the work when formal Contract is entered into for such materials.

### **7. Inspection and Testing of Materials** shall be as follows:

- 7.1 All materials and equipment used in the construction of the project shall be subject to inspection and testing by the engineer in accordance with accepted standards at any and all times during manufacture or during the project construction and at any or all places where such manufacture is carried on.
- 7.2 The Contractor shall furnish promptly upon request by the engineer, all materials required to be tested. All tests made by the engineer shall be performed in such manner and ahead of scheduled installation, as not to delay the work of the Contractor. When required, testing of concrete, masonry, soils, pipe and pipe materials will be made in accordance with provisions in the specifications.
- 7.3 Material required to be tested which is delivered to the job site shall not be incorporated into the work until the tests have been completed and approval or acceptance given in writing by the engineer.
- 7.4 Each sample submitted by the Contractor for testing shall carry an identification label containing such information as is requested by the engineer. It shall also include a statement that the samples are representative of the remaining materials to be used on the project.
- 7.5 Approval of any materials shall be general only and shall not constitute a waiver of the owner's right to demand full compliance with the Contract requirements.
- 7.6 The engineer may, at his own discretion, undertake the inspection of materials at the source. In the event plant inspection is undertaken, the following conditions shall be met:
- a. The engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has Contracted for materials.
  - b. The engineer shall have full entry at all reasonable times to such areas as may concern the manufacture or production of the materials being furnished.

## General Conditions

- c. If required, the Contractor shall arrange for a building for the use of the inspector; such building to be located near the plant, independent of any building used by the material producer, in which to house and use the equipment necessary to carry on the required tests. Cost for such arrangement shall be paid by the owner as a stated allowance in the bid.
  - d. Adequate safety measures shall be provided and maintained at all times.
- 7.7 Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:
- a. The Contractor shall furnish the engineer, without extra cost, all samples required for testing purposes. All sampling and testing including the number and selection of samples shall be determined by the engineer for his own information and use.
  - b. When testing of materials is specified in the appropriate section of the specifications, the cost of the same shall be charged to the owner or Contractor, as detailed in the specifications. However, costs of equipment performance tests shall be borne by the Contractor, as detailed in the appropriate section of the specifications.
  - c. When the Contractor proposes a material, article or component as equal to the ones specified, reasonable tests may, or may not, be required by the engineer. If the engineer requires tests of a proposed equal item, the Contractor will be required to assume all costs of such testing.
  - d. Any material, article or component which fails to pass tests required by the Engineer or by the specifications, will be rejected and shall be removed from the project site. However, if, upon request of the Contractor, retesting or further tests are permitted by the Engineer, the Contractor shall assume all costs related to such retesting or further tests.
  - e. Neither the Owner nor the Engineer will in any way be charged for the manufacturer's costs in supplying certificates of compliance.
- 7.8 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer with the required certificates of inspection, testing or approval.
- 7.9 Inspections, tests, or approvals by the engineer or others shall not relieve the Contractor from obligations to perform the Work in accordance with the requirements of the Contract Documents.
- 8. "Or Equal " Clause, Substitutions and Contractor Options.**
- 8.1 Whenever a material, article, or piece of equipment is identified on the plans or in the specifications by reference to manufacturer's or vendor's names, trade names, catalogue numbers, etc., it is intended merely to establish a standard of quality and performance. Any material, article, or equipment of other manufacturers and vendors, which will perform satisfactorily the duties imposed by the general design, shall be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Engineer, of equal quality and function. The Engineer shall determine equality based on such information, tests, or other supporting data that may be required of the Contractor.
- 8.2 Upon acceptance and approval by the Engineer of an equal product, it shall remain the responsibility of the Contractor to coordinate installation of the item with all other items to be furnished to assure proper fitting together of all items. Similar responsibility applies to items which are left to the Contractor's option. Any

## General Conditions

additional cost of equal items and any additional cost incidental to the coordination and/or fitting together of such items shall be borne by the Contractor at no extra cost to the Owner.

- 8.3 If a specified or equal item is not available to meet the construction schedule, the Contractor may propose a substitute item of less than equal performance and quality. If this substitute is acceptable to the Engineer, any difference in purchase cost or costs incidental to the installation of such item will be negotiated between the parties to the Contract.
- 8.4 Neither equal nor substitute items shall be installed without written approval of the Engineer.
- 8.5 The Contractor shall warrant that if substitutes are approved, no major changes in the function or general design of the Project will result.
- 9. Patents.** Patent information is as follows:
- 9.1 The Contractor shall hold and save the owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the owner, unless otherwise specifically stipulated in the Contract Documents.
- 9.2 License and/or royalty fees for the use of a process used in wastewater plant design which is authorized by the owner for the project, must be reasonable, and paid to the holder of the patent, or his authorized licensee.
- 9.3 If the Contractor uses any design, device or materials in the construction methods for the project covered by patents or copyrights, he shall provide for such use by suitable agreement with the owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, that, without exception, the Contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this Contract, and shall indemnify the Owner for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the construction of the work or after completion of the work.
- 10. Surveys. Surveys of land, property and construction** shall be as follows:
- 10.1 The owner will provide all land surveys and will establish and locate all property lines relating to the project.
- 10.2 For structures, the Engineer will establish and stake out one or more base lines as needed and will establish bench marks in and around the project site for the use of the Contractor and for the Engineer's own reference in checking the work in progress. For structures such as pipelines, the Engineer will establish the location of the pipe, manholes and other appurtenances, and will establish bench marks along the route of the pipeline at intervals for the using of the Contractor and for his own reference in checking the pipe and manhole inverts and other elevations throughout the project. The Contractor shall utilize the lines and bench marks established by the Engineer to set up whatever specific detail controls he may need for establishing location, elevation lines and grades of all structures. All this work is subject to checking, approval, and continuous surveillance by the Engineer to avoid error. The Contractor shall provide the Engineer with a qualified man or men to assist in this checking as needed and on request of the Engineer.
- 10.3 For construction other than pipelines and appurtenances in roadways and cross country, the Contractor shall be responsible for the location and setting lines and grades. The Contractor shall establish the location for pump

## General Conditions

station and wastewater treatment facility structures, associated yard piping including electrical conduits, internal piping and all equipment. Base lines and benchmarks for setting of the lines and grades for the above shall be provided by the Engineer.

10.4 Protection of stakes. The Contractor shall protect and preserve all of the established baseline stakes, bench marks, or other controls placed by the Engineer. Any of these items destroyed or lost through fault of the Contractor will be replaced by the Engineer at the Contractor's expense.

### 11. Contractor's Obligations are as follows:

The Contractor shall and in good workmanlike manner, do and perform all work and furnish and pay for all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this Contract, within the time stated in the proposal in accordance with the plans and drawings covered by this Contract, and any and all supplemental plans and drawings, in accordance with the directions of the Engineer as given from time to time during the progress of the work, whether or not he considers the direction in accordance with the terms of the Contract. He shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract Documents, and shall do, carry on and complete the entire work to the satisfaction of the Engineer and Owner.

Contractor shall carry on the work and adhere to the progress schedule during all disputes, disagreements or unresolved claims with the owner. No work shall be delayed or postponed pending the resolution of any disputes, disagreements, or claims except as the owner and Contractor may otherwise agree in writing.

### 12. Weather Conditions.

In the event of temporary suspension of work, or during inclement weather, or whenever the Engineer shall direct, the Contractor and his Subcontractors shall protect their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or material shall have been damaged or injured by reason of failure on the part of the Contractor or any of his Subcontractors to so protect his work, such materials shall be removed and replaced at the expense of the Contractor.

### 13. Protection of Work and Property shall be provided as follows:

13.1 The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Contract. He shall at all times safely guard and protect his own work, and that of adjacent property, from damage. The Contractor shall replace or make good any such damage, loss or injury unless caused directly by errors contained in the Contract, or by the Owner, or his authorized representatives. The Contractor will notify owners of adjacent utilities when prosecution of the Work may affect them.

13.2 The Contractor shall take all necessary precautions for the safety of employees on the work site, and shall comply with all applicable provisions of federal, state and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the work is being performed. He shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of the workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, trenches and other excavations, and falling materials, and he shall designate a responsible member of his organization on the work, whose duty shall be the prevention of accidents. The name and position

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of any person so designated shall be reported to the Engineer by the Contractor. The person so designated shall be available by phone during nonworking hours.

- 13.3 In case of emergency which threatens loss or injury of property, and/or safety of life, the Contractor is allowed to act, without previous instructions from the Engineer. He shall notify the Engineer immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted in writing to the Engineer for approval.
- 13.4 When the Contractor has not taken action but has notified the Engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer.
- 13.5 The intention is not to relieve the Contractor from acting, but to provide for consultations between Engineer and Contractor in an emergency which permits time for such consultations.
- 13.6 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in Article 17 (extra work and change orders) of the general conditions.

### **14. Inspection of work for conformance with plans and specifications.**

- 14.1 For purposes of inspection and for any other purpose, the Owner, the Engineer, and agents and employees of the Division or of any funding agency may enter upon the work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefore. The Engineer shall be furnished with every facility for ascertaining that the work is in accordance with the requirements and intention of this Contract, even to the extent of uncovering or taking down portions of finished work.
- 14.2 During construction and on its completion, all work shall conform to the location, lines, levels and grades indicated on the drawings or established on the site by the Engineer and shall be built in a workmanlike manner, in accordance with the drawings and specifications and the supplementary directions given from time to time by the Engineer. In no case shall any work which exceeds the requirements of the drawings and specifications be paid for as extra work unless ordered in writing by the Engineer.
- 14.3 Unauthorized work and work not conforming to plans and specifications shall be handled as follows:
  - a. Work considered by the Engineer to be outside of or different from the plans and specifications and done without instruction by the Engineer, or in wrong location, or done without proper lines or levels, may be ordered by the Engineer to be uncovered or dismantled.
  - b. Work done in the absence of the Engineer or his agent may be ordered by the Engineer to be uncovered or dismantled.
  - c. Should the work thus exposed or examined prove satisfactory, the uncovering or dismantling and the replacement of material and rebuilding of the work shall be considered as "Extra Work" to be processed in accordance with article 17.
  - d. Should the work thus exposed or examined prove to be unsatisfactory the uncovering or dismantling and the replacement of material and rebuilding of the work shall be at the expense of the Contractor.

- 15. **Reports, Records and Data** shall be furnished as follows: The Contractor shall submit to the owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as are required by the Contract Documents or as the owner, division or any funding agency may request concerning work performed or to be performed under this Contract.



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- 16. Superintendence by Contractor** shall be furnished as follows: At the site of the work, the Contractor shall employ a competent construction superintendent or foreman who shall have full authority to act for the Contractor. The superintendent or foreman shall have been designated in writing by the Contractor as the Contractor's representative at the site. It is understood that such representative shall be acceptable to the Engineer and shall be the one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll. Such representative shall be present on the site at all times as required to perform adequate supervision and coordination of the Work.
- 17. Extra Work and Change Orders** shall be processed as follows:
- 17.1 The Engineer may at any time by written order and without notice to the sureties require the performance of such extra work or changes in the work as may be found necessary. The amount of compensation to be paid to the Contractor for any extra work so ordered shall be made in accordance with one or more of the following methods in the order of precedence listed below:
- a. A price based on unit prices previously approved; or
  - b. A lump sum price agreed upon between the parties and stipulated in the order for the extra work;
  - c. A price determined by adding 15 percent to the "reasonable cost" of the extra work performed, such "reasonable cost" to be determined by the Engineer in accordance with the following paragraph.
- 17.2 The Engineer shall include the reasonable cost to the Contractor of all materials used, of all labor, both common and skilled, of foreman, trucks, and the fair-market rental rate for all machinery and equipment for the period employed directly on the work. The reasonable cost for extra work shall include the cost to the Contractor of any additional insurance that may be required covering public liability for injury to persons and property, the cost of workmen's compensation insurance, federal social security, and any other costs based on payrolls, and required by law. The cost of extra work shall not include any cost or rental of small tools, buildings, or any portion of the time of the Contractor, his project supervisor or his superintendent, as assessed upon the amount of extra work, these items being considered covered by the 15 percent added to the reasonable cost. The reasonable cost for extra work shall also include the premium cost, if any, for additional bonds and insurance required because of the changes in the work.
- 17.3 In the case of extra work which is done by Subcontractors under the specific Contract, or otherwise if so approved by the Engineer, the 15 percent added to the reasonable cost of the work will be allowed only to the Subcontractor performing the work. On such work an additional 5 percent for reasonable cost will be paid to the Contractor for their work in directing the operations of the Subcontractor, for administrative supervision, and for any overhead costs. If two or more tiers of Subcontractors are involved in the extra work, a maximum of 27 percent of the cost incurred by the Subcontractor actually performing the work will be allowed to be added to the reasonable cost of the work. The 27 percent maximum represents 15 percent added to the reasonable cost of the work allowed by the Subcontractor performing the work, an additional 5 percent allowed to the next tier higher subcontractor and 5 percent allowed to the Contractor for their work in directing the operations of the Subcontractor, for administrative supervision, and for any overhead costs.
- 17.4 The Engineer may authorize minor changes or alterations in the work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These shall be accomplished by a written field order. However, if the Contractor believes that any minor change or alteration authorized by the Engineer entitles him to an increase in the Contract price, he may make a claim therefore as provided in article 21.

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- 18. Time For Completion and Liquidated Damages.** The following paragraphs address time for completion and liquidated damages:
- 18.1 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the Contract of the work to be done hereunder are Essential Conditions of this Contract; and it is further mutually understood and agreed that the work embraced in this Contract shall be commenced on a date to be specified in the "Notice to Proceed."
- 18.2 The Contractor agrees that said work shall be pursued regularly, diligently and continuously at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
- 18.3 If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of Contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the work.
- 18.4 The liquidated damages amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain. Said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be deducted from time to time by the owner from current periodical payments.
- 18.5 It is further agreed that "time is of the essence" of each and every portion of this Contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall "be of the essence." Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner; provided, further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in the completion of the work is due to:
- a. A preference, priority or allocation order duly issued by the government.
  - b. An unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and severe weather.
  - c. Any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article.
- 18.6 The Contractor shall promptly notify the Owner in writing of the causes of the delay. The Owner shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of his decision in the matter.

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### **19. Defective Work.** Defective work shall be processed as follows:

- 19.1 The Contractor shall promptly remove from the premises all materials and work condemned by the Engineer as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear the expense of making good all work of other Contractors which was destroyed or damaged by such removal or replacement.
- 19.2 All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such condemned work and materials within 10 days after receipt of written notice, the Owner may remove them and store the material at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within 10 days time thereafter, the Owner may, upon 10 days written notice, sell such materials at auction or at private sale and shall pay to the Contractor any net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

### **20. Differing Site Conditions.** Claims for differing site conditions shall be processed as follows:

- 20.1 The Contractor shall promptly and before such conditions are disturbed, notify the Engineer in writing of:
- a. Subsurface or latent physical conditions at the site differing materially from those indicated in this Contract; or,
  - b. Unknown physical conditions at the site, differing materially from those ordinarily encountered and generally recognized as inherent in the type of work provided for in this Contract.
- 20.2 The Engineer shall promptly investigate the conditions. If he finds that conditions differ materially and will cause an increase or decrease in the Contractor's cost or the time required to perform any part of the work under this Contract whether or not changed as a result of such conditions, the Engineer will notify the Owner and recommend an equitable adjustment. Contractor and Owner will enter into negotiations via the Engineer to modify the contract in writing.
- 20.3 No claim of the Contractor under this clause shall be allowed unless the Contractor has given proper notice as required in paragraph 20.1 of this clause.
- 20.4 No claim by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this Contract.

### **21. Claims For Extra Cost.** Claims for extra cost shall be processed as follows:

- 21.1 No claim for extra work or cost shall be allowed unless the same was done pursuant to a written order by the Engineer, approved by the Owner and the claim presented for payment with the first estimate after the changed or extra work is done. When work is performed under the terms of article 17, the Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost when requested by the Owner and shall allow the Owner access to accounts relating thereto.
- 21.2 If the Contractor claims that any instructions by drawings or similar documents issued after the date of the Contract involve extra cost under the Contract, he shall give the Engineer written notice after the receipt of such instruction and before proceeding to execute the work, except in an emergency which threatens life or property, then the procedure shall be as provided for under article 17, "Extra Work & Change Orders." No claim shall be valid unless so made.

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### 22. Right of Owner to Terminate Contract.

- 22.1 In the event that any of the provisions of this Contract are violated by the Contractor, or by any of his Subcontractors, the Owner may serve written notice upon the Contractor and the surety of its intention to terminate the Contract, and unless within 10 days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement for correction be made, the Contract shall, upon the expiration of said 10 days cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the surety and the Contractor and the surety shall have the right to take over and perform the Contract; provided, however, that if the surety does not commence performance thereof within 10 days from the date of the mailing to such surety of notice of termination, the Owner may take over the work and prosecute the same to completion by Contract or by force account for the account and at the expense of the Contractor and the Contractor and his surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.
- 22.2 If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should refuse or should fail, except in cases for which extensions of time are provided, to supply enough skilled workmen or materials, or if he should fail to make payments to Subcontractors or for material or labor, so as to affect the progress of the work, or be guilty of a violation of the Contract, then the Owner, upon the written notice of the Engineer that sufficient cause exists to justify such action may, without prejudice to any other right or remedy and after giving the Contractor and his surety 7 days' written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, equipment and other facilities installed on the work and paid for by the Owner, and finish the work by whatever method he may deem expedient. In the case of termination of this Contract before completion from any cause whatever, the Contractor, if notified to do so by the Owner, shall promptly remove any part or all of his equipment and supplies at the expense of the Contractor. If such expense exceeds such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be approved by the Engineer.
- 22.3 Where the Contract has been terminated by the Owner, said termination shall not affect or terminate any of the rights of the Owner as against the Contractor or his surety then existing or which may thereafter accrue because of such default. Any retention or payment of monies by the Owner due the Contractor under the terms of the Contract, shall not release the Contractor or his surety from liability for his default.
- 22.4 After ten (10) days from delivery of a Written Notice to the Contractor and the Engineer, the Owner may, without cause and without prejudice to any other remedy, elect to abandon the Project and terminate the Contract. In such case the Contractor shall be paid for all Work executed and any expense sustained plus reasonable profit.
- 22.5 If through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days after approved by the engineer, or the Owner fails to pay the Contractor substantially the sum approved by the Engineer or awarded by arbitrators within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) days from delivery of a Written Notice to the Owner and the Engineer terminate the Contract and recover from the Owner payment for all Work executed and all expenses sustained. In addition and in lieu of terminating the Contract, if the Engineer has failed to act on a request for payment or if the Owner has failed to make any payment as aforesaid, the Contractor may upon ten (10) days written notice to the Owner and the Engineer stop the Work until paid all amounts then due, in which event and

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upon resumption of the Work Change Orders shall be issued for adjusting the Contract Price or Extending the Contract Time or both to compensate for the costs and delays attributable to the stoppage of the work.

22.6 If the performance of all or any portion of the Work is suspended, delayed, or interrupted as a result of failure of the Owner or Engineer to act within the time specified in the Contract Documents, or if no time is specified, within a reasonable time, an adjustment in the Contract Price or an extension of the Contract Time, or both, shall be made by Change Order to compensate the Contractor for the costs and delays necessarily caused by the failure of the Owner or Engineer.

**23. Construction Schedule and Periodic Estimates** shall provide for the following:

23.1 Before starting the work or upon request by the Engineer during its progress, the Contractor shall submit to the Engineer a work plan showing construction methods and the various steps he intends to take in completing the work.

23.2 Before the first partial payment is made, the Contractor shall prepare and submit to the Engineer:

- a. A written schedule fixing the dates for submission of drawings; and
- b. A written schedule fixing the respective dates for the start and completion of segments of the work. Each such schedule shall be subject to review and change during the progress of the work.
- c. Respective dates for submission of Shop Drawings and for the beginning of manufacture, the testing, and the installation of materials, supplies, and equipment.
- d. A schedule of payments that the Contractor anticipates will be earned during the course of the Work.

**24. Payments to Contractor.** Payments to the Contractor shall be made as follows:

24.1 Progress payments. The Owner will once each month make a progress payment to the Contractor on the basis of an estimate of the total amount of work done to the time of the estimate and its value as prepared by the Contractor and approved by the Engineer.

24.2 Retainage by Owner. The Owner will retain a portion of the progress payment, each month, in accordance with the following procedures:

- a. The Owner will establish an escrow account in the bank of the Owner's choosing. The account will be established such that interest on the principal will be paid to the Contractor. The principal will be the accumulated retainage paid into the account by the Owner. The principal will be held by the bank, available only to the Owner, until termination of the Contract.
- b. Until the work is 50% complete, as determined by the Engineer, retainage shall be 10% of the monthly payments claimed. The computed amount of retainage will be deposited in the escrow account established above.
- c. After the work is 50% complete, and provided the Contractor has satisfied the Engineer in quality and timeliness of the work, and provided further that there is no specific cause for withholding additional retainage no further amount will be withheld. The escrow account will remain at the same balance throughout the remainder of the project, unless drawn upon by the Owner in accordance with articles 19, 22, and 56.
- d. Upon substantial or final completion (as defined in article 25), the amount of retainage will be reduced to 2% of the total Contract Price plus an additional retainage based on the Engineer's estimate of the fair value of

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the punch list items and the cost of completing and/or correcting such items of work, with specified amounts for each incomplete or defective item of work. As these items are completed or corrected, they shall be paid for out of the retainage until the entire project is declared completed (See article 25). The final 2% retainage shall be held during the one-year warranty period and released only after the Owner has accepted the project.

- 24.3 In reviewing monthly estimates for payments of the value of work done, the Engineer may accept in the estimate, prior to subtracting the retainage, the delivered cost of certain equipment and nonperishable material which have been delivered to the site or off-site location and which are properly stored and protected from damage. With the estimate, the Contractor shall submit to the Engineer invoices as evidence that the material has been delivered to the site. Prior to submitting the next monthly estimate, the Contractor shall provide the Engineer with paid invoices or other evidence that the materials have been paid for. If the Contractor fails to submit such evidence, the Engineer may then subtract the value of such materials or equipment for which the Owner has previously paid, from the next monthly estimate. The type of equipment and material eligible for payment prior to being incorporated in the work will be at the Engineer's discretion. Material and equipment made specifically for the subject job will be eligible for payment.
- 24.4 All material and work for which partial payments have been made shall thereupon become the sole property of the Owner. This provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or for the restoration of any damaged work, or as a waiver of the right of the Owner to require compliance with all of the terms of the Contract.
- 24.5 Owner's right to withhold payments and make application. The Contractor agrees that he will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts, equipment, power, tools and all supplies, including commissary, incurred in the furtherance of the performance of this Contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all claims of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails to do so, then the Owner may, upon written notice to the Contractor either pay unpaid bills of which the Owner has written notice directly, or withhold from the Contractor's unpaid compensation a sum of money to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged. Payment to the Contractor shall then be resumed in accordance with the terms of this Contract but in no event shall the above provisions be construed to impose any obligations upon the Owner to either the Contractor or his surety or any third party. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as payment made under Contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.
- 24.6 If the Owner fails to make payment forty-five (45) days after approval by the Engineer, in addition to other remedies available to the Contractor, there shall be added to each such payment interest at an annual rate of 10% commencing on the first day after said payment is due and continuing until the payment is received by the Contractor.
- 25. Acceptance and Final Payment** provisions shall be as follows:
- 25.1 Substantial completion and payment.
- a. Substantial completion shall be that point, as certified by the Engineer, at which the Contract or specified part thereof, has been completed to the extent that the Owner may occupy and/or make use of the work

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performed for the purposes for which it was intended. Upon substantial completion there may be minor items, such as seeding, landscaping, etc., yet to be completed or items of work to be corrected.

- b. Upon receipt of written notice from the Contractor that the work is substantially complete, the Engineer shall promptly make an inspection, and when he finds the work complies with the terms of the Contract and the Contract is substantially completed, he will issue a signed and dated certificate, and a list of all items to be completed or corrected, stating that the work required by this Contract has been substantially completed and is accepted by him.
  - c. Upon substantial completion, the entire balance due and payable to the Contractor less 2 percent of the Contract Price, and less a retention based on the Engineer's estimate of the fair value for the cost of completing or correcting listed items of work with specified amounts for each incomplete or defective item of work shall be made.
  - d. The general guarantee period for the work shall begin on the date certified by the Engineer that the work is substantially completed.
- 25.2 Final completion shall be that point at which all work has been completed and all defective work has been corrected. Unless the Engineer has issued a certificate of substantial completion, the general guarantee period shall begin upon certification by the Engineer of final completion.
- 25.3 At the end of the general guarantee period for the entire Contract which has been certified finally completed or substantially completed, the Owner, through the Engineer, shall make a guarantee inspection of all or portions of the work. When it is found that the work is satisfactory and that no work has become defective under the terms of the Contract, the Owner will accept the entire project and make final payment, including the reimbursement of monies retained pursuant to the guarantee period.
- 25.4 If the guarantee inspection discloses any work as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of such work, and the Contractor shall immediately execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the guarantee inspection, provided the work has been satisfactorily completed.
- 25.5 Before issuance of final payment, the Contractor shall certify in writing to the Engineer that all payrolls, material bills, and other indebtedness connected with the work have been paid or otherwise satisfied; except that in case of disputed indebtedness or liens, if the Contract does not include a payment bond, the Contractor may submit in lieu of certification of payment a surety bond in the amount of the disputed indebtedness or liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the Owner may be compelled to pay upon adjudication.
- 25.6 If upon substantial completion, full completion is delayed through no fault of the Contractor, and the Engineer so certifies, the Owner may, upon certificate of the Engineer, and without termination of the Contract, make payment of the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.
- 25.7 The acceptance by the Contractor of final payment shall release the Owner from all claims and all liability to the Contractor for all things relating to this work and for every act and neglect of the Owner and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations of the performance and payment bond under this Contract.

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**26. Payments by Contractor.** The Contractor shall pay the costs:

- 26.1 For all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered;
- 26.2 For all materials, tools, and other expendable equipment to the extent of 90 percent of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the work and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used; and
- 26.3 To each of his Subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his Subcontractors to the extent of each Subcontractor's interest therein.

**27. Insurance.** The Contractor and any Subcontractor shall obtain all the insurance required under this article and such insurance shall be approved by the Owner.

- 27.1 The Contractor and all Subcontractors shall procure and shall maintain during the life of this Contract workmen's compensation insurance as required by applicable state law. The Contractor shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance.

Limits of Liability: \$100,000 each accident;  
\$500,000 disease - policy limit;  
\$100,000 disease - each employee.

- 27.2 The Contractor shall procure and shall maintain during the life of this Contract Commercial General liability insurance to include Contractual liability, explosion, collapse and underground coverages.

Limits of liability: \$1,000,000 each occurrence bodily injury and property damage;  
\$2,000,000 general aggregate-include per project aggregate endorsement;  
\$2,000,000 products/completed operations aggregate.

If blasting or demolition or both is required by the Contract, the Contractor or Subcontractor shall obtain the respective coverage and shall furnish the Engineer a certificate of insurance evidencing the required coverages prior to commencement of any operations involving blasting or demolition or both.

- 27.3 The Contractor shall procure and shall maintain during the life of this Contract comprehensive automobile liability insurance to include all motor vehicles including owned, hired, borrowed and non-owned vehicles. Limits of liability: \$1,000,000 combined single limit for bodily injury and property damage.

- 27.4 The Contractor shall either:

a. Require each of his Subcontractors to procure and to maintain during the life of his subcontract commercial general liability insurance and comprehensive automobile liability insurance of the type and in the amounts specified in articles 27.2 and 27.3; or

b. Insure the activities of his Subcontractors in his policy.

- 27.5 The required insurance shall provide adequate protection for the Contractor and his Subcontractors, respectively, against damage claims which may arise from work under this Contract, whether such work be by the insured or by anyone employed by him and also against any of the special hazards which may be encountered in the performance of this Contract.



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- 27.6 The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such insurance shall not be canceled or materially altered, except after 10 days written notice has been received by the Owner.
- 27.7 For builder's risk insurance (fire and extended coverage) and until the work is completed and accepted by the Owner, the Contractor is required to maintain builder's risk type insurance on a 100 percent completed value basis on the insurable portion of the work for the benefit of the Owner, the Contractor, and Subcontractors as their interests may appear.
- 27.8 The Contractor shall take out and furnish to the Owner and maintain during the life of this Contract, complete Owner's protective liability insurance.
- Limits of Liability: \$1,000,000 each occurrence;  
\$2,000,000 aggregate.
28. **Contract Security.** The Contractor shall within ten (10) days after the receipt of the Notice of Award furnish the Owner with a performance bond and a payment bond in penal sums equal to the amount of the Contract price conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the Work provided by the Contract Documents. Such Bonds shall be executed by the Contractor and a corporate bonding company licensed to transact business in the state in which the Work is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these Bonds shall be borne by the Contractor.
29. **Additional or Substitute Bond.** If at any time a surety on any such Bond is declared as bankrupt or loses its right to do business in the state in which the Work is to be performed, or is removed from the list of Surety Companies accepted on Federal Bonds, the Contractor shall within ten (10) days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond to the Owner.
30. **Assignments.** The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this Contract.
31. **Mutual Responsibility of Contractors.** If, through acts of neglect on the part of the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work site, the Contractor agrees to settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractors will so settle. If such other Contractor or Subcontractors shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

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### **32. Subcontracting.** When subcontracting, the Contractor:

- 32.1 May utilize the services of specialty Subcontractors on those parts of the work which, under usual Contracting practices, are performed by specialty Subcontractors.
- 32.2 Shall be as fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- 32.3 Shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the work of Subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the Contract Documents.
- 32.4 Shall not create any Contractual relation between any Subcontractor and the Owner.
- 32.5 Shall not award Work to Subcontractor(s), in excess of fifty percent (50%) of the Contract Price, without prior written approval of the Owner.

### **33. Authority of the Engineer.** In performing his duties, the Engineer or his representative shall:

- 33.1 Have the authority to suspend the work in whole or in part for such periods as he may deem necessary due to the failure of the Contractor to carry out provisions of the Contract or for failure of the Contractor to suspend work in weather conditions considered by the Engineer to be unsuitable for the prosecution of the work. The Engineer shall give all orders and directions under this Contract, relative to the execution of the work. The Engineer shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this Contract and shall decide all questions which may arise in relation to the work. The Engineer's estimates and decisions shall be final and conclusive, except as otherwise provided. In case any question shall arise between the parties hereto relative to said Contract or specifications, the determination or decision of the Engineer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this Contract affected to any extent by such question. The Engineer shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found unclear. Any differences or conflicts in regard to their work which may arise between the Contractor under this Contract and other Contractors performing work for the Owner shall be adjusted and determined by the Engineer.
  - a. The purpose of the above article is not in any way to relieve the Contractor of his responsibilities for the safety of workmen or general public in the execution of the work. Attention is drawn to Article 13 of these Conditions which refers to the safety obligations of the Contractor.
  - b. The Engineer, acting on behalf of the Owner, has the authority to enforce corrective action for work not in accordance with the specifications.
  - c. In addition, the Engineer, acting on behalf of the Owner, is to ensure that the work is in accordance with the Contract Documents. He is not held responsible, however, for the methods of construction, sequences, schedules and procedures in the execution of the work. The Engineer does have the opportunity under 33.1 to reject the method of construction, work plan schedule, procedures, as he thinks appropriate.
- 33.2 Appoint assistants and representatives as he desires, and they shall be granted full access to the work under the Contract. They have the authority to give directions pertaining to the work, to approve or reject materials, to suspend any work that is being improperly performed, to make measurements of quantities, to keep records of

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costs, and otherwise represent the Engineer in all matters except as provided below. The Contractor may, however, appeal from their decision to the Engineer himself, but any work done pending its resolution is at the Contractor's own risk. Except as permitted and instructed by the Engineer, the assistants and representatives are not authorized to revoke, alter, enlarge, relax, or release any requirements of these specifications, nor to issue instructions contrary to the plans and specifications. They are not authorized to act as superintendents or foremen for the Contractor, or to interfere with the management of the work by the Contractor. Any advice which the assistants or representatives of the Engineer may give the Contractor shall not be construed as binding the Engineer or the Owner in any way, nor as releasing the Contractor from the fulfillment of the terms of the Contract. All transactions between the Contractor and the representatives of the Engineer which are liable to protest or where payments are involved shall be made in writing.

- 34. Stated Allowances.** The Contractor shall include in his proposal for costs of materials not shown in his bid under "cash allowances" or "allowed materials," any cash allowances stated in the supplemental general conditions or other Contract Documents. The Contractor shall purchase the "allowed materials" as directed by the Owner on the basis of the lowest and best bid of at least 3 competitive bids. If the actual price for purchasing the "allowed materials" is more or less than the "cash allowance," the Contract price shall be adjusted accordingly. The adjustment in Contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "allowed materials" shall be included in the applicable sections of the Contract specifications covering this work.
- 35. Use of Premises, Removal of Debris, Sanitary Conditions.** In the use of premises or removal of debris, the Contractor expressly undertakes at his own expense: to take every precaution against injuries to persons or damage to property; to maintain sanitary conditions; to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not interfere with the progress of his work or the work of any other Contractors; to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work; to clean up frequently all refuse, rubbish, scrap materials and debris caused by his operations, to the end that at all times the site of the work shall present an orderly and workmanlike appearance; before final payment to remove all surplus material falsework, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in an orderly condition; to effect all cutting, fitting or patching of his work required to make the same conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other Contractor; to provide and maintain in a sanitary condition such toilet accommodations for the use of his employees as may be necessary to comply with the requirements of the state and local boards of health, or of other bodies or authorities having jurisdiction.
- 36. Quantities of Estimate.** Wherever the estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of the documents including the proposal, they are given for use in comparing bids and the right is specifically reserved except as herein otherwise specifically limited, to increase or decrease them as may be deemed reasonably necessary by the Owner to complete the work contemplated by this Contract, and such increase or decrease shall in no way invalidate this Contract, nor shall any such increase or decrease give cause for claims or liability for damages. Such increases or decreases shall not exceed 25 percent of the estimated quantities of work. An increase or decrease in quantities for subsurface materials (e.g. ledge, unsuitable backfill), which overrun or underrun by 25% or more of the bid quantity may be the basis for a Contract price adjustment, at the rate of a negotiated adjusted unit rate. Negotiated unit price rates shall be equitable and shall take into account, but not be limited to the following factors; bid unit rate, distribution of rates and bid balance, and the scope of work as affected by the changed quantities. Claims for extra work resulting from changed quantities shall be processed under article 21.

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- 37. Lands and Rights-of-Way.** Acquisition and usage of lands and rights-of-way shall be as follows:
- 37.1 Prior to issuing the Notice to Proceed, the Owner shall legally obtain all lands and rights-of-way necessary for carrying out and completing the work to be performed under this Contract.
  - 37.2 The Contractor shall not (except after written consent from the Owner) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the Owner. A copy of the written consent shall be given to the Engineer.
  - 37.3 The Owner shall provide to the Contractor information which delineates and describes the lands owned and the rights-of-way acquired.
  - 37.4 The Contractor shall provide at its own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.
- 38. General Guarantee.** With reference to warranties, neither the final certificate of payment nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by the Owner, shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which appear within the warranty period one year or longer if required by the Contract, from the certified date of completion or substantial completion of the work. The Owner will give notice of observed defects within two working days of their discovery.
- 39. Errors and Inconsistencies.** With reference to errors and inconsistency in Contract Documents, any provisions in any of the Contract Documents which may be in conflict with the paragraphs in these general conditions shall be subject to the following order of precedence for interpretation:
- 39.1 Drawings will govern technical specifications.
  - 39.2 General conditions will govern drawings and technical specifications.
  - 39.3 Supplemental general conditions will govern general conditions, drawings and technical specifications.
  - 39.4 Special conditions will govern supplemental general conditions, general conditions, drawings and technical specifications.
  - 39.5 The Contractor shall take no advantage of any apparent error or omission in the plans or specifications. In the event the Contractor discovers such an error or omission, he shall notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.
  - 39.6 Figure dimensions on Drawings shall govern over general drawings.
- 40. Notice and Service Thereof.** Any notice to the Contractor from the Owner relative to any part of this Contract will be in writing and will be considered delivered and the service completed, when said notice is mailed, by certified registered mail, to the Contractor at his last given address, or delivered in person to the Contractor or his authorized representative on the work.
- 41. Required Provisions Deemed Inserted.** Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not correctly

## General Conditions

inserted (example; miswording, etc.), then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

- 42. Protection of Lives and Health.** The work under this Contract is subject to the safety and health regulations (CRF 29, part 1926, and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Contractors are urged to become familiar with the requirements of these regulations.
- 43. OSHA Construction Safety Program.**
- 43.1 Pursuant to NHRSA 277:5-a, the Contractor shall provide an Occupational Health and Safety Administration (OSHA) 10-hour construction safety program for its on-site employees. All employees are required to complete the program prior to beginning work. The training program shall utilize an OSHA-approved curriculum. Graduates shall receive a card from OSHA certifying the successful completion of the training program.
- 43.2 Any employee required to complete the OSHA 10-hour construction safety program, and who cannot within 15 days provide documentation of completion of such program, shall be subject to removal from the job site.
- 43.3 The following individuals are exempt from the requirements of the 10-hour construction safety program: law enforcement officers involved with traffic control or jobsite security; flagging personnel who have completed the training required by the Department of Transportation; all relevant federal, state and municipal government employees and inspectors; and all individuals who are not considered to be on the site of work under the federal Davis-Bacon Act, including, but not limited to, construction and non-construction delivery personnel and non-trade personnel.
- 44. Equal Employment Opportunity.** Under equal employment opportunity requirements and during the performance of this Contract the Contractor agrees to the following:
- 44.1 The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, national origin, or sex. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, national origin, or sex. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- 44.2 The Contractor will in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment, without regard to race, creed, color, national origin, or sex.
- 44.3 The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract or understanding, a notice to be provided advising the labor union or worker's representative of the Contractor's commitment under section 202 of executive order no. 11246 of September 24, 1965, and 11375 of October, 13, 1967, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 44.4 The Contractor will comply with all provisions of executive orders no. 11246 and 11375.
- 44.5 The Contractor will furnish all information and reports required by executive orders no. 11246 and 11375.

## General Conditions

- 44.6 In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part by the Owner or the Department of Labor and the Contractor may be declared ineligible for further government Contracts or federally-assisted construction, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction by the Department of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.
- 44.7 A breach of this article may be grounds for termination of this Contract and for debarment as provided in 29 CFR 5.6.
- 45. Interest of Federal, State or Local Officials.** No federal, state or local official shall be admitted to any share or part of this Contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.
- 46. Other Prohibited Interests.** No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, Engineering, inspection, construction or material supply Contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part hereof. No officer, employee, architect, attorney, Engineer or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply Contract, subcontract, insurance Contract, or any other Contract pertaining to the project.
- 47. Use and Occupancy Prior to Acceptance.** Use and occupancy of a portion or unit of the project, upon completion of that portion or unit, and before substantial completion of the project, shall be a condition of this Contract with the following provisions:
- 47.1 The Owner will make his request for use or occupancy to the Contractor in writing.
- 47.2 There must be no significant interference with the Contractor's work or performance of duties under the Contract.
- 47.3 The Engineer, upon request of the Owner and agreement by the Contractor, will make an inspection of the complete part of the work to confirm its status of completion.
- 47.4 Consent of the surety and endorsement of the insurance carrier must be obtained prior to use and/or occupancy by the Owner. Also, prior to occupancy, the Owner will secure the required insurance coverage on the building.
- 47.5 The Owner will have the right to exclude the Contractor from the subject portion of the project after the date of occupancy but will allow the Contractor reasonable access to complete or correct items.
- 47.6 The warranty period shall begin upon substantial completion.
- 48. Suspension of Work.** The Owner may, at any time and without cause, suspend the work or any portion thereof for a period of not more than 90 days by notice in writing to the Contractor and the Engineer. The Owner shall fix the date on which work shall be resumed. The Contractor will be allowed an increase in the Contract price or an extension of the Contract time, or both, directly attributable to any suspension if he makes a claim therefore as provided in articles 17 and 21.

## General Conditions

49. [Reserved]

50. [Reserved]

51. [Reserved]

52. **Project Sign.** Furnish and erect a sign at the project site to identify the project and to indicate that the State Government is participating in the development of the project. Place the sign in a prominent location as directed by the Engineer. Do not place or allow the placement of other advertising signboards at the project site or along rights-of-way furnished for the project work. See Exhibit 1 for details of construction.

53. [Reserved]

54. **Public Convenience and Traffic Control** requirements:

54.1 The Contractor shall at all times so conduct his work as to assure minimal obstruction to traffic. The safety and convenience of the general public and the residents along the work site route and the protection of property shall be provided for by the Contractor. The Contractor shall be responsible for timely notification to local residents before causing any interruptions of their access.

54.2 Fire hydrants and water holes for fire protection on or adjacent to the work site shall be kept accessible to fire apparatus at all times, and no obstructions shall be placed within 10 feet of any such facility. No footways, gutters, drain inlets, or portions of highways adjoining the work site shall be obstructed. In the event that all or part of a roadway is officially closed to traffic during construction, the Contractor shall provide and maintain safe and adequate traffic accessibility, satisfactory to the Engineer, for residences and businesses along and adjacent to the roadway so closed.

54.3 When the maintenance of traffic is considered by the Engineer to be minimal, the Contract may not show this work as a pay item. In such cases, the Contractor shall bear all expense of maintaining traffic over the sections of road undergoing improvement and of constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary, without direct reimbursement.

55. **Pre-Construction Conference.** The Contractor shall not commence work until a pre-construction conference has been held at which representatives of the Contractor, Engineer, Division and Owner are present. The pre-construction conference shall be scheduled by the Engineer.

56. **Maintenance During Construction.**

56.1 The Contractor shall maintain the work during construction and until it is accepted by the Owner. This maintenance shall be continuous and effective work prosecuted day by day, with adequate equipment and forces, to the end that roads or structures are kept in satisfactory condition at all times.

56.2 All cost of maintenance during construction and before the work is accepted by the Owner shall be included in the unit prices bid on the various pay items and the Contractor shall not be paid an additional amount for such maintenance.

56.3 If the Contractor, at any time, fails to comply with the provisions above, the Engineer may direct the Contractor to do so. If the Contractor fails to remedy unsatisfactory maintenance within the time specified by the Engineer, the Engineer may immediately cause the project to be maintained and the entire cost of this maintenance will be deducted from money to become due the Contractor on this Contract.

## General Conditions

### 57. Cooperation with Utilities.

- 57.1 The Owner will notify all utility companies, all pipe line owners, or other parties affected, and have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction made as soon as practicable.
- 57.2 Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners of such utilities at their expense, except as may otherwise be provided for in the special conditions or as noted on the plans.
- 57.3 It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and as evident on the site, and that no additional compensation will be allowed for any delays, inconvenience, damage sustained by him due to any interference from such utility appurtenances or the operation of moving them.
- 57.4 The Contractor shall cooperate with the Owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of rearrangements may be reduced to a minimum, and that services rendered by those parties will be minimal.
- 57.5 In the event of interruption to a water or utility service as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with said authority in the restoration of services. If water service is interrupted, repair work shall be continuous until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority. If any utility service is interrupted for more than 4 hours, the Contractor shall make provisions for temporary service at his own expense until service is resumed.

### 58. Work Performed at Night and on Sundays and Holidays shall comply with the following:

- 58.1 No work will be permitted at night or on Sundays or holidays except as approved in writing by the Engineer, and provided such work is not in violation of a local ordinance. When working at night, the Contractor shall provide flood lighting sufficient to insure the same quality of workmanship and the same conditions regarding safety as would be achieved in daylight.
- 58.2 Whenever Memorial Day or Fourth-of-July is observed on a Friday or a Monday and during the weekend of Labor Day, the Contractor may be required to suspend work for the 3 calendar days. Prior to the close of work, the work site shall be placed in a condition acceptable to the Engineer for the comfort and safety of the traveling public. An arrangement shall be made for responsible personnel acceptable to the Engineer to maintain the project in the above conditions.

### 59. Laws to be Observed. With reference to laws that shall be observed:

- 59.1 The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations, and all orders and decrees of tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the state and its representatives 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.



## General Conditions

### 59.2 Indemnification

The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses, and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employees of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by disability benefit or other employee benefit acts.

The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications.

### **60. Permits.** Permits to be obtained by the Contractor shall be in accordance with the following:

- 60.1 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be obtained and paid for by the Contractor. Permits, licenses and easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the Owner. Permits may include:
- a. New Hampshire Department of Transportation Highway Trench Permits.
  - b. RSA 485-A:17 and 483-A N.H. DES Wetlands Bureau Dredge and Fill Permit.
  - c. RSA 485-A:17 - N.H. DES Site Specific Permit (Water Quality)
  - d. RSA 149-M:10 N.H. DES Solid Waste Management Bureau - disposal of construction debris and/or demolition waste.
  - e. N.H. Department of Environmental Services Air Resources Division (burning permits).
  - f. Other permits, as required by State and Local laws and ordinances.
  - g. Notice of intent for coverage under EPA's General NPDES Permit for construction dewatering activities.

### **61. Control of Pollution due to construction** shall comply with the following:

- 61.1 During construction, the Contractor shall take precautions sufficient to avoid the leaching or runoff of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride and any other polluting materials which are unsightly or which may be harmful to humans, fish, or other life, into groundwaters and surface waters of the State.
- 61.2 In waters used for public water supply or used for trout, salmon, or other game or forage fish spawning or nursery, control measures must be adequate to assure that turbidity in the receiving water will be increased not more than 10 standard turbidity units (s.t.u.) in the absence of other more restrictive locally-established limitations, unless otherwise permitted by the Division. In no case shall the classification for the surface water be violated.

## General Conditions

61.3 In water used for other purposes, the turbidity must not exceed 25 s.t.u. unless otherwise permitted by the Division.

### **62. Use of Explosives.**

- 62.1 When the use of explosives is necessary for the prosecution of the Work, exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.
- 62.2 Store all explosives in a secure manner, in compliance with all State and local laws and ordinances, and legally mark all such storage places. Storage shall be limited to such quantity as may be needed for the work underway.
- 62.3 Designate as a "Blasting Area" all sites where electric blasting caps are located and where explosive charges are being placed. Mark all blasting areas with signs as required by law. Place signs as required by law from each end of the blasting area and leave in place while the above conditions prevail. Immediately remove signs after blasting operations or the storage of caps is over.
- 62.4 Notify each property Owner and public utility company having structures in proximity to the site of the work sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property. Such notice shall not relieve the Contractor of any of his responsibility for damage resulting from his blasting operation. Warn all persons within the danger zone of blasting operations and do not perform blasting work until the area is cleared. Provide sufficient flagmen outside the danger zone to stop all approaching traffic and pedestrians. Provide watchmen during the loading period and until charges have been exploded. Place adequate protective covering over all charges before being exploded.

### **63. Arbitration by Mutual Agreement.**

- 63.1 All claims, disputes, and other matters in question arising out of, or relating to, the Contract Documents or the breach thereof, except for claims which have been waived by making an acceptance of final payment as provided in Section 25, may be decided by arbitration if the parties mutually agree. Any agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.
- 63.2 Notice of the request for arbitration shall be filed in writing with the other party to the Contract Documents and a copy shall be filed with the Engineer. Request for arbitration shall in no event be made on any claim, dispute, or other matter in question which would be barred by the applicable statute of limitations.
- 63.3 The Contractor will carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

**64. Taxes.** The Contractor shall pay all sales, consumer, use, and other similar taxes required by the laws of the place where the Work is performed.

### **65 Separate Contracts.**

65.1 The Owner reserves the right to let other Contracts in connection with this Project. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their Work, and shall properly connect and coordinate the Work with theirs. If the proper execution or results of any part of the Contractor's Work depends upon the Work of any other Contractor, the Contractor shall inspect

## General Conditions

and promptly report to the Engineer any defects in such Work that render it unsuitable for such proper execution and results.

- 65.2 The Owner may perform additional Work related to the Project or the Owner may let other Contracts containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such Contracts (or the Owner, if the Owner is performing the additional Work) reasonable opportunity for the introduction and storage of materials and equipment and the execution of the Work, and shall properly connect and coordinate the Work with theirs.
- 65.3 If the performance of the additional Work by other Contractors or the Owner is not noted in the Contract Documents prior to the execution of the Contract, written notice shall thereof be given to the Contractor prior to starting such additional Work. If the Contractor believes that the performance of such additional Work by the Owner or others involves it in additional expense or entitles it to an extension of the Contract Time, the Contractor may make a claim thereof as provided in Sections 17 and 18.

## **General Conditions**

### EXHIBIT 1

#### Project Sign Detail

[Insert project sign detail here - Contact NHDES for appropriate detail]

Blue  
#333399

Green  
#336633

Blue  
#333399



Black

Blue  
#1050B7

Blue  
#3799FF

Green  
#0033CC



# POLLUTION CONTROL PROJECT

Yellow  
#FFFF00

PROJECT NUMBER CS- \_\_\_\_\_ - \_\_\_\_\_

Blue  
#000080

## PROJECT NAME

Funds Provided by NHDES State Revolving Fund and American Rescue Plan Act of 2021

Black

SRF Loan Amount: \$ \_\_\_\_\_

4'-0" x 8'-0" x 3/4" HIGH DENSITY OVERLAY  
PLYWOOD SIGNBOARD OR OTHER APPROVED  
MATERIAL SUITABLE FOR SIGNS

PROVIDE 4" x 4" SIGN POSTS OR OTHER  
ADEQUATE SUPPORTS TO MOUNT SIGN AT  
APPROVED LOCATION

# NHDES Front End Documents Section D: Federal Provisions Rules Regulations and Forms

## Section D: Federal Provisions Rules Regulations and Forms

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### Links to Other NHDES Front End Documents

[NHDES Front End Documents: Section A Bidding Requirements](#)

[NHDES Front End Documents: Section B Contract](#)

[NHDES Front End Documents: Section C General Conditions](#)

## **Pertinent Federal Acts and Provisions**

The Contractor shall comply with the regulations of the Davis-Bacon Act, the Contract Work Hours Standards Act, Executive Order 11246 (Federal Equal Employment Opportunity), and Title X of the Clean Air Act Amendments of 1990 (Disadvantage Business Enterprise), and any amendments or modifications thereto. The Contractor shall cause appropriate provisions to be inserted in subcontracts to ensure compliance with the above acts by all Subcontractors, as applicable.

The Contractor shall comply with the American Iron and Steel requirements of the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 (Public Law 113-76), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects.

The Contractor shall comply with Subpart B and Subpart C of 2 CFR Part 180 and 2 CFR Part 1532. By entering into this contract, the contractor certifies that neither the contractor's firm, nor any person or firm who has an interest in the contractor firm, is a debarred or suspended person or firm. Furthermore, by entering into this contract, the contractor certifies that no part of this contract will be subcontracted to a debarred or suspended person or firm. Contractors may access the federal government's Excluded Parties List System for verification of excluded parties at the following website: <http://www.sam.gov>.

The Contractor shall comply with prohibition on certain telecommunications and video surveillance services or equipment. This term and condition implements 2 CFR 200.216 and is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020. As required by 2 CFR 200.216, EPA recipients and subrecipients, including borrowers under EPA funded revolving loan fund programs, are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities). Recipients, subrecipients, and borrowers also may not use EPA funds to purchase:

- a. For the purpose of public safety, security of government facilities, physical security surveillance of critical Page 4 of 29 infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- b. Telecommunications or video surveillance services provided by such entities or using such equipment.
- c. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Consistent with 2 CFR 200.471, costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, and cloud servers are allowable except for the following circumstances:

- a. Obligating or expending EPA funds for covered telecommunications and video surveillance services or equipment or services as described in 2 CFR 200.216 to:
  - (1) Procure or obtain, extend or renew a contract to procure or obtain;
  - (2) Enter into a contract (or extend or renew a contract) to procure; or
  - (3) Obtain the equipment, services, or systems. Certain prohibited equipment, systems, or services, including equipment, systems, or services produced or provided by entities identified in section 889, are recorded in the [System for Award Management](#) exclusion list.



## Links for more Information

- [U.S.DOL Prevailing Wage Resources](#)
- [General Wage Determinations](#)
- [U.S. DOL Certified Payroll Form WH-347](#)
- [WH-1321 “Employee Rights Under the Davis-Bacon Act” poster](#)
- [EPA’s DBE Resources](#)
- [NHDOT Certified Disadvantaged Business Enterprise \(DBE\) Directory](#)
- [EPA American Iron and Steel \(AIS\) Requirement - Guidance and Questions and Answers website](#)
- [AIS Approved National Waivers](#)
- [Sole Source Aquifers \(SDWA\)](#)
- [Protection and Enhancement of the Cultural Environment \(1971\)](#)
- [Fish and Wildlife Coordination Act](#)
- [Migratory Bird Treaty Act of 1918](#)
- [Systems for Award Management exclusion list](#)

**CONTRACTOR’S PAYROLL CERTIFICATION  
AND  
AMERICAN IRON AND STEEL CERTIFICATION**

**PUBLIC LAW: 113-76**

**This form will be submitted with each disbursement request.**

Project Name:		Project Number:	
Project Location:			
Contractor Name:			
Contractor Address:			
Street # and name		City/Town	State ZIP
Payment Application #		Payment Application End Date	

I hereby certify that all of the contract requirements as specified under the Labor Standards Provision for Federal and Federally Assisted Contracts have been complied with by the above named Contractor, and by each Subcontractor employing Laborers or Mechanics at the site of the work, or there is an honest dispute with respect to the required provisions.

I hereby certify that the “American Iron and Steel” provisions of the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 ([Public Law 113-76](#)), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects as applicable, have been met, and that all iron and steel used in the project named above have been produced in the United States in a manner that complies with American Iron and Steel Requirements, and/or that applicable EPA-approved waivers have been obtained to comply with American Iron and Steel requirements.

Contractor Signature:	Printed Name:
Title:	Date:

# NOTICE TO LABOR UNIONS OR OTHER ORGANIZATIONS OF WORKERS NONDISCRIMINATION IN EMPLOYMENT

**PUBLIC LAW:** 41 CFR Part 60-1.4(b)-3.1

## THIS DOCUMENT MUST BE COMPLETED BY THE SUCCESSFUL BIDDER AND BOUND IN THE EXECUTED CONTRACT

The Contractor, and his subcontractors if applicable, shall send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. To

\_\_\_\_\_ (Union or Organization). The undersigned currently holds contract(s) with \_\_\_\_\_ (Applicant) involving funds or credit of the U.S. Government or (a) subcontract(s) with a prime contractor holding such contract(s).

You are advised that under the provisions of the above contract(s) or subcontract(s) and in accordance with Executive Order 11246, dated September 24, 1965, Executive Order 13665 dated April 8, 2014 and Executive Order 13672 dated July 21, 2014, the undersigned is obliged not to discriminate against any employee or applicant for employment because of race, color, religion, national origin, sexual orientation or gender identity. This obligation not to discriminate in employment includes, but is not limited to, the following

HIRING, PLACEMENT, UPGRADING, TRANSFER, OR DEMOTION RECRUITMENT, ADVERTISING, OR SOLICITATION FOR EMPLOYMENT TRAINING DURING EMPLOYMENT, RATES OF PAY OR OTHER FORMS OF COMPENSATION, SELECTION FOR TRAINING INCLUDING APPRENTICESHIP, LAYOFF, OR TERMINATION.

<input type="checkbox"/> Contractor	<input type="checkbox"/> Subcontractor
Signature:	Printed Name:
Title:	Date:

**COPIES OF THIS NOTICE WILL BE POSTED BY THE ABOVE SIGNED IN CONSPICUOUS PLACES AVAILABLE TO EMPLOYEES OR APPLICANTS FOR EMPLOYMENT.**

## **EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS (EO11246)**

(Executive Order 11246, as amended)

The Contractor shall comply with the equal opportunity requirements of Executive Order 11246, as amended, and as supplemented by 41 CFR Part 60, including the Equal Opportunity Clause at 41 CFR Part 60-1.4(b), and specific affirmative action obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

### **A. Equal Opportunity Clause (41 CFR Part 60-1.4(b))**

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

7. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

**B. Federal Equal Employment Opportunity Construction Contract Specifications (41 CFR Part 60-4.3)**

1. As used in these specifications:
  - a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
  - b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
  - c. "Employer identification number" means the Federal Social Security number used on the employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
  - d. "Minority" includes:
    - (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
    - (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
    - (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); and
    - (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000.00 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.
3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it

has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The Goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction Contractors performing construction work in geographical areas where they do not have a Federal or federally-assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the *Federal Register* in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.
5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.
6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
  - a. Ensure and maintain a working environment free of harassment, intimidation and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
  - b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organization responses.
  - c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the Contractor may have taken.
  - d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligation.

- e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to an discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.
- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are non-segregated, except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.
9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner
10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
14. The Contractor shall designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors shall not be required to maintain separate records.
15. Nothing herein provided shall be construed as a limitation upon application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).



## CERTIFICATION OF NONSEGREGATED FACILITIES

Public Law: 41 CFR 60 (a) §60-1.8

**APPLICABLE TO FEDERALLY ASSISTED CONSTRUCTION CONTRACTS AND RELATED SUBCONTRACTS EXCEEDING \$10,000 WHICH ARE NOT EXEMPT FROM THE EQUAL OPPORTUNITY CLAUSE.**

**THIS DOCUMENT MUST BE COMPLETED BY THE SUCCESSFUL BIDDER AND BOUND IN THE EXECUTED CONTRACT.**

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained.

The federally assisted construction contractor certifies that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result.

The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work area, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity or national origin, because of habit, local custom, or otherwise.

The federally assisted construction contractor agrees that (except where he had obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certification in his files

<input type="checkbox"/> Contractor	<input type="checkbox"/> Subcontractor
Signature:	Printed Name:
Title:	Date:

**NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.**

## Disadvantaged Business Enterprises Rule- Program Requirements

**Purpose:** The Environmental Protection Agency (EPA) rule titled “Participation by Disadvantaged Business Enterprises in United States Environmental Protection Agency Programs”, at 40 CFR Part 33 (DBE Rule), sets forth an EPA program that serves the compelling government interest to increase and encourage the utilization and participation of Disadvantaged Business Enterprises (DBEs) in procurements funded by EPA assistance agreements. Because the New Hampshire State Revolving Fund (SRF) Loan Programs receive funding from EPA, the DBE rule requirements apply to all SRF funded projects.

State Revolving Fund loan recipients and their contractors must comply with the following DBE Rule requirements throughout the SRF loan project period:

1. Good Faith Efforts.
2. Annual Reporting of MBE/WBE accomplishments (for projects that exceed \$250,000).
3. Contract Administration Requirements.
4. Bidders List Requirements.
5. Other Reporting.

The NHDES SRF programs must ensure that contracts and subcontracts that are funded with SRF loans comply with these federal requirements and must report to EPA on DBE accomplishments.

### 1. Good Faith Efforts

The Contractor shall make the following good faith efforts whenever procuring construction, equipment, services and supplies:

- a. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
- b. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
- c. Consider in the contracting process whether firms competing for large contracts could be contracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit maximum participation by DBEs in the competitive process.
- d. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
- e. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U. S. Department of Commerce.
- f. Contractor shall maintain all records documenting Contractor’s compliance with the requirements of 40 CFR Part 33, including documentation of Contractor’s good faith efforts. Such records shall be provided to Owner upon request.

### 2. Annual Reporting of MBE/WBE Accomplishments

The Owner is required to report MBE/WBE utilization accomplishments to NHDES by October 15 of each year. The Contractor shall keep records of its MBE/WBE utilization, and prepare periodic reports in a timely manner as requested by the Owner to allow the Owner to complete and submit the required annual MBE/WBE reports to NHDES by the October 15 deadline. Contractor’s utilization reports shall include the following for all MBE/WBE costs incurred in the reporting period (i.e., the October 1 through September 30 federal fiscal year):

- a. Name, address and telephone number of MBE/WBE
- b. Business enterprise status (MBE or WBE)

- c. Dollar value of cost(s) (Amount(s) paid to MBE/WBE in reporting period)
- d. Date(s) of cost(s) (Date(s) of payment(s) to MBE/WBE, mm/dd/yyyy)
- e. Type of product or services (Construction/Supplies/Services/Equipment)

Note that only costs incurred with certified MBE/WBE's are counted as MBE/WBE accomplishments.

{NOTE TO ENGINEER: This annual reporting requirement may not apply if the total funding budgeted for the project does not exceed \$250,000. Contact NHDES for guidance if you think this reporting requirement may not apply to your project}

### 3. Contract Administration Requirements

The Contractor shall:

- a. Pay all subcontractors for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the loan recipient.
- b. Notify Owner in writing prior to the termination of any DBE subcontractor for Contractor's convenience.
- c. Employ the good faith efforts when soliciting a replacement subcontractor if a DBE subcontractor fails to complete work under the subcontract for any reason.
- d. Employ the good faith efforts even if the prime contractor has achieved its fair share objective
- e. Comply with the following term and condition, as required by 40 CFR, Section 33.106:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies. (Appendix A to 40 CFR Part 33—Term and Condition)

### 4. Bidders List Requirements

The Owner is required to maintain a bidders list in accordance with 40 CFR Section 33.501, and the Contractor shall provide bidders list information to the Owner for Owner's use in complying with this requirement. The Contractor shall maintain a Bidders List, which must include all firms that bid or quote on subcontracts under this Contract, including both MBE/WBEs and non-MBE/WBEs.

The Bidders List shall include the following information for all subcontractors who submit bids or quotes for subcontract work:

- (a) Entity's name with point of contact;
- (b) Entity's mailing address, telephone number, and e-mail address;
- (c) The procurement on which the entity bid or quoted, and when; and
- (d) Entity's status as an MBE/WBE or non-MBE/WBE.

### 6. Other Reporting

- a. DBE Subcontractor Performance and Utilization Forms  
The Bidder shall submit with its bid completed DBE Subcontractor Performance Forms NHDES W-09-58(formally EPA Form 6100-3), and DBE Subcontractor Utilization Form NHDES W-09-59(formally EPA Form 6100-4). The Owner is required to submit these forms to NHDES when requesting authorization to award the construction contract.
- b. DBE Subcontractor Participation form  
The contractor shall provide a copy of the DBE Subcontractor Participation Form NHDES-W-09-57 (formally EPA Form 6100-2) to each of its DBE subcontractors.
- c. Bidders List Reporting  
The Contractor shall provide the updated Bidders List to the Owner periodically upon Owner's request, and at project substantial completion.



**DISADVANTAGED BUSINESS ENTERPRISE  
(DBE) PROGRAM  
SUBCONTRACTOR PARTICIPATING FORM  
CLEAN WATER AND DRINKING WATER  
STATE REVOLVING LOAN FUND**



**FEDERAL RULE: 40 CFR Part 33**

FORMERLY EPA-6100-2

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE<sup>1</sup> subcontractor<sup>2</sup> the opportunity to describe work received and/or report any concerns regarding the EPA-funded project. (e.g., in areas such as termination by prime contractor, late payments, etc.) The DBE subcontractor can as an option, complete and submit this form to other EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name:		Project Name:	
Bid/Proposal No:	Assistance Agreement ID: (if known)	Point of Contact:	
Address:			
Street # and Name		City/Town	State ZIP
Telephone No:		Email:	
Prime Contractor Name:		Issuing Funding Entity:	
Contract Item Number	Description of Work Receive from the Prime Contractor Involving Construction, Services, Equipment or Supplies	Amount Received by Prime Contractor	
Please use the space below to report any concerns regarding the above EPA-funded project:			
Subcontractor Signature:		Printed Name:	
Title:		Date:	

<sup>1</sup> A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from with EPA accepts certifications as described in 40CFR 33.204-33.205. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>2</sup> Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.



**DISADVANTAGED BUSINESS ENTERPRISE  
(DBE) PROGRAM  
SUBCONTRACTOR PERFORMANCE FORM  
NHDES CLEAN WATER AND DRINKING WATER STATE  
REVOLVING LOAN FUND**



**FEDERAL RULE: 40 CFR Part 33**

FORMERLY EPA FORM 6100-3

This form is intended to capture the DBE<sup>3</sup> subcontractor's<sup>4</sup> description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package. You will find NHDES bid information in [Section A](#) of the front-end documents.

Subcontractor Name:		Project Name:	
Bid/Proposal No:		Assistance Agreement ID: (if known)	Point of Contact:
Address:			
Street # and Name		City/Town	State ZIP
Telephone No:		Email:	
Prime Contractor Name:		Issuing Funding Entity:	
Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of work submitted to the Prime Contractor	
DBE Certified by: <input type="checkbox"/> DOT <input type="checkbox"/> SBA <input type="checkbox"/> Other:		Meets/exceeds EPA Certification Standards? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
Prime Contractor Signature:		Printed Name:	
Title:		Date:	
Subcontractor Signature:		Printed Name:	
Title:		Date:	

<sup>3</sup> A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from with EPA accepts certifications as described in 40CFR 33.204-33.205. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

<sup>4</sup> Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

## DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM SUBCONTRACTOR UTILIZATION FORM



CLEAN WATER AND DRINKING WATER  
STATE REVOLVING LOAN FUND



**FEDERAL RULE: 40 CFR Part 33**

FORMERLY EPA FORM 6100-4

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE subcontractors and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposed package. Prime contractors should also maintain a copy of this form on file. You will find NHDES bid information in [Section A](#) of the front-end documents.

**THIS DOCUMENT MUST BE COMPLETED BY THE SUCCESSFUL BIDDER AND BOUND IN THE EXECUTED CONTRACT**

Prime Contractor Name:		Project Name:	
Bid/Proposal No:	Assistance Agreement ID: (if known)	Point of Contact:	
Address:			
Street # and Name		City/Town	State ZIP
Telephone No:		Email:	
Issuing Funding Entity:			
I have identified potential DBE certified subcontractors:		<input type="checkbox"/> Yes	<input type="checkbox"/> No
If yes please complete the table below. If no, please explain:			
Subcontractor Name Company Name	Company Contact Information Street Number and Name, City/Town, State, ZIP Phone and Email	Est. Dollar Amount	Currently DBE Certified?
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
			<input type="checkbox"/> Yes <input type="checkbox"/> No
I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to use the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302(c).			
Prime Contractor Signature:		Printed Name:	
Title:		Date:	



**NEW HAMPSHIRE STATE REVOLVING FUND:  
BIDDERS LIST**  
NHDES CLEAN WATER AND DRINKING WATER  
STATE REVOLVING LOAN FUND



**PUBLIC LAW: 40 CFR § 33.501**

The Contractor shall maintain and submit to the owner a bidders list, which the owner will use for compliance with the recordkeeping requirements of 40 CFR § 33.501. The list must include information regarding all entities that bid or quote on subcontracts under this contract, including both MBEs/WBEs and non-MBEs/WBEs. Projects funded by loan(s) of \$250,000 or less may be exempt from the requirement to maintain a bidders list [reference 40 CFR § 33.501(c)].

Project Name and Number:			Prime Contractor:			
Contact Information to include Company Name, Contact Name, Phone, Street Address, Town/City, Email, State/ZIP			Contract Item Number and Work Description Item # Description		Bid/Quote Date	Entity Status MBEs/WBEs
					/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
( ) -					/ /	
					/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
( ) -					/ /	
					/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
( ) -					/ /	
					/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
( ) -					/ /	
					/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
( ) -					/ /	
					/ /	<input type="checkbox"/> Yes <input type="checkbox"/> No
( ) -					/ /	

## American Iron and Steel

The Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 ([Public Law 113-76](#)), and subsequent laws that continue the American Iron and Steel requirements of Public Law 113-76 include “American Iron and Steel (AIS)” requirements for the Clean Water and Drinking Water State Revolving Fund (SRF) programs. Under these laws, all Clean Water and Drinking Water SRF funded construction, alteration, maintenance, or repair of public water systems or treatment works projects must use iron and steel products that are produced in the United States. The Contractor shall comply with these AIS requirements.

### **1. EPA AIS Guidance**

[EPA’s State Revolving Fund American Iron and Steel Requirement](#) website includes detailed information on American Iron and Steel requirements and waivers.

The paragraphs in *italics* below are excerpts from the EPA AIS guidance available at the EPA website. Words in plain text are clarifications added by NHDES.

#### **(a) Iron and Steel Products** <sup>[5]</sup>

*An iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the project:*

- *Lined or unlined pipes and fittings.*
- *Manhole covers.*
- *Municipal castings (defined in more detail below).*
- *Hydrants.*
- *Tanks.Flanges.*
- *Pipe clamps and restraints.*
- *Valves.*
- *Structural steel (defined in more detail below).*
- *Reinforced precast concrete and.*
- *Construction materials (defined in more detail below).*

#### **(b) Permanently Incorporated into the Project**<sup>6</sup>

*Only items on the above list made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example, trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.*

#### **(c) Primarily Iron or Steel**<sup>7</sup>

*Primarily iron or steel places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.*<sup>8</sup>

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<sup>5</sup> EPA guidance dated March 20, 2014, Question 11.

<sup>6</sup> EPA guidance dated March 20, 2014, Question 18.

<sup>7</sup> EPA guidance dated March 20, 2014, Question 12.

<sup>8</sup> See example at EPA guidance March 20, 2014, Question 13.



**(d) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?<sup>9</sup>**

*The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.*

**(e) Steel<sup>10</sup>**

*Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.*

**(f) Production in the United States<sup>11</sup>**

*Production in the United States of the iron or steel products used in the project requires that all manufacturing processes<sup>12</sup>, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating\*. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.*

**\* External Coatings Applied Outside of the United States<sup>13</sup>**

*Any coating processes that are applied to the external surface of iron and steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the coating processes occur, provided that final assembly of the product occurs in the United States.*

*The exemption above only applies to coatings on the external surface of iron and steel components. It does not apply to coatings or linings on internal surfaces of iron and steel products, such as the lining of lined pipes. All manufacturing processes for lined pipes, including the application of pipe lining, must occur in the United States for the product to be compliant with AIS requirements.*

**(g) Municipal Castings<sup>14</sup>**

*Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are: Access Hatches;*

- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;
- Cast Bases;
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlet;
- Cleanout/Monument Boxes;

<sup>9</sup> EPA guidance dated March 20, 2014, Question 14.

<sup>10</sup> EPA guidance dated March 20, 2014, Question 15.

<sup>11</sup> EPA guidance dated March 20, 2014, Question 16.

<sup>12</sup> **Assembly and all other steps in the manufacturing process** must take place in the US, except metallurgical processes involving refinement of steel additives in accordance with the EPA guidance dated March 20, 2014, Question 23]. There is also an additional exception for application of exterior coating.

<sup>13</sup> EPA guidance dated March 16, 2015, Q/A No. 6.

<sup>14</sup> EPA guidance dated March 20, 2014, Question 19.

- Construction Covers and Frames;
  - Curb and Corner Guards;
  - Inlets;
  - Junction Boxes;
  - Steel Hinged Hatches, Square and Rectangular;
- (g) Municipal Castings (Cont.)**
- Curb Openings;
  - Detectable Warning Plates;
  - Downspout Shoes (Boot, Inlet);
  - Drainage Grates, Frames and Curb Inlets;
  - Lampposts;
  - Manhole Covers, Rings and Frames, Risers;
  - Meter Boxes;
  - Service Boxes;
  - Steel Riser Rings;
  - Trash receptacles;
  - Tree Grates;
  - Tree Guards;
  - Trench Grates; and
  - Valve Boxes, Covers and Risers.

**(h) Structural Steel<sup>15</sup>**

*Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.*

**(i) Construction Materials<sup>16</sup>**

*Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered “structural steel”. This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.*

[As noted above, ductwork is considered a “construction material” and must comply with the AIS requirements. Steel dampers, grilles and registers that are a permanently incorporated part of the ductwork are also subject to the AIS requirements.]

**(j) Construction Materials (Additional Guidance<sup>17</sup>)**

*The AIS requirements include a list of specifically covered products, one of which is construction materials, a broad category of potential products. For construction materials, EPA’s AIS guidance includes a set of example items that it considers construction materials composed primarily of iron and steel and covered by the Act. This example list in the guidance is not an all-inclusive list of potential construction materials. However, the guidance also includes a list of items that EPA specifically does not consider construction materials, generally those of electrical or complex-mechanical nature. If a product is similar to the ones in the non-construction material list (and it is also not specifically listed by the Act), it is not a construction material. For all other items specifically included in the Act, coverage is generally self-evident.*

**(k) Items that are not Construction Materials<sup>18</sup>**

*Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.*

<sup>15</sup> EPA guidance dated March 20, 2014, Question 20.

<sup>16</sup> EPA guidance dated March 20, 2014, Question 21.

<sup>17</sup> EPA guidance dated September 10, 2014, Q/A No. 10.

<sup>18</sup> EPA guidance dated March 20, 2014, Question 22.

*The following examples (including their appurtenances\* necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates (i.e., common sluice and slide gates), motorized screens (such as traveling screens), blowers/aeration equipment\*\*, compressors, meters\*\*\*), sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.*

*\* If products come from one manufacturer and are shipped together as a system, then this is generally considered a “packaged system” and those items used to connect the system are appurtenances. However, if the borrower or contractor must purchase items to connect the system (valves, piping, etc.) separately from another manufacturer, then these items would need to be domestic, or otherwise obtain a waiver.<sup>19</sup>*

*\*\*Aerators, similar to pumps, are mechanical equipment that do not need to meet the AIS requirements. “Blowers/aeration equipment, compressors” are listed in EPA’s guidance as non-construction materials.<sup>20</sup>*

*\*\*\*“Meters” includes any type of meter, including: flow meters, wholesale meters, and water meters/service connections.<sup>21</sup>*

#### **(l) Assembled Products<sup>22</sup>**

*AIS requirements only apply to the final product as delivered to the work site and incorporated into the project. Assemblies, such as a pumping assembly or a reverse osmosis package plant, are distinct products not listed and do not need to be made in the U.S. or composed of all U.S. parts. If a listed iron and steel product is used as a part for an assembled product that is nondomestic, the components, even if specifically listed in the Act, do not have to be domestically produced.*

#### **(m) Sluice and Slide Gates are not Valves, and are not Subject to AIS<sup>23</sup>**

*Valves are products that are generally encased / enclosed with a body, bonnet, and stem. Examples include enclosed butterfly, ball, globe, piston, check, wedge, and gate valves. Furthermore, “gates” (meaning sluice, slide or weir gates) are listed in EPA’s guidance as non-construction materials.*

#### **(n) Gate Valves are Subject to AIS<sup>24</sup>**

*Valves are specifically listed in the Consolidated Appropriations Act of 2014 as an “iron and steel product” and therefore, absent a waiver, must be produced in the U.S. to be in compliance with the requirement if they are “primarily” iron and steel. Gates as referenced in the EPA March 20, 2014 guidance refer only to common sluice and slide gates, and not to gate valves.*

#### **(o) Reinforced Precast Concrete<sup>25</sup>**

*While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the*

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<sup>19</sup> EPA AIS Refresher Webinar, December 15, 2016.

<sup>20</sup> EPA guidance dated September 10, 2014, Q/A No. 19 on aerators.

<sup>21</sup> EPA guidance dated September 10, 2014, Q/A No. 14 on meters.

<sup>22</sup> EPA guidance dated September 10, 2014, Q/A No. 11, AIS Refresher Webinar, December 15, 2016.

<sup>23</sup> EPA guidance dated September 10, 2014, Q/A No. 20.

<sup>24</sup> EPA guidance dated May, 30, 2014, Q/A No. 4.

<sup>25</sup> EPA guidance dated March 20, 2014, Question 24.

casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

**(p) Pre-stressed Concrete Cylinder Pipe<sup>26</sup>**

Pre-stressed concrete cylinder pipe (PCCP) or other similar concrete cylinder pipes would be comparable to pre-cast concrete which is specifically listed in the Consolidated Appropriations Act of 2014 as a product subject to the AIS requirement

**(q) Valves and Actuators<sup>27</sup>**

Valves and actuators, while often purchased and shipped together, are two unique products that are manufactured separately and typically attached together during the final step of the process. Valves are included in the definition of "iron and steel products" in the AIS requirement. Actuators, whether manual, electric, hydraulic or pneumatic, are not listed as an "iron and steel product" under the AIS requirement of the Consolidated Appropriations Act of 2014, nor are they considered construction materials. Therefore, they do not need to be domestically produced in the U.S. in order to comply with the requirement.

**(r) Electric Powered Motor Operated Valves<sup>28</sup>**

Electric powered motor operated valves are not excluded based on the valve being motorized equipment. The actuator, a motor that controls the valve, is considered a separate product, which is not listed as an "iron and steel product" under the AIS requirement of the Consolidated Appropriations Act of 2014, nor is it considered a construction material. Therefore, the actuator does not need to be domestically produced in the U.S. in order to comply with the requirement. See Q2 for further clarification.

**(s) Tanks Used on Filtration Systems<sup>29</sup>**

Tanks that are specifically designed to be filters, or as parts of a filtration system, do not have to be domestically produced because these parts are no longer simply tanks, even if the filter media has not been installed and will be installed at the project site, as is customary to do for shipping purposes. These parts have only one purpose which is to be housing for filters and cannot be used in another fashion.

**(t) Flanged Pipe<sup>30</sup>**

While the Consolidated Appropriations Act of 2014 does not specifically mention flanged pipe, since it does mention both pipe and flanges, both products would need to be domestically produced. Therefore, flanged pipe would also need to be domestically produced.

**(u) Couplings, Expansion Joints, and other Similar Pipe Connectors<sup>31</sup>**

These products would be considered specialty fittings, due to their additional functionality, but still categorized under the larger "fitting" categorization. Fittings are defined as a material that joins pipes together or connects to a pipe (AWWA,

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<sup>26</sup> EPA guidance dated September 10, 2014, Q/A No. 2.

<sup>27</sup> EPA Q/A guidance dated May 30, 2014, Q/A No. 2.

<sup>28</sup> EPA guidance dated May 30, 2014, Q/A No. 3

<sup>29</sup> EPA guidance dated September 10, 2014, Q/A No. 4

<sup>30</sup> EPA guidance dated September 10, 2014, Q/A No. 5

<sup>31</sup> EPA guidance dated September 10, 2014, Q/A No. 6

*The Drinking Water Dictionary, 2000). Therefore, these products must comply with the AIS requirements and be produced domestically.*

#### **(v) Saddles and tapping Sleeves<sup>32</sup>**

*These products are necessary for pipe repair, to tap a water main, or to install a service or house connection. Therefore, they are included under the larger “pipe restraint” category which is a specifically identified product subject to the domestic preference in the Consolidated Appropriations Act of 2014.*

#### **(w) Reused Items (i.e., existing pipe fittings, used storage tanks, reusing existing valves)<sup>33</sup>**

*The AIS guidance does not address reuse of items. Reuse of items that would otherwise be covered by AIS is acceptable provided that the item(s) was originally purchased prior to January 17, 2014, the reused item(s) is not substantially altered from original form/function, and any restoration work that may be required does not include the replacement or addition of foreign iron or steel replacement parts. EPA recommends keeping a log of these reused items by including them on the assistance recipient’s de minimis list, and stating therein that these items are reused products. The donation of new items (such as a manufacturer waiving cost for certain delivered items because of concerns regarding the origin of a new product) is not, however, considered reuse.*

## **2. Certification**

The Contractor, through its subcontractors, suppliers and manufacturers shall provide to the Owner written certification that all AIS materials provided for the project comply with the AIS requirements of the SRF programs, Manufacturer certification letters must include the following:

- Manufacturer name;
- SRF construction project name and location;
- A list of specific product(s) delivered to the project site;
- A statement that the product is in compliance with the American Iron and Steel requirement as mandated in EPA’s SRF programs;
- The location of the foundry/mill/factory where the product was manufactured (City and State); and
- A signature by a manufacturer’s responsible party.

EPA AIS guidance dated March 20, 2014 contains additional guidance on manufacturer certifications. [A sample certification letter is included in this guidance.](#)

## **3. Installation**

All iron and steel products, as defined herein, shall be produced in the United States in accordance with the American Iron and Steel requirements of the Clean Water and Drinking Water State Revolving Fund programs. If a potentially non-compliant product is installed in the permanent work, the Contractor will be required to remove the non-domestic item from the project.

## **4. De Minimis Waiver**

EPA’s April 15, 2014 [Nationwide Waiver](#) for De Minimis incidental AIS components is part of this guidance, and is available for use on this project. Contractors who wish to use this waiver must consult with the Owner when determining the items to be covered by this waiver, and shall retain and provide to the Owner relevant documentation (i.e., invoices) for those items for the Owner’s project files. The Contractor shall summarize in reports to the Owner: the types and/or categories of items to which this waiver is applied; the total cost of incidental components covered by the waiver for each type or category (including copies of invoices); and the calculations by which Contractor determined the total cost of materials used in and incorporated into the project. **The Contractor shall include a complete and up-to-**

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<sup>32</sup> EPA guidance dated September 10, 2014, Q/A No. 7

<sup>33</sup> EPA guidance dated September 10, 2014, Q/A No. 8

**date [De Minimis Report](#) in each application for payment.** The Contractor shall also provide the report to the Owner upon request.

(a) Fasteners under the De Minimis Waiver<sup>34</sup> []

There is no broad exemption for fasteners from the American Iron and Steel (AIS) requirements. Significant fasteners used in SRF projects are not subject to the de minimis waiver for projects and must comply with the AIS requirements. Significant fasteners include fasteners produced to industry standards (e.g., ASTM standards) and/or project specifications, special ordered or those of high value. When bulk purchase of unknown-origin fasteners that are of incidental use and small value are used on a project, they may fall under the national de minimis waiver for projects. The list of potential items could be varied, such as big-box/hardware-store-variety screws, nails, and staples. The key characteristics of the items that may qualify for the de minimis waiver would be items that are incidental to the project purpose (such as drywall screws) and not significant in value or purpose (such as common nails or brads). You can find further information on the [EPA Website](#).

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<sup>34</sup> EPA guidance dated September 10, 2014, Q/A No. 1

# American Iron and Steel Manufacturer Example Certification

Date

Manufacturer Name  
Manufacturer Street Address  
City, State ZIP

RE: Project Name, Project Location

I, \_\_\_\_\_ (Authorized Manufacturer Representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Product and/or Materials  
\_\_\_\_\_  
Item, Product and/or Materials  
\_\_\_\_\_  
Item, Product and/or Materials  
\_\_\_\_\_  
Item, Product and/or Materials  
\_\_\_\_\_  
Item, Product and/or Materials  
\_\_\_\_\_

Manufacturing of the above items, products and/or materials took place at the following location(s):

\_\_\_\_\_

Additionally, if any of the above compliance statements change while providing material to this project \_\_\_\_\_ (Manufacturer) will immediately notify \_\_\_\_\_ (Contractor) and the \_\_\_\_\_ (Owner).

\_\_\_\_\_  
Manufacturer's Signature

Note: The signature must be by manufacturer's authorized responsible party, not the material distributor or supplier.

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## Manufacturer Certification Checklist

- ✓ Manufacturer name;
- ✓ SRF construction project name and location;
- ✓ A list of specific product(s) delivered to the project site;
- ✓ A statement that the product is in compliance with the American Iron and Steel requirement as mandated in EPA's SRF programs;
- ✓ The location of the foundry/mill/factory where the product was manufactured (City and State); and
- ✓ A signature by a manufacturer's responsible party.

## American Iron and Steel Required Subcontract and Purchase Agreement Language

The Contractor shall include in all contracts and purchase agreements for this project the following American Iron and Steel contract language:

*“ \_\_\_\_\_ (Subcontractor/Supplier) acknowledges to and for the benefit of the \_\_\_\_\_ (Owner) and the State of New Hampshire (State) that it understands the goods and service under this contract or purchase agreement (Agreement) are being funded with monies that are subject to statutory requirements commonly known as “American Iron and Steel” (the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 ([Public Law 113-76](#)), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects); that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided under this contract or Agreement. The Subcontractor/Supplier hereby represents and warrants to and for the benefit of the Owner and the State that (a) the Subcontractor/Supplier has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Subcontractor/Supplier will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State.”*





BIDDERS AMERICAN IRON AND STEEL
ACKNOWLEDGEMENT
NHDES CLEAN WATER AND DRINKING WATER
STATE REVOLVING FUND



Public Law 113-76

Instructions: This acknowledgement form must be completed and signed by the bidder's authorized representative, and conveyed to owner with bid submittal. You will find NHDES bid information in Section A of the front-end documents.

Project Name \_\_\_\_\_ City/ Town/ Entity \_\_\_\_\_

Bidder Name \_\_\_\_\_ Bidder Address \_\_\_\_\_

With submittal of this Bid, the Bidder acknowledges to and for the benefit of the Owner and the State of New Hampshire (State) that it understands that this project is subject to the "American Iron and Steel (AIS)" requirements of the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 (Public Law 113-76), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects , and these laws require that all of the iron and steel used in the project be produced in the United States ("American Iron and Steel Requirement") including all iron and steel goods provided by the Bidder pursuant to this Bid.

The Bidder hereby presents and warrants to and for the benefit of the Owner and State that (a) the Bidder has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Bidder will provide any further verified information, certification or assurance of compliance with this Acknowledgement, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State

Notwithstanding any other provision of the Contract Documents, any failure to comply with this Acknowledgement by the Bidder shall permit the Owner or State to recover as damages against the Bidder any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Owner).

Additionally, The Bidder hereby acknowledges that Bidder must include in all contracts and purchase agreements for this project the following American Iron and Steel contract language:

" (Subcontractor/Supplier) acknowledges to and for the benefit of the (Owner) and the State of New Hampshire (State) that it understands the goods and service under this contract or purchase agreement (Agreement) are being funded with monies that are subject to statutory requirements commonly known as "American Iron and Steel" (the Water Resources Reform and Development Act of 2014, the Consolidated Appropriations Act of 2014 (Public Law 113-76), and subsequent laws that continue the requirement for the use of American Iron and Steel products in State Revolving Fund construction projects); that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided under this contract or Agreement. The Subcontractor/Supplier hereby represents and warrants to and for the benefit of the Owner and the State that (a) the Subcontractor/Supplier has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Subcontractor/Supplier will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Owner or the State.

(Signature of Certifying Bidder Representative)

Date

Printed Name



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF WATER

**DECISION MEMORANDUM**

**SUBJECT:** De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

**FROM:** Nancy K. Stoner  
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the “American Iron and Steel (AIS)” requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an “American Iron and Steel” (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, “[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency... finds that— (1) applying subsection (a) would be inconsistent with the public interest” 436(b)(1).

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.



Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

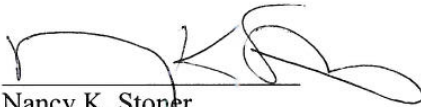
- What percentage of total project costs were consumables or incidental costs?
- What percentage of materials costs were consumables or incidental costs?
- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at [connor.timothy@epa.gov](mailto:connor.timothy@epa.gov) or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at [anderer.kirsten@epa.gov](mailto:anderer.kirsten@epa.gov) or (202) 564-3134.

Issued on: APR 15 2014

Approved by:   
Nancy K. Stoner  
Acting Assistant Administrator

# AMERICAN IRON AND STEEL DE MINIMIS TRACKING REPORT

## NHDES CLEAN WATER AND DRINKING WATER STATE REVOLVING FUND

(To be submitted with each application for payment.)



**Public Law 113-76 Consolidated Appropriations Act**

**De Minimis Waiver Section 436**

Contractors who wish to use the AIS De Minimis waiver must consult with the owner when determining the items to be covered by this waiver, and shall retain and provide to the owner relevant documentation (i.e., invoices) for those items. The contractor shall summarize in reports to the owner the types and/or categories of items to which this waiver is applied; the total cost of incidental components covered by the waiver for each type or category (including copies of invoices); and the calculations by which contractor determined the total cost of materials used in and incorporated into the project. **The contractor shall include a complete and up-to-date De Minimis Tracking Report in each application for payment.** The contractor shall also provide the report to the owner upon request.

Owner:		Project Name:				
Contractor:		CWSRF/DWSRF Project #:				
Has the contractor purchased or used AIS materials that will be covered under this waiver?						
<input type="checkbox"/> Yes. Please continue to the next section.						
<input type="checkbox"/> No. Please simply sign below.						
Total cost of materials incorporated into the project.		De Minimis 5% Limit		De Minimis 1% Limit		
<input type="checkbox"/> Yes	Is this your final report? In order to be considered a final report <b>all</b> materials have been delivered for the					
<input type="checkbox"/> No	project.					
Component Description	Date Added	County of Origin (if available)	Quantity (if applicable)	Cost Per Unit (if applicable)	Component Total Cost	How is cost documented <sup>35</sup> ?

**Total Cost of De Minimis Components**

Contractor Signature:		Printed Name:	
Title:		Date:	

NOTE: The De Minimis waiver is only applicable to the cost of materials incorporated into the project. Do not include other project costs (labor, installation costs, etc.) in the "Total Cost of Materials." The cost of a material must include delivery to the site and any applicable tax. Contractor must provide sufficient documentation to support all costs included in this calculation.

<sup>35</sup> Documentation must demonstrate confirmation of the components' actual costs (invoice etc.).





## NH Department of Environmental Services Federal Labor Standards Provisions

### 29 CFR 5.5(a)

#### Contract and Subcontract provisions

(a) The Contractor shall insure that all sub contracts entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF - financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or -FY 2015 Water Resource Reform and Development Act, contain the following clauses:

**(1) Minimum Wage** (i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. Wage determinations may be obtained from the [U.S. Department of Labor's website](#).

(ii)(A) The Loan recipient, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the Loan recipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the Loan recipient(s) to the State award official. The State award official will transmit the



request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Loan Recipient (s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside, in a separate account, assets for the meeting of obligations under the plan or program.

**(2) Withholding.** The Loan recipient(s), shall upon written request of the Contracting Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**(3) Payrolls and basic records.** (i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain

written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the Loan recipient, that is, the entity that receives the sub-grant or Loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the Loan recipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Loan recipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the Loan recipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and Loan recipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

10) Certification of eligibility. (i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

**4. Contract Provision for Contracts in Excess of \$100,000** (a) Contract Work Hours and Safety Standards Act. The Loan recipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Loan recipient, upon written request of the Contracting Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be

determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Prime Contractor shall insert a clause requiring that the subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Prime Contractor shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the subcontractor for inspection, copying, or transcription by authorized representatives of NH DES and the Department of Labor, and the subcontractor will permit such representatives to interview employees during working hours on the job.

**{Insert Davis Bacon Wage Decision(s) here}**

"General Decision Number: NH20240008 09/20/2024

State: New Hampshire

Construction Type: Heavy

County: Grafton County in New Hampshire.

HEAVY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>◆ Executive Order 14026 generally applies to the contract.</li> <li>◆ The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.</li> </ul>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> <li>◆ Executive Order 13658 generally applies to the contract.</li> <li>◆ The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2024.</li> </ul>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number 0 Publication Date 09/20/2024

ELEC0104-002 09/04/2023

Rates Fringes

ELECTRICIAN.....	\$ 43.36	29.83
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SUNH2022-005 08/15/2024		
	Rates	Fringes
CARPENTER.....	\$ 22.50	3.32
LABORER: Common or General.....	\$ 20.00	1.93
LABORER: Pipelayer.....	\$ 24.00	2.67
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 29.00	0.56
OPERATOR: Bulldozer.....	\$ 27.10	7.06
OPERATOR: Loader.....	\$ 21.50	0.00
TRAFFIC CONTROL: Flagger.....	\$ 18.00	6.90
TRUCK DRIVER: Dump Truck.....	\$ 22.00	6.31
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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate

(weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

#### State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R. 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME



refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
 Wage and Hour Division  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
 U.S. Department of Labor  
 200 Constitution Avenue, N.W.  
 Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION"

## **DIVISION 01 – GENERAL REQUIREMENTS**

## SECTION 01 11 13

### SUMMARY OF WORK

#### PART 1 – GENERAL

##### 1.1 PROJECT DESCRIPTION

A. Work at the site consists of the following, as set forth in more detail in the Drawings and Specifications:

- 10 manholes requiring minor repairs
- 13 manholes that need to be raised to grade
- 5 segments (1,005 LF) requiring CCTV scans & cleaning (8” to 12” piping)
- 16 segments (2,120 LF) requiring pipe lining (8” to 15” piping)
- 2 open cut repairs (approx. 20 LF total) on 8” PVC piping

B. Work at the site to be performed by others: None

C. Owner-Furnished Equipment: None

D. Provide all items, articles, materials, operations, or methods listed, mentioned, scheduled on the Drawings and/or specified herein including all labor, materials, equipment and incidentals necessary and required for a complete functioning system.

##### 1.2 WORK SEQUENCE

A. The Work will be conducted in a sequence and in such a manner as to minimize utility interruptions and to minimize the risk to health and the environment.

##### 1.3 GEOTECHNICAL INVESTIGATIONS

None

##### 1.4 CONTRACTOR USE OF PREMISES

A. General: Limit use of the premises to construction activities in areas indicated; allow for Owner operation and use by the public.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
2. Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and the general public at all times. Do not use these

areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

3. Disposal of Excess, Unsuitable, and/or Waste Materials: Unless otherwise approved by Engineer, all excess, unsuitable, or waste materials shall be removed from the project site and shall be lawfully disposed of at Contractor's expense. Do not dispose of hazardous material on site by burial or by burning.

## **1.5 OWNER OCCUPANCY**

- A. Full Owner Occupancy: The Owner will occupy the site during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.

## **1.6 SAFETY AND HEALTH REGULATIONS**

- A. Portions of the Work may be exposed to water treatment chemicals. The Contractor certifies that it is experienced and qualified to anticipate and meet the safety and health requirements of this Project.
- B. The Contractor shall comply with Safety and Health Regulations for Construction under of the Contract Work Hours and Safety Standards Act Section 107 as set forth in the Code of Federal Regulations Title 29. Copies of these regulations may be obtained from official internet websites or from the Department of Labor building at 14th Street and Constitution Avenue NW, Washington, DC 20013.
- C. The Contractor shall also comply with the provisions of the Federal Occupational Safety and Health Act of 1970, as amended.

## **1.7 GENERAL**

- A. The Project has been designed and the Contract Documents prepared with the intention that resulting Work will comply with applicable local, State, and Federal rules and regulations.
  1. Before Substantial Completion, inspect, test, and adjust performance of every system or facility of the Work to ensure that overall performance is in compliance the Contract Documents and all permit requirements.
  2. Instruct the Owner's operating personnel on operational requirements needed to maintain compliance.

**PART 2 – PRODUCTS** (Not Applicable)

**PART 3 – EXECUTION** (Not Applicable)

**End of Section**

## **SECTION 01 11 17**

### **DRAWINGS AND SPECIFICATIONS**

#### **PART 1 – GENERAL**

##### **1.1 DESCRIPTION**

- A. This Section is intended to describe the general Intent of the Drawings and Specifications.
- B. The Owner will furnish the Contractor up to five (5) copies of the drawings and specifications without charge.

##### **1.2 EXISTING CONDITIONS**

- A. All existing conditions shown on the drawings are for information purposes only and are based on limited information. The Contractor shall verify existing conditions and shall not be entitled to extra compensation for failure to do so.

##### **1.3 INTENT OF DRAWINGS AND SPECIFICATIONS**

- A. The drawings and specifications are intended to show the general intent of the work. The Owner has contracted for a complete project although every detail, component, fitting and appurtenance may not have been shown. The Contractor shall be responsible for all items necessary to make a complete functional system.

##### **1.4 DIMENSIONS**

- A. Drawings should not be scaled. All dimensions shall be taken from figured dimensions on the drawings or by actual field measurements. The Contractor shall notify the Engineer immediately of any discrepancy between figured dimensions labeled on the drawings and actual field measurements, whenever such discrepancy may impact the installation or operation of the Work.

## SECTION 01 22 13

### MEASUREMENT AND PAYMENT

#### PART 1 – GENERAL

##### 1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for the measurement and payment of Contract pay items.

##### 1.2 SUBMITTALS

- A. Provide the following submittals in accordance with Section 01 33 23.
  - 1. Field notes of all measurements for payment purposes.

##### 1.3 SCHEDULING

- A. Notify Engineer as far in advance as possible of pay item measurements a minimum of three days prior to submission of the application for payment.
- B. Allow for and afford Engineer ample time, space, and equipment to observe and verify measurements.

##### 1.4 DESCRIPTION

- A. For unit price items, the Contractor shall be paid for the actual amount of work accepted and for the actual amount of materials in place during the period of construction. After the work is completed and before final payment is made, the Engineer shall make final measurements to determine the quantities of the various items of work accepted as the basis for final payment.
- B. For lump sum items, the Contractor shall be paid on the basis of actual work accepted until the work item is completed. Upon completion of the item, 100 percent of the lump sum price may be paid, subject to the terms of the General Conditions or Supplemental Conditions.
- C. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.

##### 1.5 MEASUREMENT REQUIREMENTS

- A. Where payments are to be made on a unit price or adjustment item unit price basis, notify Engineer so that they may observe existing conditions and the status of work-in-place and may witness measurements being made. Where Engineer has not witnessed required



measurements and cannot verify or substantiate quantities, they may not recommend payment for same.

- B.** Maintain complete and legible field notes for all measured items. Notes shall contain spaces for Contractor's and Engineer's signatures plus additional space for comments. An original and copy shall be made for all notes with the copy being submitted to Engineer. The Engineer's signature shall not be construed as an acceptance of the Work or the measurements made but shall mean the Engineer was present when the measurements were made.
- C.** The Owner reserves the right to reject the Contractor's measurement of work-in-place and to have this Work measured by the Engineer or independent party acceptable to the Contractor at the Owner's expense.

## **1.6 LIMITS OF PAYMENT**

- A.** Payments will be made for the quantities installed and accepted in accordance with the Contract. Upon completion of construction, if actual quantities are different than the quantities estimated in the Bid, the Contract unit prices will still prevail, except as follows. When alterations in the quantities of work not requiring Change Orders are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving Change Orders will be paid for as stipulated in such Change Orders.
- B.** The Contractor shall accept as full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to complete the work and for performing all work; also for all 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. No extra payment shall be made to the Contractor for any delays caused by defective workmanship or rescheduling of work by others.

## **1.7 WORK ELIMINATED FROM CONTRACT**

- A.** Should any work be deleted from the Contract a Change Order shall be issued as stipulated in the General Conditions.

## **1.8 PARTIAL PAYMENTS**

- A.** Partial payments shall be made monthly as the work progresses. All partial invoices and payments shall be subject to correction in the final quantity invoice and payment. No monthly payment shall be required to be made when, in the judgment of the Engineer, the Work is not proceeding in accordance with the provisions of the Contract.

- B. No partial payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures of any kind which are not a permanent part of the Contract.
- C. Each subsequent Application for Payment shall include an affidavit of the Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of the Contractor's obligations reflected in prior Applications for Payment. The Owner shall have the right to deduct from the next progress payment an amount equal to payment for said material and/or equipment if reasonable and adequate proof is not submitted.

## **1.9 FINAL PAYMENT**

- A. The Contractor will prepare a final payment requisition for review by the Engineer for the work performed. Upon approval by the Engineer, the Owner will pay the entire sum found to be due less any retainage provided for in the General Conditions and any previous payments.

## **1.11 PAYMENT FOR MATERIALS DELIVERED**

- A. Payment may be made for all or part of the value of materials stored on site. The application for payment shall be accompanied by a summary of materials stored on site that will establish the Owner's title to the materials and protect the Owner's interest therein, including insurance. The amount thus paid by the Owner shall reduce the estimated amounts due the Contractor as the material is incorporated into the Work. Materials stored on site, that have been paid for by the Owner, shall become the property of the Owner and, in the event of default on the part of the Contractor, the Owner may use these materials in the construction of the Work. The Contractor shall be responsible for any damage to, or loss of, any materials.

## **PART 2 – PRODUCTS**

### **2.1 GENERAL**

- A. Provide all labor, materials, facilities, measuring devices and all other equipment necessary to perform all measurements for payment purposes.

## **PART 3 – EXECUTION**

### **3.1 GENERAL**

- A. Perform all measuring required by this Section.
- B. No separate payments will be made for Work under this Contract except for the pay items stipulated in this Part 3. All costs in connection with the Work shall be included in one or more of the pay items as appropriate.

- C. The names of pay items in this Section, the Schedule of Values, or the Bid Form may be abbreviated or non-comprehensive and are for general identification purposes of the item only. The names shall not be construed to represent a complete description of all the Work included under each pay item. Refer to the subsequent paragraphs of this Section for more complete descriptions of Work to be included under each Contract pay item.

### **3.2 LUMP SUM PRICE PAY ITEMS**

- A. Measurement - no measurements will be made.
- B. Payment shall be on a lump sum basis, based on the percentage of work completed and accepted by the engineer for each lump sum pay item.

### **3.3 UNIT PRICE PAY ITEMS**

- A. Measurement and payment shall be made by the unit.

### **3.4 DESCRIPTION OF PAY ITEMS**

The following pay items describe the measurement of and payment for the work to be done under the items listed in the Bid.

#### **Item 1 – General Conditions and Miscellaneous Work**

- A. Measurement: General Conditions and Miscellaneous Work shall consist of preparatory work and operations including but not limited to, the following items:

1. Project Management
2. Mobilization/demobilization
3. Submittals
4. Testing not paid for by the Owner
5. Equipment delivery
6. Sanitary facilities
7. Furnishing of insurance
8. Permits and permit conditions
9. Clean-up
10. Coordination with utilities, other contractors, and other project-related entities
11. Installation and removal of temporary facilities
12. Project Closeout
13. Project record drawings

- B. Payments:

1. Payment shall be made at the contract lump sum price, which price shall be full compensation for all costs incurred in furnishing labor, tools, materials an equipment

and incidental work item costs for the preparatory work and operations described in the above measurement section for this item.

2. For the purpose of computing payments, the adjusted contract price shall include all contract unit price and lump sum items except the contract lump sum price for the item General Conditions, Mobilization, and Demobilization.
3. Payments shall be made as follows:
  - a. First payment of fifty percent (50%) of the contract lump sum price for Mobilization or 2.5 percent of the adjusted contract price, whichever is less, will be made not later than payment of the first application for payment following the completion of five percent (5%) of the total contract price.
  - b. Second payment of twenty five percent (25%) of the contract lump sum price for Mobilization or 1.2 percent of the adjusted contract price, whichever is less, will be made not later than payment of the first application for payment following the completion of fifty percent (50%) of the total contract price.
  - c. Upon substantial completion of all work on the project, payment of the remainder of the contract lump sum price for Mobilization will be paid.

#### Item No. 2 – Sewer Manhole Minor Repairs

- A.** Measurement – Actual number of manholes repaired as specified for manholes.
- B.** Payment – Payment for manhole repair shall be made for the quantity repaired at the unit bid price each as stated in the bid schedule. Payment shall be full compensation for completing the manhole repair, traffic control/flagging, restoring the surface around the sewer manhole, and all work incidental to the satisfactory completion of the item for which payment is not provided under other items.

#### Item No. 3 – Sewer Main Cleaning and CCTV Scan

- A.** Measurement – Actual length in feet of sewer main cleaned and videoed as specified. Measurement shall be made along the centerline of the pipe.
- B.** Payment – Payment for cleaning and videoing pipe of the size specified shall be made for the quantity installed at the unit bid price per linear foot as stated in the bid schedule.

#### Item 4 – Sewer Main Cured in Place Pipe Lining

- A.** Measurement – Actual length in feet of sewer main lined as specified. Measurement shall be made along the centerline of the pipe.

- B.** Payment – Payment for the lining of pipe shall be made for the quantity installed at the unit bid price per linear foot as stated in the bid schedule.

Item 5 –Open Cut 8” Pipe replacement

- A.** Measurement – Actual length in feet of sewer main replaced as specified. Measurement shall be made along the centerline of the pipe.
  
- B.** Payment – Payment for replacement of pipe shall be made for the quantity installed at the unit bid price per linear foot as stated in the bid. Payment shall be full compensation for trenching, clearing tree branch trimming, holding utility poles, excavation (except rock excavation and exploratory excavation), sheeting and bracing, dewatering, trench dams, pipe, polyethylene wrap if required, bedding, jointing, connections to existing, select backfill around and over pipe, warning tape, tracer wire (for PVC pipe), in-kind soil backfilling, compaction, restoring the trench surface to grade, in-kind gravel backfill, testing, traffic control and erosion control and all work incidental to the satisfactory completion of the item for which payment is not provided under other items. Payment will be made for ninety (90) percent of the price upon completion of installation; the remaining ten (10) percent upon completing satisfactory testing subject to other retainages set forth in the contract documents. Payment for this item may be withheld if the record drawings do not reflect the work for which payment is requested.

**End of Section**

## SECTION 01 26 13

### REQUESTS FOR INFORMATION

#### PART 1 – GENERAL

##### 1.1 GENERAL

- A. The Contractor shall prepare and submit Requests for Information (“RFIs”) if it requires clarification of the Contract Documents. All RFIs shall be in writing using the attached form. The Contractor may fax, deliver, or mail RFIs to the Engineer. RFIs from the Contractor’s subcontractors or suppliers will not be accepted or processed.
- B. If the information can be found in the Contract Documents, it will be indicated in the RFI and returned to the Contractor. The Engineer’s time for preparing responses to RFIs that are self-evident in the Contract Documents will be charged to the Contractor.
- C. The Engineer’s review of the RFI will be conducted with reasonable promptness while allowing sufficient time in the Engineer’s judgment to permit adequate review. In general, the Engineer anticipates responding to the RFI within four (4) business days.

#### PART 2 – PRODUCTS (Not Applicable)

#### PART 3 – EXECUTION

##### 3.1 GENERAL

- A. All RFIs shall be numbered sequentially starting with No. 001. The Contractor shall maintain a log of all RFIs submitted including at a minimum the date of submittal, subject and receipt of response from the Engineer. An electronic copy of the following form will be provided to the Contractor.

**End of Section**

**REQUEST FOR INFORMATION**

PROJECT:    \_\_\_[CLIENT NAME]\_\_\_  
              \_\_\_[PROJECT NAME]\_\_\_

TO:   Horizons Engineering  
      Attn: \_\_\_\_\_  
      34 School Street  
      Littleton, NH 03561  
      Fax: 603.444.1343

<b>REQUEST</b>			
Title:		Date:	
Drawing No.:		Specification Section No.:	
Date Response Required:			
Attachments:			
Contractor:		Submitted by:	

<b>RESPONSE</b>			
Horizons Engineering	Reviewed by:		Date:

## SECTION 01 31 13

### PROJECT COORDINATION

#### PART 1 – GENERAL

##### **1.1 SUMMARY**

- A.** This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
1. Administrative and supervisory personnel.
  2. General installation provisions.
  3. Cleaning and protection.

##### **1.2 COORDINATION**

- A.** Coordination: Coordinate construction activities to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations for proper installation, connection, and operation.
1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
  2. Where availability of space is limited, coordinate installation of different components to ensure maximum accessibility for required maintenance, service and repair that meets each component manufacturer's written installation requirements.
  3. Make adequate provisions to accommodate items scheduled for later installation.
- B.** Where specified, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- C.** Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly and timely progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of schedules.
  2. Installation and removal of temporary facilities.



3. Delivery and processing of submittals.
4. Progress meetings.
5. Project close-out activities.

**D. Conservation:** Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.

**E. Utilities:** Coordinate Work with applicable utilities within the Project limits. Contact DigSafe at 811 or 888-DIG-SAFE to locate utilities prior to starting Work as well as if damage occurs or if conflicts or emergencies arise during the Work.

#### **1.4 SUBMITTALS**

**A.** Provide the following submittals in accordance with Section 01 33 23.

**B. Coordination Drawings:** Prepare and submit coordination drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the interrelationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.

**C. Staff Names:** Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other onsite personnel; identify individuals with their duties and responsibilities; list their addresses and telephone numbers.

1. Post copies of the list in the Project meeting room, in the temporary field office, and at each temporary land telephone.

#### **PART 2 – PRODUCTS** (Not Applicable)

#### **PART 3 – EXECUTION**

#### **3.1 GENERAL INSTALLATION PROVISIONS**

**A. Inspection of Conditions:** Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

- B.** Manufacturer's Instructions: Comply with manufacturer's written installation instructions and recommendations to the extent that those instructions and recommendations are more explicit or stringent than the Contract Documents' requirements.
- C.** Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D.** Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and structure movement.
- E.** Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Engineer for final decision.
- F.** Recheck measurements and dimensions before starting each installation.
- G.** Install each component during weather conditions and Project status that meet industry and manufacturer installation requirements. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H.** Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I.** Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Engineer for final decision.

### **3.2 CLEANING AND PROTECTION**

- A.** During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B.** Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C.** Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### **End of Section**

## SECTION 01 31 19

### PROJECT MEETINGS

#### PART 1 – GENERAL

##### 1.1 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:
1. Pre-Construction Conference.
  2. Pre-Installation Conferences.
  3. Coordination Meetings.
  4. Progress Meetings.

##### 1.2 PRE-CONSTRUCTION CONFERENCE

- A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than 15 days after the Effective Date of the Contract and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner, Engineer and their consultants, the Contractor and its superintendent, major subcontractors, and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
- C. Agenda: Discuss items of significance that could affect progress including such topics as:
1. Designation of responsible personnel
  2. Owner authority and responsibilities
  3. Contractor authority and responsibilities
  4. Engineer authority and responsibilities
  5. Distribution of Contract Documents
  6. Office, Work, and storage areas
  7. Tentative construction schedule
  8. Temporary utilities
  9. Subcontractors
  10. Equipment deliveries and priorities
  11. Schedule of Values
  12. Preliminary Progress Schedule, critical Work sequencing
  13. Submittals
  14. Procedures for processing Applications for Payment
  15. Preparation of record documents

16. Procedures for processing field decisions and Change Orders
17. Use of the premises, staging, storage
18. Safety procedures, first aid
19. Security
20. Housekeeping
21. Working hours
22. Project permits
23. Quality control and testing
24. Work of other contractor(s) that Contractor needs to coordinate with to complete the Work
25. Progress meetings

#### **1.4 PRE-INSTALLATION CONFERENCES**

- A. Conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction. The installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow shall attend the meeting. Advise the Engineer of scheduled meeting dates.
  1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:
    - a. Contract Documents
    - b. Options
    - c. Related Change Orders
    - d. Purchases
    - e. Deliveries
    - f. Shop Drawings, Product Data and quality control Samples
    - g. Possible conflicts
    - h. Compatibility problems
    - i. Time schedules
    - j. Weather limitations
    - k. Manufacturer's recommendations
    - l. Compatibility of materials
    - m. Acceptability of substrates
    - n. Temporary facilities
    - o. Space and access limitations
    - p. Governing regulations
    - q. Safety
    - r. Inspection and testing requirements
    - s. Required performance results
    - t. Recording requirements
    - u. Protection

2. Record significant discussions and agreements and disagreements of each conference along with the approved schedule. Promptly distribute the record of the meeting to everyone concerned including the Owner and Engineer.
3. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

## **1.5 PROGRESS MEETINGS**

- A. Conduct progress meetings at the Project site at regularly scheduled intervals. Notify the Owner, Engineer, and other concerned parties of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.
- B. Attendees: In addition to representatives of the Contractor, Owner, and Engineer, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.
- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
  1. Contractor's Construction Schedule: Review progress since the last meeting. Determine the status of each activity in relation to the Contractor's construction schedule, whether on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
  2. Review the present and future needs of each entity present, including such items as:
    - a. Interface requirements
    - b. Time
    - c. Sequences
    - d. Deliveries
    - e. Off-site fabrication problems
    - f. Access
    - g. Site utilization
    - h. Temporary facilities and services
    - i. Hours of work
    - j. Hazards and risks
    - k. Housekeeping

- l. Quality and work standards
  - m. Change orders
  - n. Documentation of information for payment requests
  - o. Inspection and acceptance of equipment
  - p. Requirements for equipment start-up
3. Status of submittals
  4. Status of progress payments
  5. Any conflicts, discrepancies, or other difficulties requiring resolution
- D. Reporting:** No later than 3 days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
1. **Schedule Updating:** Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

**PART 2 – PRODUCTS** (Not Applicable)

**PART 3 – EXECUTION** (Not Applicable)

**End of Section**

## SECTION 01 33 23

### SUBMITTALS

#### PART 1 – GENERAL

##### 1.1 SUMMARY

- A. This Specification specifies administrative and procedural requirements for submittals required for performance of the Work. Submittals covered by these requirements include project schedule, manufacturers' information, shop drawings, test procedures, test results, samples, requests for substitutions, operation and maintenance manuals, record drawings, and miscellaneous work-related submittals. Submittals shall also include, but not be limited to, all mechanical, electrical and electronic equipment and systems, materials, reinforcing steel, fabricated items, and piping and conduit details.
- B. Administrative submittals may include, but are not limited to:
1. Permits
  2. Applications for payment
  3. Performance and payment bonds
  4. Insurance certificates
  5. List of Subcontractors
  6. Documentation confirming conformance to Equal Employment Opportunity and Labor Laws
- C. The Contractor shall furnish all drawings, specifications, descriptive data, certificates, samples, tests, methods, schedules, and manufacturer's installation and other instructions as specifically required in the Contract Documents to demonstrate fully that the materials and equipment to be furnished and the methods of work comply with the provisions and intent of the Contract Documents.

##### 1.2 RESPONSIBILITIES

- A. The Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. The Contractor shall verify that all features of all products conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items, models, or series of equipment, which are being submitted for review. All extraneous materials shall be crossed out or otherwise obliterated.
- B. The Contractor shall coordinate submittals with the work so that work will not be delayed. The Contractor shall coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals.

### **1.3 SUBMITTAL PROCEDURES**

- A. Coordination:** Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay. Provide six (6) copies of submittals to the Engineer for review.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
  2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
    - a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
  3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
    - a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Engineer will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
    - b. If an intermediate submittal is necessary, process the same as the initial submittal.
    - c. No extension of Contract Time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation:** Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
  2. Include the following information on the label for processing and recording action taken.
    - a. Project name
    - b. Date
    - c. Name and address of Engineer
    - d. Name and address of Contractor



- e. Name and address of subcontractor
  - f. Name and address of supplier
  - g. Name of manufacturer
  - h. Number and title of appropriate Specification section
  - i. Drawing number and detail references, as appropriate
- C. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Engineer using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
- 1. On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
  - 2. A unique, sequential number shall be noted on the transmittal form accompanying each item submitted.

#### **1.4 CONTRACTOR'S CONSTRUCTION PROGRESS SCHEDULES**

- A. Prepare fully-developed, horizontal bar chart (Gantt) type construction progress schedules prepared by the critical path method or other approved means and in accordance with Specification section 00 72 43-2.03.A and 2.05.
- 1. Provide a separate time bar for each significant construction activity and all items of work listed in the bid. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the Schedule of Values, if applicable. The dependencies between activities shall be indicated so that it may be established what effect the progress of any one activity has on the schedule.
  - 2. Schedule items included in Section 01 11 13 must be addressed on the schedule.
  - 3. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate actual completion.
  - 4. Time for completion, materials delivery dates, specific dates for construction activities, and sequencing requirements shall be shown on the schedule. Activities making up the critical path shall be identified.
  - 5. No activity on the schedule shall have a duration longer than 21 days, excepting a delivery schedule, or assigned value greater than \$50,000.

6. The schedule duration of each activity shall be based on the work being performed during the normal 40-hour work week with allowances made for legal holidays and normal weather conditions.
  7. Prepare the schedule on a sheet, or series of sheets, of sufficient width to show data for the entire construction period.
  8. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
  9. Coordinate the Contractor's construction schedule with the Schedule of Values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
  10. The Contractor shall be responsible for revising the schedule when changes occur, when requested by the Owner and with each application for progress payment. Changes from the previous submission shall be highlighted for ease of identification. The Contractor shall provide a brief narrative report summarizing anticipated problems, recommended actions and effects upon the schedule and the schedule of other trades or activities.
  11. The Engineer's review is only for the purpose of checking conformity with the Contract Documents and assisting the Contractor in coordinating the work with the needs of the Project. It is not to be construed as relieving the Contractor from any responsibility to determine the means, methods, techniques, sequences, and procedures of construction and site safety as provided in the Contract Documents.
- B. Phasing:** Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.
- C. Work Stages:** Indicate important stages of construction for each major portion of the Work, including testing and installation.
- D. Area Separations:** Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- E. Distribution:** Following response to the initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

**F. Schedule Updating:** Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

## **1.5 SCHEDULE OF SUBMITTALS**

**A.** Refer to Specification section 00 72 43 for additional Schedule of Submittals requirements. Engineer shall review the Contractor's Schedule of Submittals and may add or delete submittals from the list as deemed appropriate by the Engineer.

**B. Distribution:** Following response to initial submittal, print and distribute copies to the Engineer, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

**C. Schedule Updating:** Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

## **1.6 SHOP DRAWINGS**

**A.** Submit newly prepared information, drawn to accurate scale. Indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis for Shop Drawings.

**B.** Shop Drawings shall adequately provide the dimensions and layout of equipment and shall include plan and elevation views, blow-up drawings to depict all key components and materials, sections to depict how parts fit together and function, and other details as required to provide full detail of the equipment and its component parts. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Dimensions
2. Identification of products and materials included
3. Compliance with specified standards

4. Notation of coordination requirements
  5. Notation of dimensions established by field measurement
  6. Sheet Size: Except for templates, patterns and similar full size drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 24" x 36"
  7. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
  8. Do not use Shop Drawings for construction without an appropriate final stamp indicating action taken.
- C. Shop Drawings shall not fulfill the requirements for record drawings but may be included with record drawings when applicable.

## **1.7 PRODUCT DATA**

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's catalog cut sheets, installation instructions, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, performance curves, brochures, model number identification, and standard published manufacturer's material specifying the quality, make-up, application and materials of fabrication for the specified products.

## **1.8 SAMPLES**

- A. Submit samples as required. Samples include, but are not limited to, physical examples of the work, such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effects, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.
1. Submittals: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.
  2. Maintain sets of samples as returned at the Project site for quality comparisons throughout the course of construction.
  3. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

## **1.9 TEST DATA**

- A. The Contractor shall notify the Owner not less than 7 working days prior to the date that the equipment installation(s) and/or other materials or portions of the Work will be ready for inspection and testing.
- B. Test certification shall be provided and signed by the responsible party to the satisfaction of the Owner within two weeks of the actual test. It shall include the following:
  - 1. Date of report, name, address, telephone number and signatures of individuals performing the test or inspection and of individuals issuing the report.
  - 2. Project name, number, and Contract number.
  - 3. Dates, times, temperature, weather conditions, and locations of tests and inspections.
  - 4. Identify the work or product by specification section and test or inspection method.
  - 5. Complete inspection or test data, results of test, interpretation of test results, compliance with the Contract Documents, and recommendations regarding retesting.

## **1.10 ENGINEERED PRODUCTS**

- A. Products requiring professional engineering design and/or certification shall be stamped by a professional engineer with valid registration in the state in which the Project is located. Such stamp shall be consistent with the rules and regulations of the state governing professional engineering registration.

## **1.11 ENGINEER'S ACTION**

- A. Except for submittals for record, information, or similar purposes, where action and return is required or requested, the Engineer will review each submittal, mark to indicate action taken, and return two (2) marked-up copies to the Contractor within 20 calendar days after receipt of a submittal for review and comment unless otherwise specified. Compliance with specified characteristics is the Contractor's responsibility.
  - 1. Action Stamp: The Engineer will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked as follows to indicate the action taken:
    - a. Reviewed as submitted: Where submittals are marked "Reviewed as submitted," that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

- b. Reviewed – make corrections noted: When submittals are marked "Reviewed – make corrections noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and the requirements of the Contract Documents; final acceptance will depend on that compliance. Where submittal information will be incorporated in operation and maintenance data, a corrected copy shall be provided.
- c. Rejected – revise and re-submit: When submittal is marked "Rejected - revise and resubmit," the Contractor shall not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay.

**1.12      EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS**

- A. Review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide shall not relieve the Contractor of its responsibility for errors therein and shall not be regarded as an assumption of risks or liability by the Engineer or the Owner, or by any officer or employee thereof, and the Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "Reviewed as submitted" or "Reviewed – make corrections noted" shall mean that the Owner has no objection to the Contractor, upon the Contractor's own responsibility, using the plan or method of work proposed or providing the materials or equipment proposed.

**PART 2 – PRODUCTS** (Not Applicable)

**PART 3 – EXECUTION** (Not Applicable)

**End of Section**

## SECTION 01 77 19

### PROJECT CLOSEOUT

#### PART 1 – GENERAL

#### 1.1 GENERAL

- A. Substantial Completion:** Before requesting inspection for Substantial Completion, complete the following:
1. In the Application for Payment that coincides with the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed substantially complete.
  2. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
  3. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar record information.
  4. Change-over permanent locks and transmit keys to the Owner.
  5. Complete start-up testing of systems, and instruction of the Owner's personnel. Remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
  6. Complete final clean up. Touch-up and repair and restore marred exposed finishes.
- B. Inspection Procedures:** On receipt of a request for inspection, the Engineer will proceed or advise the Contractor of unfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Engineer will repeat inspection when requested and assured that the Work has been substantially completed.
  2. Results of the completed inspection will form the basis of requirements for final acceptance.
- C. Final Acceptance:** Before requesting inspection as basis for final acceptance and final payment, complete the following:
1. Submit final payment request with releases.

2. Submit a final statement, accounting for changes to the Contract Sum.
  3. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.
  4. Submit final meter readings for utilities, a record of stored fuel, and similar data as of Substantial Completion.
  5. Submit consent of surety to final payment.
  6. Submit evidence of continuing insurance coverage complying with insurance requirements.
- D. Reinspection Procedure:** The Engineer will reinspect the Work upon receipt of notice that the Work has been completed, except items whose completion has been delayed because of circumstances acceptable to the Engineer.
1. Upon completion of reinspection, the Engineer will advise the Contractor if Work is incomplete or if obligations that have not been fulfilled but are required for final acceptance.
  2. If necessary, reinspection will be repeated.
- E. Training:** Arrange for the installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Include a detailed review of the submitted operations and maintenance manuals. As part of the instruction, demonstrate the following procedures:
1. Start-up and shutdown.
  2. Control Sequences.
  3. Adjustments.
  4. Inspection procedures.
  5. Safety procedures.
  6. Emergency operations.
- F. Final Cleaning:** The Contractor must clean the Site before Final Acceptance will be made. Employ experienced workers for final cleaning. Clean each surface to the condition expected in a commercial building cleaning and maintenance program. Such cleaning shall include, but not be limited to, the following:
1. Remove labels that are not permanent labels.
  2. Clean transparent materials. Remove glazing compound. Replace chipped or broken glass.



3. Clean exposed hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
4. Clean surfaces of mechanical and electrical equipment using cleaning materials appropriate to the surface and material being cleaned. Remove excess lubrication.
5. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
6. Clean the site of rubbish, litter and other foreign substances. Sweep paved areas; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
7. Remove waste and surplus materials, rubbish, and temporary construction facilities from the Site.

**G.** Removal of Protection: Remove temporary protection and facilities.

**H.** Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Remove waste materials from the site and dispose of in a lawful manner.

**PART 2 – PRODUCTS** (Not Applicable)

**PART 3 – EXECUTION** (Not Applicable)

**End of Section**

## SECTION 01 78 36

### WARRANTIES

#### PART 1 – GENERAL

##### 1.1 GENERAL

- A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in Contract Documents, to extend time limits provided by standard warranties or to provide greater rights for the Owner.
  - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
- C. Requirements for warranties for products and installations that are specified to be warranted, are included in the individual Specifications.
- D. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.
- E. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- F. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- G. Replacement Cost: On determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through part of its useful service life.
- H. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
  - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and limit selections

to products with warranties not in conflict with requirements of the Contract Documents.

2. The Owner reserves the right to refuse to accept Work where a special warranty, or similar commitment is required, until evidence is presented that entities required to countersign commitments are willing to do so.
- I.** Submit written warranties to the Engineer prior to the date for Substantial Completion. If the Engineer's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties on the Engineer's request.
1. When a designated portion of the Work is completed and occupied or used, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Engineer within fifteen days of completion of that designated portion of the Work.
- J.** When a special warranty is to be executed by the Contractor or the Contractor and a subcontractor, supplier, or manufacturer, prepare a written document that contains appropriate terms and identification ready for execution by the required parties. Submit a draft to the Owner through the Engineer for approval prior to final execution.
1. Refer to individual Specifications for specific content and particular requirements for submittal of special warranties.
- K.** Bind warranties in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
1. Provide heavy paper dividers with celluloid covered tabs for each warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
  2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES", the Project title or name, and the name of the Contractor.
  3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each warranty, as necessary, for inclusion in each required manual.

**PART 2 – PRODUCTS** (Not Applicable)

**PART 3 – EXECUTION** (Not Applicable)

**End of Section**

## **SECTION 01 78 39**

### **PROJECT RECORD DRAWINGS**

#### **PART 1 – GENERAL**

##### **1.1 DESCRIPTION**

- A. Work covered under this Section includes the preparation and submittal of record documents.

##### **1.2 SUBMITTALS**

- A. As soon as possible after the completion of the Work, submit record documents as specified in the Section to the Engineer for review and final payment.
- B. The Engineer will retain all materials submitted by the Contractor.

#### **PART 2 – PRODUCTS**

##### **2.1 RECORD DRAWINGS**

- A. One (1) set of legibly marked plans showing all work as actually installed.

#### **PART 3 – EXECUTION**

##### **3.1 RECORD DOCUMENTS**

- A. Maintain on-site in a clean, orderly fashion one (1) set of all drawings, specifications, addenda, change orders, test reports, submittals, and all other information pertinent to the work.

##### **3.2 RECORD DRAWINGS**

- A. Maintain one (1) set of record drawings which accurately depicts existing conditions on-site, the Work as it is installed, and all existing utilities, etc. encountered during the installation of the work.

**B.** Legibly mark up one (1) set of drawings with the following information as a minimum:

1. The work as it is installed.
2. All approved field changes.
3. All pipes, structures, or obstructions encountered during the performance of the work, including the limits and depth of rock or unstable materials.
4. Locations, ties, and elevations of all buried utilities, appurtenances, and/or structures to the nearest 0.1 foot.
5. All changes to the work not shown on original construction drawings.
6. Locations and elevations of all Work; limits and quantities of all pay items.

## **DIVISION 02 – EXISTING CONDITIONS**

**SECTION 02 01 00**

**EXISTING UTILITIES AND UNDERGROUND STRUCTURES**

**PART 1 – GENERAL**

**1.1 DESCRIPTION**

- A.** The Engineer and Owner have made limited investigations to determine the locations of underground utilities and structures. Because of the nature of subsurface utilities and the difficulty in determining exact locations, the locations as shown on the plans should be considered approximate. Wherever underground utilities are encountered by the Contractor during construction they shall be protected by the Contractor, at his own expense, until the construction work is complete and the existing structures are made secure. Injury to any such utilities/structures caused by or resulting from the Contractor's work shall be repaired at the Contractor's expense. No additional compensation will be allowed for any delays sustained by the Contractor due to any interference from underground utilities.
- B.** It shall be the Contractor's responsibility to notify Dig Safe and locate all utilities within the construction area prior to proceeding with construction.
- C.** The restoration of existing property shall be done as promptly as practicable and shall not be left until the end of the construction period.
- D.** Cooperation with Utilities:
  - 1. The Contractor shall allow the Owner or its agents and other contractors, and public service corporations, or their agents, to enter upon the work for the purpose of constructing, maintaining, repairing, removing, altering or replacing such pipes, sewers, conduits, manholes, wires, poles, or other structures and appliances as are now located or as may be required or permitted at or on the work by the Engineer.

The Contractor shall cooperate with all aforesaid parties and shall allow reasonable facilities for the prosecution of any other work by the Owner, or of public service corporation, to be done in connection with this work. Care shall be taken at all times to inconvenience abutters as little as possible.

**PART 2 – PRODUCTS**

Not Used

**PART 3 – EXECUTION**

Not Used

**End of Section**



## **DIVISION 31 – EARTHWORK**

**SECTION 31 08 00**

**RESTORATION OF SURFACES**

**PART 1 – GENERAL**

**1.1 DESCRIPTION**

A. Work covered in this Section includes the restoration of surfaces and items disturbed during the Work.

B. Related work described elsewhere:

Earthwork

Division - 31

**1.2 QUALITY ASSURANCE**

A. Restoration of surfaces and items shall be done in accordance with the requirements of those authorities having jurisdiction.

B. Existing pavements and bituminous walks shall be replaced using new pavement equal to or better than the existing in quality and thickness, except where otherwise specified. Pavements shall be free from all noticeable sags, humps, cracks, or other defects.

C. Replacement curbing shall be of the same size, material, and appearance as adjoining curbing.

D. Grassed and vegetated areas shall be loamed and replanted with healthy vegetation of a type and quality equal to or superior to existing vegetation.

E. Miscellaneous items including but not limited to mailboxes, fencing, signage, etc. shall be carefully removed and replaced.

**1.3 SUBMITTALS**

A. Submittals shall be submitted in accordance with Section - 01 33 23 “Submittals”.

**1.4 SCHEDULING**

A. All surfaces shall be restored as soon as possible after completion of that portion of the Work.

## **PART 2 – MATERIALS**

### **2.1 NEW MATERIALS**

- A. New materials shall comply with the requirements of the authority having jurisdiction.

### **2.2 REUSED MATERIALS**

- A. Items such as granite curbs, fencing, signs, walks, etc. which have been disturbed during the Work may be replaced with existing materials when, in the opinion of the Engineer, such materials are in acceptable condition.

## **PART 3 – EXECUTION**

### **3.1 INSPECTION**

- A. Prior to restoring any surfaces, carefully inspect the Work to ensure that the work is complete. Unnecessary disturbance of restored surfaces is to be avoided.

### **3.2 PLANTS**

- A. Replace in their original locations all surviving, health plants, shrubs, trees, etc. which were removed during installation of the Work.
- B. Replace with the same type and size any vegetation which does not survive moving.

### **3.3 GRASS AND LAWNS**

- A. Grassed areas are to be restored in accordance with Section 32 92 00 “Loaming, Seeding, and Fertilizing”.

### **3.4 BITUMINOUS PAVING**

- A. All Work shall conform to Section 32 12 16.31 “Bituminous Concrete Pavement – NH”.
- B. Replace all pavement markings immediately after installation of new pavement.

### **3.5 MISCELLANEOUS**

- A. Replace miscellaneous items such as fencing, gates, signage, mailboxes, etc. in the same location as soon as possible after installation of the Work.

## **END OF SECTION**

## **SECTION 31 11 00**

### **CLEARING, GRUBBING, and STRIPPING**

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

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SUMMARY**

- A. This Section includes the following:
  - 1. Protection of existing trees
  - 2. Removal of trees and other vegetation
  - 3. Topsoil stripping
  - 4. Clearing and grubbing
  - 5. Removing above-grade improvements
  - 6. Removing below-grade improvements

##### **1.3 PROJECT CONDITIONS**

- A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
  - 1. Protect improvements on adjoining properties and on Owner's property.
  - 2. Restore damaged improvements to their original condition, as acceptable to property owners.
- C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.
  - 3. Water trees and other vegetation to remain within limits of contract work as

- required to maintain their health during course of construction operations.
4. Provide protection for roots over 1-1/2 inch diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
  5. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to Engineer. Employ a competent arborist to repair damages to trees and shrubs.
  6. Replace trees which cannot be repaired and restored to full-growth status, as determined by arborist.
- D.** Salvageable Equipment and Materials: Carefully remove any items indicated to be salvaged, and store on Owner's premises where indicated or directed.

## **PART 2 - PRODUCTS**

Not Applicable

## **PART 3 - EXECUTION**

### **3.1 SITE CLEARING**

- A.** General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions as required to permit installation of new construction. Do not exceed clearing limits shown on the plans and clear only the minimum area required to install the work. Excessive clearing is to be avoided.
1. Cut minor roots and branches of trees indicated to remain in a clean and careful manner, where such roots and branches obstruct installation of new construction.
- B.** Clearing and Grubbing: Clear indicated areas of site of trees, shrubs and other vegetation, except for those indicated to be left standing.
1. Completely remove stumps, roots, and other debris protruding through ground surface. Stockpile separate from other materials to avoid contamination.
  2. Use only hand methods for grubbing inside drip line of trees indicated to remain.
  3. Fill depressions caused by clearing and grubbing operations with common earth, unless further excavation, earthwork or surface treatment is indicated.

- a. Unless indicated otherwise, place fill material in horizontal layers not exceeding one (1) foot loose depth, and compact to a density nearly equal to that of adjacent, original ground.
- C. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.

### **3.2 DISPOSAL OF WASTE MATERIALS**

- A. Removal from Owner's Property: Remove and properly dispose of stumps, waste materials and unsuitable or excess earth materials off site unless otherwise directed by the Engineer.

**END OF SECTION**

## SECTION 31 23 16

### EARTHWORK

#### PART 1 - GENERAL

##### 1.1 DESCRIPTION

- A. Work covered by this Section includes Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01 and Division 31 Specification Sections.
- B. Work performed under this Section is intended to conform with State of New Hampshire, Department of Transportation, “Standard Specifications for Road and Bridge Construction (latest revision)”.

##### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Preparing subgrade, subbase and base for building slabs, walks, and pavements.
  - 2. Excavating, trenching and backfilling of underground utilities, structures and foundations.
  - 3. Preparing subgrade and installing earthen material courses for site projects.

##### 1.3 DEFINITIONS

- A. Borrow consists of approved material required for the construction of fills or other portions of the work, and shall be obtained from approved sources, which sources may be designated in the Contract.
- B. Earth consists of clay, loam, sand, gravel, topsoil and other materials not otherwise classified.
- C. Excavation consists of removal of material encountered to subgrade elevations or dimensions indicated and subsequent disposal of materials removed, classified as follows:
  - 1. Earth Excavation includes excavation of pavements and other obstructions visible on surface; underground structures, utilities, and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.
    - a. Common Earth Excavation consists of all excavation other than Trench

Earth Excavation and Rock Excavation.

- b. Trench Earth Excavation consists of excavations for pipelines, cables, conduits, manholes and other related work where the bottom-width limit of excavation does not exceed 8 feet.
2. Rock Excavation consists of all solid rock which cannot be removed without blasting or ripping. Intermittent drilling, blasting, or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.
  - a. Site Rock Excavation consists of all rock excavation other than Trench Rock Excavation and includes the excavation of boulders and parts of masonry structures when found to measure 2 cubic yards or more.
  - b. Trench Rock Excavation consists of rock excavation where solid rock and boulders or parts of masonry structures found to measure 1 cubic yard of more are removed from trenches where the bottom-width limit of excavation does not exceed 8 feet.
3. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.
  - a. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.
  - b. In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.
4. Additional Excavation: When excavation has reached required subgrade elevations, notify Engineer, who will observe subgrade conditions. If Engineer believes that bearing materials at required subgrade elevations are unsuitable, continue excavation until suitable bearing materials are encountered and replace excavated material as directed by Engineer.
  - a. Removal of unsuitable material and its replacement as directed will be paid on basis of Conditions of the Contract relative to changes in work.



- D. Subgrade consists of the undisturbed earth or the compacted soil layer immediately below indicated surface treatment systems.
- E. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.
- F. Unstable Material consists of debris, frozen materials, topsoil, quick-sand, and all wet, soft or loose material which does not provide sufficient bearing capacity to satisfactorily support pipes or other work.
- G. Unsuitable Material consists of excavated material which does not meet requirements for backfilling purposes and includes solid and loose rock and unstable material.
- H. Paved Areas consist of the area which lies directly under a paved surface, whether it is asphalt, concrete, or other paving materials.
- I. Select Fill – Consists of Select Earth, imported sand and or other granular materials as specified and/or approved by the Engineer.
- J. Earth Overburden – Earth overlying solid rock and in place during blasting operations or earth not classified as Select or Common Earth.
- K. Pipe Bedding – Sand, crushed stone, or other processed granular materials as approved by the Engineer. Pipe bedding material(s) shown on the Drawings take precedence over this paragraph.
- L. Wood Sheeting and Bracing – Sound timber, free from defects which might impair its strength and effectiveness.
- M. Steel Sheeting and Bracing – ASTM A328.
- N. Backfill – General – To the extent suitable materials are available, backfill shall consist of excavated material. Where excavation does not provide sufficient approved material, import additional material from off-site.
- O. Backfill-Trenches – Select fill from pipe bedding material up to a minimum of 12” over the top of pipe; suitable Common Earth, Select Earth, of Select Fill for the remainder of the trench. Backfill materials shown on the Drawings take precedence over this paragraph.
- P. Backfill – Around Structures – In paved areas, Select Fill, or a better material when required, for the full depth. In unpaved areas, Select Fill for the full depth. Backfill materials shown on the Drawings take precedence over this paragraph.
- Q. Concrete for Cradles and Encasements – Class C concrete.

#### **1.4 SUBMITTALS**

- A.** Test Reports: Submit the following reports directly to Engineer from the testing services, with copy to Contractor:
1. Certified copies of all results of moisture-density tests and field compaction density tests.
  2. Gradations of materials proposed for use in the Work.
  3. Copies of measurements and computed volumes of unstable material removed.
  4. Certification from testing laboratory that materials meet permeability requirements at required compaction.
  5. Verification of suitability of each footing subgrade material, in accordance with specified requirements.
  6. Report of actual unconfined compressive strength and/or results of bearing tests of each strata tested.

#### **1.5 QUALITY ASSURANCE**

- A.** All fill material shall be subject to the approval of the Engineer.
- B.** Codes and Standards: Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.
- C.** Testing and Inspection Service: Contractor shall employ and pay for (unless specified otherwise) a qualified independent geotechnical testing laboratory to perform soil testing and inspection service during earthwork operations.
- D.** Testing Laboratory Qualifications: To qualify for acceptance, the geotechnical testing laboratory must demonstrate to Engineer's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct required field and laboratory geo-technical testing without delaying the progress of the Work.
- E.** Moisten or dry backfill to the proper moisture content as determined in accordance with ASTM D1577.

#### **1.6 PROJECT CONDITIONS**

- A.** Site Information: Subsurface explorations data, if made available to the Contractor, is for informational purposes only. Conditions are not intended as representations or warranties of accuracy or continuity between subsurface explorations. The Owner will not be

responsible for interpretations or conclusions drawn from this data by Contractor.

1. Additional test pits, borings or other explorations may be performed by Contractor, at the Contractor's option; however, no change in the Contract Sum will be authorized for such additional explorations.
- B. Existing Utilities:** Locate existing underground utilities in areas of excavation work. If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.
1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
  2. Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.
    - a. Provide minimum of 48-hour notice to Engineer, and receive written notice to proceed before interrupting any utility.
  3. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shutoff of services if lines are active.
- C. Use of Explosives:** Do not bring explosives onto site or use in work without prior written permission from authorities having jurisdiction.
- D. Protection of Persons and Property:** Barricade open excavations occurring as part of this work per applicable regulatory requirements.
1. Operate warning lights as recommended by authorities having jurisdiction.
  2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
  3. Perform excavation by hand within drip-line of large trees to remain. Protect root systems from damage or dry-out to the greatest extent possible. Maintain moist condition for root system and cover exposed roots with moistened burlap.
- E. Maintain excavations and trenches free of groundwater, sewage, storm water, ice and snow.**

- F. Backfilling with frozen materials or when materials already in place are frozen is not permitted.

**DELIVERY, STORAGE, AND HANDLING**

- A. Segregate topsoil, excavated materials, and other earth materials on the site to prevent contamination.
- B. Store excavated materials meeting the requirements for backfill a sufficient distance away from excavations and trenches to avoid overloading and to prevent slides or cave-ins. Do not store materials on, over, or adjacent to structures or utilities, which may collapse or become damaged due to the added weight. Remove excess excavated material promptly and dispose of off- site.
- C. No construction activity, access, storage or other use shall take place beyond the construction easement boundaries.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Common Earth – Clay, loam, sand, gravel, topsoil and similar materials which may contain some stones, pebbles, lumps and rock fragments up to 6” in largest dimension, but does not contain debris, organic or frozen material.
- B. Select Earth – Sand, gravel and similar materials which may contain small amounts of stones, pebbles, or lumps over 1” but not over 2” in largest dimension, but does not contain clay, silt, loam, organic material, debris and frozen material.
- C. Embankment Fill: Shall have no stones larger than six inches in size, organic material or debris, construction debris, clumps of silt or clay, or other deleterious materials.

Gradation:	Passing 6” Sieve	=	100%
	Passing No. 4 Sieve	=	70-100%
	Passing No. 40 Sieve	=	40-80%
	Passing No.100 Sieve	=	25-60%
	Passing No.200 Sieve	=	20-45%

- D. Sand - Conforming to NHDOT Item No. 304.1.

Gradation:	Passing 1/2” Sieve	=	100%
	Passing No. 4 Sieve	=	70-100%

Passing No.200 Sieve = 0-12%  
(Based on Fraction Passing No. 4)

**E. Gravel (Bank Run) – Conforming to NHDOT Item No. 304.2.**

Gradation: Passing 6” Sieve = 100%  
Passing No. 4 Sieve = 25-70%  
Passing No.200 Sieve = 0-12%  
(Based on Fraction Passing No. 4)

**F. Screened Gravel – Uniformly graded, clean, hard, and durable particles free from an excess of soft, thin, elongated, laminated, or disintegrated pieces and be free form silt, loam, clay, or organic matter.**

Gradation: Passing 1-1/2” Sieve = 100%  
Passing 3/4” Sieve = 90-100%  
Passing 3/8” Sieve = 0-30%  
Passing No. 4 Sieve = 0-5%

**G. Pea Gravel: Natural stone, washed free of clay, shale and organic matter, graded in accordance with ANSI/ASTM C136 to the following: maximum size 5/8 inch, minimum size 1/4 inch.**

**H. Crushed Gravel – Conforming to NHDOT Item No. 304.3.**

Gradation: Passing 3” Sieve = 100%  
Passing 2” Sieve = 95-100%  
Passing 1” Sieve = 55-85%  
Passing No. 4 Sieve = 27-52%  
Passing No. 200 Sieve = 0-12%  
(Based on Fraction Passing No. 4)

**I. Crushed Aggregate For Shoulders - Conforming to NHDOT Item No. 304.33.**

Gradation: Passing 1-1/2” Sieve = 100%  
Passing 1” Sieve = 90-100%  
Passing No. 4 Sieve = 30-65%  
Passing No. 200 Sieve = 0-10%  
(Based on Total Sample)

**J. Crushed Stone (Fine) - Conforming to NHDOT Item No. 304.4.**

Gradation: Passing 2” Sieve = 100%  
Passing 1-1/2” Sieve = 85-100%  
Passing 3/4” Sieve = 45-75%  
Passing No. 4 Sieve = 0-45%

Passing No. 200 Sieve = 0-5%  
 (Based on Total Sample)

**K. Crushed Stone (Course) – Conforming to NHDOT Item No. 304.5.**

Gradation: Passing 3-1/2” Sieve = 100%  
 Passing 3” Sieve = 85-100%  
 Passing 1-1/2” Sieve = 60-90%  
 Passing 3/4” Sieve = 40-70%  
 Passing No. 4 Sieve = 15-40%  
 Passing No.200 Sieve = 0-5%  
 (Based on Total Sample)

**L. Loam (Topsoil) – Loam shall be the surface layer of natural workable soil containing 3% minimum to 10% maximum organic matter (determined by loss by ignition), capable of sustaining the growth of vegetation, with no admixture of refuse or material toxic to plant growth. It shall be relatively free from stones, lumps, stumps or similar objects larger than 1” in greatest diameter, sterile soil, roots and brush. Ordinary sods of herbaceous growth such as grass and non-noxious weeds will be permitted. The loam shall be free from subsoil. The acidity range of the loam prior to treatment as specified herein shall be between pH 5.0 and 6.0 inclusive. Not more than 65% shall pass the No. 200 Sieve as determined by the wash test in accordance with ASTM D 1140. No more than 20% of the material passing the No. 4 Sieve shall consist of clay particles.**

**M. Silt - Silt Loam or Silt, at least 50% of material by weight shall have a particle size less than 0.05 mm. The material shall be free of debris, frozen material, and stones greater than 3” in largest dimension. The saturated permeability of the compacted material shall not exceed  $1 \times 10^{-5}$  as determined by the U.S. Army Corps of Engineers "Falling Head Permeability Test EM1110-2-1906, Appendix 7", when compacted to 85% of the maximum density obtainable at optimum moisture content (as determined by ASTM D1557, Method C).**

**N. Spalls - Stones or broken rock ranging downward from the maximum size indicated.**

**O. Stabilization Fabric: "Mirafi Filterweave FW 700" or approved equivalent.**

**P. Stone Filter Blanket - Clean durable fragments of either ledge rock, boulders or both, reasonably free of thin or elongated pieces and organic material.**

Gradation: Passing 5” Sieve = 100%  
 Passing 4” Sieve = 85-100%  
 Passing 1-1/2” Sieve = 20-55%  
 Passing 3/4” Sieve = 0-25%

- Q. Structural Fill** – Hard durable particles or fragments of stone, gravel and natural sand free from deleterious amounts of clay, silt or organic matter. At least 30 percent of the materials retained on the No. 4 sieve shall have a fractured face.

Gradation:	Passing 2” Sieve	=	100%
	Passing 1-1/2” Sieve	=	90-100%
	Passing No. 4 Sieve	=	30-60%
	Passing No.100 Sieve	=	0-12%
	Passing No.200 Sieve	=	0-5%
	(Based on Fraction Passing No. 4)		

- R. Pipe Bedding** – Screened gravel and/or crushed stone free from organic matter, clay, and/or loam meeting ASTM C33 Stone Size No. 67.

Gradation:	Passing 1” Sieve	=	100%
	Passing ¾” Sieve	=	90-100%
	Passing 3/8” Sieve	=	20-55%
	Passing No. 4 Sieve	=	0-10%
	Passing No. 8 Sieve	=	0-5%

### **PART 3 – EXECUTION**

#### **3.1 EXCAVATION - GENERAL**

- A.** Notify "Dig Safe" (800-225-4977) of intended excavation.
- B.** Identify and mark known underground utilities.
- C.** Identify required lines, levels, contours and datum.
- D.** Comply with local codes, ordinances, and requirements of agencies having jurisdiction.
- E.** Do not perform rock excavation work until material to be excavated has been measured and classified by Engineer.

#### **3.2 STABILITY OF EXCAVATIONS**

- A.** Slope sides of excavations to comply with local codes, ordinances, and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- B.** Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers, and cross braces, in good serviceable condition. Maintain shoring and

bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.

1. Provide permanent steel sheet piling or pressure-creosoted timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Unless indicated otherwise, cut off tops a minimum of 2.5 feet below final grade and leave permanently in place.

### **3.3 DEWATERING**

- A. Prevent surface and ground water from flowing into excavations and from flooding project site and surrounding area.
  1. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations without erosion or sedimentation.
  2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.

### **3.4 STORAGE OF EXCAVATED MATERIALS**

- A. Stockpile excavated materials acceptable for backfill and fill where directed. Place, grade, shape and stabilize stockpiles as necessary to prevent storm water erosion.
  1. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.
  2. Dispose of excess excavated soil material and materials not acceptable for use as backfill or fill.

### **3.5 EXCAVATION FOR STRUCTURES**

- A. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete form-work, installation of services, and other construction and for inspection.
  1. Excavations for footings and foundations: Do not disturb bottom of excavation.



Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. For pile foundations, stop excavations from 6 inches to 12 inches above bottom of footing before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Structures: Conform to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot; plus a sufficient distance to permit placing and removal of concrete form-work, installation of services, and other construction and for inspection. Do not disturb bottom of excavations, intended for bearing surface.

### **3.6 EXCAVATION FOR PAVEMENTS**

- A. Cut surface under pavements to comply with cross-sections, elevations and grades as indicated.

### **3.7 TRENCH EXCAVATION FOR PIPES AND CONDUIT**

- A. Excavate trenches sufficiently wide to provide ample working room but not wider than the maximum width indicated.
- B. Where it is necessary for pipes to be laid in fill, place Select fill in uniform horizontal layers not over 6" in compacted thickness. Carry fill up to elevation at least two feet above the elevation of the top of the pipe to be laid and then excavate trench.
- C. Bedding requirements are detailed on the plans.
- D. Excavate trenches and conduit to depth indicated or required to establish indicated slope and invert elevations and to support bottom of pipe or conduit on undisturbed soil or compacted bedding material as indicated. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
  1. Where rock is encountered, carry excavation 6 inches below invert elevation and backfill with a 6-inch layer of stone bedding prior to installation of pipe.
  2. For pipes or conduit less than 6 inches in nominal size, and for flat-bottomed, multiple-duct conduit units, hand-excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil or compacted bedding material as indicated.
  3. For pipes or conduit 6 inches or larger in nominal size, shape trench bottom or

bedding to fit bottom of pipe for 90 degrees (bottom 1/4 of the circumference). Where no bedding is indicated, fill depressions with granular fill-sand and tamp. At each pipe joint, dig bell holes to relieve pipe bell of loads to ensure continuous bearing of pipe barrel on bearing surface.

### **3.8 COLD WEATHER PROTECTION**

- A. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

### **3.9 REQUIREMENTS PRIOR TO BACKFILLING**

- A. Backfill excavations as promptly as work permits, but not until completion of the following:
  1. Acceptance of construction below finish grade including, where applicable, damp-proofing, waterproofing, and perimeter insulation.
  2. Inspection, testing, approval, and recording locations of underground utilities have been performed and recorded.
  3. Removal of concrete form-work.
  4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.
  5. Removal of trash and debris from excavation.
  6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
  7. Inspection, testing and approval of subgrade.

### **3.10 SUBGRADE PREPARATION**

- A. Clear, grub and dispose of vegetation. Strip humus, excavate unsuitable materials and remove obstructions. Uniformly grade subgrade to indicated lines, grades and acceptable grading tolerances. Grade subgrade to be free of non-draining depressions where practical.
- B. When subgrade density is less than that specified under "Compaction" for particular area classification, break up surface, pulverize, moisture-condition to optimum moisture

content, and compact to required depth and percentage of maximum density.

- C. Unless otherwise indicated, roughen sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

### **3.11 GENERAL BACKFILL AND FILL PLACEMENT**

- A. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- B. Place backfill and fill materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.
- C. Place backfill and fill materials evenly adjacent to structures, piping, or conduit to required elevations. Prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.
- D. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and that are carried below bottom of such footings or that pass under wall footings. Place concrete to level of bottom of adjacent footing.
  - 1. Do not backfill trenches until tests and inspections have been made and backfilling is authorized by Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

### **3.12 PLACING SUB-PAVEMENT GRAVEL COURSES**

- A. General: Sub-pavement gravel courses consist of placing subbase and base gravel materials, in layers of specified thickness, over subgrade surface to support pavements.
  - 1. Refer to other Division - 31 sections for paving specifications.
- B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of sub-pavement gravel courses.
- C. Shoulders: Place shoulders along edges of sub-pavement gravel courses to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each sub-pavement gravel course layer. Compact and roll at least a 12-inch width of shoulder simultaneous with the compaction and rolling of each layer of sub-pavement gravel.
- D. Placing: Place sub-pavement gravel course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain

optimum moisture content for compacting sub-pavement gravel material during placement operations.

2. When a compacted sub-pavement gravel course is indicated to be 6 inches thick or less, place material in a single layer. When indicated to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

### **3.13 PLACING SLAB STRUCTURAL FILL COURSE**

- A. General: Structural fill course consists of placement of structural fill material, in layers of indicated thickness, over subgrade surface to support concrete building slabs.
- B. Placing: Place structural fill material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting material during placement operations.
  1. When a compacted structural fill course is indicated to be 6 inches thick or less, place material in a single layer. When indicated to be more than 6 inches thick, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

### **3.14 BACKFILLING TRENCHES**

- A. Pipe Bedding – Bedding requirements shall be as shown on the plans. Provide bedding to the spring line of the pipe. Place fill by hand in not greater than 6 inch compacted layers.
- B. 12” Over Pipes – Provide 12 inches of Select Fill over the top of the pipe as detailed on the plans. Place fill by hand in not greater than 6 inch layers. Bring Select Fill up evenly on both sides of pipes and carefully and thoroughly compact.
- C. Remainder of Trench – Paved Areas – Select Fill, Select Earth, or Common Earth placed no greater than 12 inch compacted layers.
- D. Remainder of Trench – Other Areas – Select Fill, Select Earth, or Common Earth placed no greater than 12 inch compacted layers.

### **3.15 BACKFILLING AROUND STRUCTURES**

- A. Uniformly spread and deposit backfill in horizontal layers, not over twelve inches in compacted thickness. Take special precautions to prevent damage to new construction.
- B. In paved areas, backfill with Select Fill for the full depth. In unpaved areas, backfill with Select Fill, Select Earth or Common Earth.

### **3.16 SHEETING AND BRACING**

- A. Provide and maintain adequate sheeting and bracing as required for the safety and protection of the Work, persons and adjacent property and structures in accordance with federal, state and local laws, codes ordinances, and standards.
- B. Where sheeting is placed along side pipe and extends below mid-diameter, it shall be cut off and left in place to an elevation not less than one foot above the top of the pipe. The Engineer may, at his discretion, order sheeting and bracing to be cut-off and left in place. Where, in the opinion of the Contractor, damage may result from withdrawing sheeting, he shall immediately notify the Engineer. Sheeting ordered left in place adjacent to piping shall be cut-off at least three feet below grade but not less than one foot above the top of the pipe.
- C. Contractor is fully responsible for the design and construction of all sheeting and bracing used and for all damages resulting from improper quality, strength, placing, maintenance or removal of sheeting and bracing.

### **3.17 UNSTABLE MATERIALS**

- A. Remove unstable materials in excavations and trench bottoms which are incapable of supporting pipes or structures, to the extent and depths directed by the engineer, and properly dispose of off-site. Refill and compact the excavation as required.
- B. Whenever the material encountered is, in the Contractor's opinion, incapable of providing adequate support, he shall immediately notify the Engineer.

### **3.18 DISPOSAL OF EXCAVATED MATERIALS**

- A. Excavated materials which meet the requirements for embankment fill or backfill may be used for constructing embankments and backfilling, as possible. Remove excess excavated materials and dispose of off-site.
- B. The storing and stockpiling of unsuitable material on-site is not permitted.

### **3.19 COMPACTION AND MOISTURE CONDITIONING**

- A. Control soil and fill compaction and moisture conditioning, providing minimum percentage of density specified for each area classification indicated below or in accordance with Section 31 23 23.23. Correct improperly compacted areas or lifts as directed by Engineer if soil density tests indicate inadequate compaction.
  - 1. Percentage of Maximum Density Requirements: Compact soil to not less than 95% of maximum density, in accordance with ASTM D 1557, Method C.

2. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade or layer of soil material. Apply water in minimum quantity as necessary to prevent free water from appearing on surface during or subsequent to compaction operations.
  - a. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
  - b. Stockpile or spread soil material that has been removed because it is too wet to permit compaction. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value.

### **3.20 FIELD QUALITY CONTROL**

- A. Quality Control Testing During Construction: Allow testing service to inspect and approve each subgrade and fill layer before further backfill or construction work is performed in accordance with Section 31 23 23.23 Soil Compaction.

### **3.21 GRADING**

- A. General: Uniformly grade areas within limits of grading, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated or between such points and existing grades.
- B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.
- C. Grading Surface of Fill under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 0.05 foot when tested with a 10-foot straight edge.
- D. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

### **3.22 EROSION CONTROL**

- A. Provide measures as necessary to control all erosion and sedimentation resulting from construction activities as indicated, warranted or required by authorities having jurisdiction.

### **3.23 MAINTENANCE**

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

- B.** Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.
- C.** Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- D.** Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### **3.24 DISPOSAL OF EXCESS AND WASTE MATERIALS**

- A.** Do not dispose of spoil materials on or off site in wetlands or other environmentally sensitive areas unless properly permitted through regulatory authorities having jurisdiction and conducted in accordance with the permit conditions thereof.
- B.** Remove spoil materials and legally dispose of off site.

**End of Section**

## SECTION 31 23 16.26

### ROCK REMOVAL

#### PART 1 — GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the removal and disposal of rock from the site and trench excavations.
- B. Refer to other “Division - 31 — Earthwork” Sections for additional requirements relating to this Section.

##### 1.3 DEFINITIONS

- A. Rock Excavation consists of all solid rock which cannot be removed without blasting or ripping. Intermittent drilling, blasting, or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.
  - 1. Site Rock Excavation consists of all rock excavation other than Trench Rock Excavation and includes the excavation of boulders and parts of masonry structures when found to measure two (2) cubic yards or more.
  - 2. Trench Rock Excavation consists of rock excavation where solid rock and boulders or parts of masonry structures found to measure two (2) cubic yards or more are removed from trenches where the bottom-width limit of excavation does not exceed 8 feet.
- B. Unauthorized Excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor’s expense.

##### 1.4 SUBMITTALS

- A. Name, qualifications, experience records, certificates of insurances and copies of licenses.
- B. Listing and description of materials and methods proposed for use.



- C. Prior to blasting, the Contractor shall at his own expense have a survey done of all existing structures and utilities on the site and within 500 feet of the site. Said survey shall be conducted by an independent entity approved by the Engineer and shall address the structural integrity of all existing structures and utilities. Upon completion of blasting operations, the Contractor shall have prepared by the same independent entity, a survey addressing the structural integrity of the same structures and utilities.
- D. Written notice to Owner, Engineer, and individual property owners in immediate vicinity at least 48 hours in advance of blasting operations.
- E. On a daily basis, the Contractor shall submit to the Engineer accurate records including but not limited to, the location, depth, elevation of blast, maximum explosive weight per delay and the date and time of blast.

## **1.5 QUALITY ASSURANCE**

- A. All blasting operations shall be conducted in full compliance with all laws of the State, all local ordinances, and with all possible care so as to avoid injury to persons and property. The rock shall be well covered, and sufficient warning given to all persons in the vicinity of the work before blasting. Care shall be taken to avoid injury to all structures, utilities and property. The Contractor, in addition to observing all municipal and other ordinance relating to the storage and handling of explosives, shall also conform to and further requirements the Engineer deems necessary.

## **1.6 PROJECT CONDITIONS**

- A. Site information: Subsurface explorations data, if made available to the Contractor, is for informational purposes only. Conditions are not intended as representations or warranties of accuracy or continuity between subsurface explorations. The Owner will not be responsible for interpretations or conclusions drawn from this data by the Contractor.
  - 1. Additional test pits, borings, or other explorations may be performed by Contractor, at the Contractor's option; however, no change in the Contract Sum will be authorized for such additional explorations.

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Handle and store explosives in strict accordance with requirements of regulatory authorities have jurisdiction.
- B. Keep explosives on site only in such quantity as may be needed for the work under way and only during such time as they are to be used.

- C. Store explosives in a secure manner separate from all tools, with caps or detonators safely stored at a separate point more than 100 feet distant.
- D. Disposal of rock shall be by one of the following:
  - 1. If rock is suitable in nature and of the proper size, it may be used as rock channel, outlet, or slope lining.
  - 2. If the Contract Documents permit or require the use of rock in embankments, fills or other areas, it may be incorporated into the Work accordingly.
  - 3. If the Contract Documents designate a spoil or stockpile area, deliver and neatly place the rock in the designated area.
  - 4. Delivered to an area designated by the Owner or Engineer.
  - 5. If none of the above apply, remove the rock from the project site and dispose of off-site in a lawful manner.

## **PART 2 — PRODUCTS**

### **2.1 MATERIALS**

- A. Concrete used to fill over-excavations shall be Class C (28 day compressive strength of 2,000 psi) as specified in Division - 03 Section “Cast-in-Place Concrete”.
- B. Other Materials required for the complete removal and for providing a safe operation shall be as selected by the Contractor, as complying with the requirements of regulatory authorities having jurisdiction, subject to the approval of the Engineer.

## **PART 3 — EXECUTION**

### **3.1 GENERAL**

- A. Where rock is encountered, it shall be uncovered but not excavated until measurements have been made by the Engineer.
- B. Attempt to remove rock by mechanical means before resorting to blasting.
- C. Protect structures, utilities, sidewalks, pavements, and other facilities and property from blasting hazards.

**D.** Remove rock to the limits indicated or directed by Engineer.

### **3.2 UNAUTHORIZED EXCAVATION**

- A.** Rock excavated below foundation subgrades, not authorized by Engineer, shall be refilled with Class C concrete or other materials approved by Engineer, to the indicated subgrade elevation.
- B.** Other unauthorized rock excavations shall be backfilled and compacted as specified for authorized excavations of same classification, unless otherwise directed by Engineer.
- C.** Excavations which are made wider than shown on the Drawings, specified or authorized by Engineer, may necessitate redesigns and stronger materials for which all costs shall be borne by Contractor.

END OF SECTION

## **SECTION 31 23 19**

### **DEWATERING**

#### **PART 1 – GENERAL**

##### **1.1 WORK INCLUDED**

Work included under this Section includes the dewatering equipment for the control of ground and surface water entering excavations on the project site.

##### **1.2 RELATED WORK**

Excavating, Trenching, and Backfilling	31 23 33
Erosion Control	31 25 00

##### **1.3 QUALITY ASSURANCE**

- A.** The Contractor shall employ whatever means deemed appropriate to control water on the Site. The Owner and Engineer shall not be responsible for the means and methods of dewatering. Unless otherwise noted, dewatering shall be incidental in the work.
- B.** The Contractor shall keep work free of standing or flowing groundwater, surface water, sewage, snow, or ice. Unless otherwise directed by the Engineer, the placement of work is not permitted.

#### **PART 2 – PRODUCTS**

##### **2.1 GENERAL**

- A.** Provide, operate and maintain a dewatering system to remove all water from excavations and trenches including pumps, drains, wellpoints, piping and any other facilities necessary to keep the excavations and trenches free from water.
- B.** Assure proper permits have been acquired for dewatering of excavations if the discharge from the dewatering operations will reach surface waters or wetlands. Coverage under any of the following permits, and performance of any of the associated sampling requirements, shall be deemed to satisfy this section:
  - 1. U.S. EPA National Pollution Discharge Elimination System (NPDES) Construction General Permit; or,
  - 2. US EPA National Pollution Discharge Elimination System (NPDES) Construction Dewatering Permit.

## **PART 3 – EXECUTION**

### **3.1 PERFORMANCE**

- A.** Keep excavations and trenches dry until the structures, pipes and appurtenances have been completed.
- B.** Dispose of water pumped or drains from the construction site in a suitable manner to avoid public nuisance, injury to public health, damage to public and private property, and damage to work completed or in progress. Water discharged to a natural drainage course or stream shall pass through a sediment trap prior to discharge. Discharge water from excavations shall be treated to meet applicable treatment performance standards specified in state or federal permits. In no case shall discharges to surface waters exceed state water quality standards for turbidity.
- C.** All damage from dewatering operations, or the failure of the Contractor to maintain the work in a suitable dry condition shall be repaired by the Contractor, at no additional cost to the Owner,
- D.** Cofferdams shall be utilized where necessary for the dewatering, control and diversion of water to keep excavations and trenches free of water. Design and construct cofferdams to withstand all imposed loads to prevent injury to persons and property. Construct cofferdams to depths to permit a reasonable change in depths of the work, of sufficient height to prevent flooding, and of such dimensions to give sufficient clearance for construction and inspection.
- E.** Temporary underdrains – When and where found necessary, install temporary underdrains in the excavation. Surround the underdrain and fill the space between the underdrain and the pipe or structure with crushed stone to prevent the migration of fines.
- F.** Wellpoint system – If required, dewater the excavations and trenches by an efficient drainage wellpoint system to drain the soil and prevent saturated soils from flowing in to the excavated area.

**END OF SECTION**



## **2.2 LABORATORY TESTING**

- A. Testing performed under this Section shall be by an independent testing firm qualified to provide the necessary services. The firm shall be approved by the Engineer before any testing is performed.

## **2.3 LABORATORY TEST REPORTS**

- A. As a minimum, the laboratory testing reports shall contain the following:
  - 1. Laboratory's name.
  - 2. Date, time and specific location from which sample was taken and name of person who collected the sample.
  - 3. Designation of the test method used.
  - 4. A description of the sample, the test, and the test results.
  - 5. The date the test was performed and the person who performed the test.
  - 6. The Project name, identification, and Contractor's name.

## **PART 3 — EXECUTION**

### **3.1 INSPECTION**

- A. Verify that layers of material are no thicker than twelve (12) inches.
- B. Verify that moisture content is nearly optimum.
- C. Do not begin compaction operations until conditions are satisfactory.

### **3.2 PERFORMANCE**

- A. Compaction densities shown are percentage of the maximum density obtainable at optimum moisture content as determined by ASTM D1557, Method C (Modified Proctor).
- B. Compact each layer of material to the following required densities:

<u>Location</u>	<u>Density</u>
Under concrete slabs, foundations and footings	95%
Backfill around structures	95%
Embankments	95%
Cross country areas	85%

- C. Embankment material shall be compacted using a vibratory sheepsfoot roller or other method that kneads successive lifts and does not cause potential layering.

### **3.3 FIELD QUALITY CONTROL**

- A. Perform a laboratory moisture density test for each type of soil proposed for use or encountered in the Work. Determine optimum moisture content in accordance with ASTM D1557, Method C.
- B. Costs for initial field density tests shall be paid for as in Laboratory Services. Costs for retesting shall be borne by the Contractor. Field density tests shall be performed in accordance with the following average frequencies;
  - 1. Under Structures – One test for every 200 square feet of area of each layer of compacted granular.
  - 2. Around Structure – One test for each foot of backfill at intervals of approximately fifty (50) feet around the structure.
  - 3. Trenches – One test at intervals of approximately 300' along the trench.
  - 4. Embankment – Three tests for each foot of compacted fill.
- C. Testing frequency indicated in Paragraph 3.3 B is at the discretion of the Engineer and may be decreased as the Project progresses.
- D. Field density and moisture testing shall conform to the requirements of ASTM D1556 or D2922 and ASTM D3017. Soils shall be described in accordance with ASTM D2488, Visual-Manual Procedure.
- E. Soils not meeting the specified in-place densities shall be excavated and re-compacted at the Contractor's expense.

### **3.4 COORDINATION**

- A. Provide all assistance and cooperation during testing and coordinate operations to allow ample time for the required sampling and testing.

**END OF SECTION**



**SECTION 31 25 00**

**EROSION CONTROL**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A.** Work covered by this Section includes the control of erosion, siltation, and sedimentation.
- B.** Related work described elsewhere:

Earthwork

Division - 31

**1.2 PROJECT REQUIREMENTS**

- A.** Take every reasonable precaution and do whatever is necessary to avoid any erosion and to prevent silting of rivers, streams, lakes, reservoirs, impoundments, wetlands, drainage ditches and swales.
- B.** The exposure of uncompleted cut slopes, embankments, trench excavations, and site graded areas shall be kept as short as possible. Initiate seeding and other erosion control measures on each segment as soon as reasonably possible.
- C.** Adhere to any and all applicable local, state, and federal requirements and permits related to erosion control.

**1.3 SEDIMENT CONTROL GUIDELINES**

- A.** U.S. Environmental Protection Agency Publication 430/9-73-007 "Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity."
- B.** "Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire" Rockingham County Conservation District, August 1992.

**1.4 SUBMITTALS**

- A.** The Contractor shall furnish to the Engineer, in writing, his plan for controlling erosion and siltation before beginning the construction work. Said plan shall also include the methods to be utilized for protecting and stabilizing steep slopes, stream banks, and channels which will be affected by the construction work.

**B.** Where earth disturbance will exceed once acre, the Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) that conforms to the requirements of the USEPA National Pollution Discharge Elimination System (NPDES) Construction General Permit, or agree to abide by an alternate SWPPP if one has been prepared by the Owner or their agent. In the latter instance, the signing of the SWPPP by the contractor shall constitute such an agreement.

1. Contractor shall prepare and submit a Construction General Permit Notice of Intent form at least 7 days prior to beginning earth disturbance activities, and only after a SWPPP has been prepared. Earthwork shall not commence until the Contractor has received confirmation from EPA that said Contractor has obtained coverage under the Construction General Permit.

**C.** Acceptance of a plan will not relieve the Contractor of responsibility for completing the work as specified.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

**A.** Dewatering Bag- Dirt Bag as manufactured by ACF or approved equal

**B.** Erosion Stone- See 02341

**C.** Matting for erosion control - jute mat or excelsior mat

**D.** Hay bales - rectangular-shaped bales of hay or straw weighing at least 40 pounds per bale and free from primary noxious weed seeds and rough or woody materials

**E.** Mulch - Cured hay free from primary noxious weed seeds and rough or woody materials

**F.** Seed for erosion control shall be annual or perennial ryegrass, and NH Conservation Seed Mix

**G.** Silt fence: Envirofence as manufactured by Mirafi, Inc. or approved equal.

**H.** Wattles- Sediment Log as manufactured by the American Excelsior Company or approved equal

## **PART 3 - EXECUTION**

### **3.1 PERFORMANCE**

- A.** Erosion and sediment controls shall be operated to prevent violations of NH water quality standards (NH Env-Ws 1700).
  
- B.** Diverting Surface Water:
  - 1. Perform no earthwork in flowing waters. Build, maintain, and operate all cofferdams, channels, flumes, slope drains, sumps, and other temporary diversion and protection works needed to divert stream flow, runoff, water from seeps in cut slope, and other surface water through or around the construction site and away from the construction work while construction is in progress.
  - 2. Protect areas where existing stream banks are to be excavated by constructing hay bale dikes at the top of slope to divert storm runoff from the disturbed area and at the toe of the slope to retain sediments.
  - 3. A diversion shall outlet to a durable surface that prevents erosion at the point of discharge.
  - 4. Contain turbid discharge from pumped dewatering operations by a filter bag or a dike located in an upland area at least 20 feet from surface waters or wetlands and constructed to prevent silt from entering the stream and to protect the area of the outlet pipe against erosion by flowing water by the construction of a rock or timber apron.
  - 5. Prior to removal of all sediment control dikes, remove all retained silt, filter bags or other materials at no additional cost to the Owner.
  
- C.** Erosion Prevention Provisions:
  - 1. Limit period of time that disturbed soils are exposed to precipitation.
    - a. Apply stabilization measures within 72 hours of completing earth disturbing work adjacent to wetlands.
    - b. Apply stabilization measures within 14 days of finish grading areas that are not adjacent to wetlands.
  - 2. Apply matting to seeded slopes steeper than 3:1. Apply mulch to all other seeded slopes.

3. Mulch:
  - a. Undertake immediately after each area has been properly prepared.
  - b. Place mulch on the seeded areas within 48 hours after seeding.
  - c. Apply hay that has been thoroughly fluffed at approximately, but not to exceed, 2 tons per acre unless otherwise ordered.
4. Matting:
  - a. Place strips lengthwise in the direction of the flow of water.
  - b. Where strips are laid parallel or meet as in a tee, overlap at least 4 inches.
  - c. Ends: Overlap at least 6 in., shingle fashion.
  - d. The up-slope end of each strip of the matting shall be turned down and buried to a depth of not less than 6 in. with the soil firmly tamped against it.
5. Install rock check dams, hay bale check dams, or other temporary grade controls structures in swales and temporary channels that receive concentrated flow.

**D. Sediment Control Provisions:**

6. Install silt fence and other perimeter controls at early stages of earth disturbance. As shown on plans and as directed by engineer. Avoid usage where concentrated flow may occur. Back up silt fence with wire backing or hay bales as needed.
7. Install coarse stone tracking pad at site exit to prevent sediments from being tracked onto pavement by construction vehicles. Supplement with street sweeping.
8. Avoid interim grading that concentrates runoff to unstable ground or channels. Utilize temporary water bars or other methods to interrupt long flowpaths on unfinished roads and convey runoff to stable upland areas.
9. Install temporary sediment basins in swales and temporary channels that receive concentrated flow. Locate for convenience of frequent maintenance, but do not site in areas where inadvertent basin breaching would cause safety hazards, property damage, or result in preventable environmental impacts.
10. Place erodable material stockpiles on level ground and away from drainage

channels. Install silt fence along downgradient perimeter of stockpile between pile and nearest surface water or wetlands.

**E. Winter Erosion Control**

1. All proposed vegetative areas which do not exhibit a minimum of 85% vegetative growth by October 15<sup>th</sup>. Or which are disturbed after October 15<sup>th</sup>, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or frozen ground and shall be completed in advance of thaw or spring melt events.
2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15<sup>th</sup>, or which are disturbed after October 15<sup>th</sup>, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
3. After November 15<sup>th</sup>, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

**3.2 MAINTENANCE**

- A.** Maintain all temporarily stabilized surfaces until they are stable
1. Repair rills that form on gravel stabilized roadways until paving occurs.
  2. Apply supplemental seed, fertilizer and lime as needed to achieve final stabilization; defined by NHDES as 85% vegetative growth.
- B.** If any matting staples become loosened or raised or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.
- C.** Maintain areas mulched or matted, with no extra compensation, until the completion of the Contract.
- D.** Maintain siltation fence by checking the installation for fallen segments and keep build-up of silt to less than 50% of its height.
- E.** Check all sediment capturing devices at a regular frequency, after storms, and as dictated by applicable permits. Remove sediments from sediment capturing features when 50% of the devices volume is occupied by sediment and prior to anticipated large storms.

**3.3** Place sediments cleaned from basins and other devices in upland area and out of drainage paths

**3.4 REMOVAL OF TEMPORARY WORKS**

A. Remove or level and grade to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

**END OF SECTION**

**DIVISION 32 – EXTERIOR IMPROVEMENTS**

## **SECTION 32 12 16.31**

### **BITUMINOUS CONCRETE PAVING – NH**

#### **PART 1 – GENERAL**

##### **1.1 QUALITY ASSURANCE**

- A.** All work performed under and relating to this Section shall be in conformance to the State of New Hampshire - Department of Transportation, Standard Specifications for Road and Bridge Construction (latest revision).
- B.** Provide at least one person who shall be present at all times during the execution of this portion of the Work and who shall be thoroughly trained and experienced in the placing of the type of asphalt pavement specified and who shall direct all work performed under this Section.
- C.** All materials and the asphalt plant will be subject to inspections and tests by Engineer and by the approved testing laboratory. Provide all equipment, materials, facilities and labor as specified in the Standard Specification for Road and Bridge Construction.

##### **1.2 SUMMARY**

- A.** This Section includes provisions for hot-mixed asphalt paving over sub-pavement gravel courses and over existing asphalt surfaces.
- B.** This Section is also applicable to hot-mixed asphalt temporary pavements.
- C.** Proof rolling of prepared sub-pavement gravel courses is included in this Section.
- D.** Saw-cutting of existing pavement edges is included in this Section.
- E.** Traffic and lane markings are covered by this Section.

##### **1.3 SUBMITTALS**

- A.** General: Provide submittals in accordance with Specification 01 33 23.
- B.** Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

##### **1.4 SITE CONDITIONS**

- A.** Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (1 deg C) for 12 hours



immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

- B.** Construct hot-mixed asphalt surface course when base is dry and when atmospheric temperature is above 40 deg F for courses greater than 1-1/4 inches compacted depth and when atmospheric temperature is above 50 deg F for courses less than 1-1/4 inches in compacted depth. Base course may be placed when air temperature is above 35 deg F and rising.
- C.** Grade Control: Establish and maintain required lines and elevations.

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS**

- A.** General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.
- B.** When products are not otherwise specified by Engineer, provide products meeting the requirements of applicable city or town public works department's highway construction standards. In the absence of applicable local highway construction standards, provide products meeting the requirements of the Department of Transportation of the state in which the project is located, as appropriate, based on highway class designation, traffic loading and surfacing requirements.
- C.** Restore existing pavements damaged by construction in kind with regard to materials and thickness of courses unless otherwise directed by Engineer.

## **PART 3 – EXECUTION**

### **3.1 SURFACE PREPARATION**

- A.** General: Remove loose material from compacted sub-pavement gravel course surface immediately before applying herbicide treatment or prime coat.
- B.** Proof-roll prepared sub-pavement gravel course surface to check for unstable areas and areas requiring additional compaction. Do not begin paving work until deficient areas have been corrected and are ready to receive paving.
- C.** Herbicide Treatment: When indicated or warranted, apply chemical weed control agent in strict compliance with manufacturer's recommended dosages and application instructions. Apply to compacted, dry sub-pavement gravel course surface prior to application of prime coat.
- D.** Prime Coat & Sealants: When indicated or warranted, apply at rate necessary to penetrate and seal, but not flood, surface. Squeegee excess material from surface. Cure and dry as

long as necessary to attain penetration and evaporation of volatile. If the prime coat fails to penetrate within the time specified and the roadway must be used by traffic, blotter material shall be spread in the amounts required to absorb excess bituminous material. When the bituminous material is sufficiently cured, blotter material remaining shall be removed by sweeping.

- E. Saw-cut:** Neatly saw-cut existing pavements to be joined and damaged pavements to be joined or over-laid. Remove saw cut pavement disturbing adjoining pavements as little as possible.
- F. Tack Coat:** Clean the edges of previously constructed asphalt or Portland cement concrete pavements to be joined. Apply uniformly to contact surfaces of previously constructed pavements and to drainage or utility casting surfaces abutting or projecting into hot-mixed asphalt pavement. Allow to dry until at proper condition to receive paving. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces.

### **3.2 PLACING MIX**

- A. General:** Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 250 deg F. Use of hand method of placement is limited to the paving of raised islands, slopes, cattle passes, areas between rails at railroad crossings, sidewalks, driveways and aprons and incidental paving in areas inaccessible to equipment. Place each course to required grade, cross-section, and compacted thickness. Place temporary pavements to indicated thickness and in no case less than 1".
- B. Paver Placing:** Place in strips not less than 10 feet wide, unless otherwise acceptable to Engineer. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.
- C. Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.**
- D. Joints:** Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.
- E. Curbs:** Construct curbs over compacted pavement surfaces. Apply a light tack coat unless pavement surface is still tacky and free from dust.
- F. Place curb materials to cross-section indicated or, if not indicated, to local standard shapes, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms as soon as material has cooled.**

### **3.3 ROLLING**

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
- B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.
- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent laboratory density.
- F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### **3.4 CLEANUP**

- A. General: Any bituminous material remaining on exposed surfaces of curbs, sidewalks, or other masonry structures shall be removed at the Contractor's expense.

### **3.5 TRAFFIC AND LANE MARKINGS**

- A. Cleaning: Sweep and clean surface to eliminate loose material and dust.
- B. Do not apply traffic and lane marking paint until layout and placement have been verified with Engineer.
- C. Apply paint with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates and thickness.
- D. Protect painted markings until dry enough to withstand traffic loading.

### **3.6 FIELD QUALITY CONTROL**

- A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness will be done by Owner's testing laboratory. Repair or remove and replace unacceptable paving as directed by Engineer.
- B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:
  - 1. Base Course: Plus or minus 3/8 inch.
  - 2. Surface Course: Plus or minus 3/16 inch.
- C. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Any variations from a true profile exceeding 3/16 of an inch shall be satisfactorily eliminated.
  - 1. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.
- D. Check surface areas at intervals as directed by Engineer.

**End of Section**

**SECTION 32 92 00**

**LOAMING, SEEDING, AND FERTILIZING**

**PART 1 – GENERAL**

**1.1 DESCRIPTION**

- A. Work included under this Section includes furnishing all labor, materials, equipment, and incidentals necessary to place topsoil, fertilizer, seed and mulch as required.

**1.2 QUALITY ASSURANCE**

- A. Employ trained personnel experienced in this type of work.

**1.3 PRODUCT DELIVERY AND STORAGE**

- A. Fertilizer shall be delivered to the Site showing the manufacturer’s guaranteed analysis and stored so that when used it shall be dry and free flowing.
- B. Lime shall be delivered and maintained in a dry, free flowing condition until used.
- C. All seed shall be delivered in sealed containers bearing the dealer’s guaranteed analysis and stored in a dry, protected place.

**PART 2 – PRODUCTS**

**2.1 MATERIALS**

- A. Loam shall be the surface layer of natural workable soil containing organic matter, or material generally humus in nature capable of sustaining the growth of vegetation. It shall be free from stones, lumps, stumps, or similar objects larger than 2 inches in greatest diameter, sterile soil, roots, and brush. The loam shall be free from subsoil.
- B. The acidity range of the loam prior to treatment as specified herein shall be between pH 5.0 and 6.0 inclusive.
- C. The gradation analysis of the loam shall be as follows:

<u>Passing</u>	<u>Percentage</u>
1” Screen	100%
¼” Screen	3 % (max)
No. 100 USS mesh sieve	40 to 60 %

- D. Loam shall not be delivered until representative samples proposed for use have been furnished by the Contractor and approved by the Engineer. When requested to do so, the Contractor shall furnish at his own expense, a certified analysis of the loam made by an approved soil testing laboratory.
- E. Fertilizer shall be a complete commercial fertilizer, 5-10-10 grade.
- F. Lime shall be ground limestone containing not less than 85% calcium and magnesium carbonate.
- G. Seed shall be from the same or previous year's crop and shall have not more than 1% weed content. Seed shall also meet the following requirements:
  1. Grass seed of the specified mixtures shall be furnished in fully labeled, standard, sealed containers.
  2. Percentage and germination of each seed type in the mixture, purity and weed seed content of the mixture shall be clearly stated on the label.
  3. Seed shall be furnished on a percentage of live seed basis.
- H. Lawn areas shall be seeded with a Class A mixture of the following:

Class A (Lawn Seed)

<u>Species</u>	<u>Minimum Purity % / Minimum Germination %</u>	<u>Lbs/Acre</u>
▪ Kentucky Blue Grass (at least two varieties America, Liberty Crest, Monopoly, etc.)	97/85	105
▪ Creeping Red Fescue	96/85	44
▪ Perennial Rye Grass ( Manhattan III, Envy, Fiesta II, Caliente, etc.)	98/90	<u>25</u>
<b>TOTAL</b>		<b>174</b>

- I. Class B shall normally be used for all slope work. And shall conform to the following:

Class B (Slope Seed)

<u>Species</u>	<u>Minimum Purity % / Minimum Germination %</u>	<u>Lbs/Acre</u>
▪ Creeping Red Fescue	96/85	35
▪ Perennial Rye Grass	98/90	30
▪ Redtop	95/80	5
▪ Alsike Clover	97/90	5
▪ Birdsfoot Trefoil (Empire variety preferred Inoculum)	98/80	<u>5</u>
<b>TOTAL</b>		<b>80</b>

- J. Red clover and birdsfoot trefoil seed shall include not more than 25% hard seed. If necessary, to meet this requirement extra seed shall be supplied at no expense to the Owner.
- K. Inoculum specific to birdsfoot trefoil must be used with this mixture. The inoculum shall be a pure culture of nitrogen-fixing bacteria selected for maximum vitality and the ability to transform nitrogen from the air into soluble nitrates and to deposit them in the soil. The inoculum shall not be used later than the date indicated on the container or later than specified. The inoculum shall be subject to approval.
- L. Hay and straw mulch shall consist of mowed and properly cured grass or legume mowings, reasonably free from swamp grass, seeds, weeds, twigs, debris or other deleterious material. It shall be free from rot or mold.

### **PART 3 – EXECUTION**

#### **3.1 GENERAL**

- A. Loosen any heavily compacted subsoil to a depth of 12 inches. Rake the subgrade of all areas to receive loam and remove rubbish, sticks, roots and stones larger than 2 inches in diameter. Spread and lightly compact loam to finish grade as shown on the Drawings.
- B. After the loam is placed and before it is raked to true lines and rolled, spread limestone evenly and thoroughly incorporate into the loam by heavy raking to at least one-half the depth of the loam. The amount of limestone shall be based on a soil test with recommendations from the Engineer.
- C. Uniformly spread fertilizer and immediately mix with the loam.
- D. Immediately following this preparation, uniformly apply the seed and lightly rake the seed in to the surface. Apply mulches before rolling. Lightly compact the soil using a light weight roller or a tracked dozer run parallel with the slope. Water with a fine spray on a regular basis to ensure germination.
- E. Seeding and fertilizing shall be done between April 1 and June 1, between August 15 and October 15, or as directed or permitted. Seeding shall not be done during windy weather or when the ground is frozen, excessively wet, or otherwise untellable.
- F. Mulching should consist of light and uniform mulch over the area as follows:

Class A areas – use straw mulch  
Class B areas – use hay mulch

#### **3.2 Protect seeded areas from pedestrian and vehicular traffic**

### **3.3 APPLICATION RATES**

- A. Spread loam over properly prepared areas to give a covering which will be 4 inches in compacted depth.
- B. Apply lime at the recommended rate determined by the Engineer.
- C. Apply fertilizer at a rate of 20 pounds per 1,000 square feet.
- D. Apply mulch at a rate of 90 pounds per 1,000 square feet.
- E. The Engineer reserves the right to vary the amounts of materials used, as required to produce optimum results.

### **3.4 MAINTENANCE**

- A. Keep all seeded areas watered, reseeding if and when necessary, until a healthy, uniform growth is established over the entire area.

### **3.5 GUARANTEE**

- A. The Contractor shall guarantee for a period of one year from the date of substantial completion that the new grass will be free from dead areas or washout. The Contractor shall reseed areas necessary to establish a firm, healthy stand of grass.

**END OF SECTION**



**DIVISION 33 – UTILITIES**

## SECTION 33 01 30 – SEWER INSPECTION, CLEANING, AND FLOW CONTROL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 specification sections, apply to this section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. CCTV Inspection
  - 2. Sewer Flow Control
  - 3. Sewer Cleaning
  - 4. Chemical Root Treatment shall not be used (Pressure jet or auger only)

#### 1.3 COORDINATION

- A. Coordinate Work of this Section with Town Operators and Public Works.

#### 1.4 SUBMITTALS

- A. CCTV Inspection
  - 1. Catalog and manufacturer's data sheets for television equipment.
  - 2. Traffic Control Plan
  - 3. Inspection Schedule
- B. Sewer Flow Control
  - 1. Sewer Flow Control Plan showing:
    - a. Estimate of peak flow to be controlled
    - b. Schedule
    - c. List of Equipment with:
      - 1) Pump size, capacity, and quantity
      - 2) Pipeline sizes and materials
    - d. Sewer User Notification Plan (Collaborate with Public Works)
    - e. Emergency Procedures
- C. Sewer Cleaning
  - 1. Catalog and manufacturer's data sheets for cleaning equipment.
  - 2. Traffic Control Plan
  - 3. Liquid Waste Manifest
- D. Chemical Root Treatment shall not be used (Pressure jet or auger only)

- E. Closeout Submittal:
  - 1. Contractor's markups of all work performed with before and after photos.
  - 2. CCTV reports before and after cleaning. Shall include videos, photos, and reports.

#### 1.5 QUALITY ASSURANCE

- A. Minimum of 2 years' experience on similar projects with similar pipe lengths and diameters.

#### 1.6 NOTIFICATIONS

- A. Notify the Owner a minimum of 5 days before the anticipated beginning of all sewer inspection and cleaning activities. Notify the Owner 24 hours before the actual beginning of any sewer inspection and cleaning activities.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on Site in the manufacturer's original packaging and inspect for damage.
- B. Store materials and protect material from damage in accordance with the manufacturer's recommendations.

### PART 2 - PRODUCTS

#### 2.1 CCTV INSPECTION

- A. Inspection Vehicle:
  - 1. Equipped with monitoring equipment specifically compatible with the appropriate sewer inspection equipment.
  - 2. Equipped with a safety backup alarm.
  - 3. Clearly marked with the inspection company name and phone number.
- B. Inspection Equipment:
  - 1. Shall include a monitoring studio equipped with independent power source and temperature controlled of a sufficient size to allow seating for a minimum of two people in addition to an operating technician.
  - 2. Secure cables, chains, and other devices used with the camera so as not to obstruct the camera's view or otherwise interfere with proper documentation of sewer conditions.
  - 3. The television monitor shall be located in the monitoring studio and be capable of producing high quality color picture, have a resolution of no less than 350 lines, and provide continuous display during inspection survey.
  - 4. The camera transport platform shall be self-propelled, skid-mounted, or float-mounted and sized for each pipe diameter in accordance with the manufacturer's recommendations. The platform shall be able to be equipped with a tag line suitable for

pulling the camera backwards, a winch, power winch, TV cable, powered rewind, or other devices used to move the camera through the pipe.

5. A remote reading footage counter shall be used to determine distance traveled by the camera to an accuracy of two-tenths of a foot. The footage counter display shall be located in the monitoring studio. Measuring of distance by marking of cables will not be allowed. Calibration shall be conducted each day prior to conducting any inspections.
6. CCTV Camera:
  - a. The camera shall be mounted on a transport platform, shall be explosion proof and operative in hazardous and corrosive environment.
  - b. The camera shall have a minimum of 460 lines of horizontal resolution and 400 lines of vertical resolution. The resolution of the camera should meet or exceed the resolution of the monitor.
  - c. The camera shall be capable of 360-degree rotation and 270-degree pan and tilt with adjustable supports specifically designed and constructed for operation in connection with pipe inspection.
  - d. Camera lights shall be mounted to and turn in the direction of the camera head.
  - e. The viewing angle shall be a minimum of 65 degrees and have either automatic or remote focus and iris controls. Remote control adjustment for focus and iris shall be located in the monitoring studio.
  - f. The camera shall be operative in 100% humidity conditions.
  - g. The camera shall be able to achieve proper balance of tint and brightness, have a focal distance range from 6 inches to infinity, be capable of 40:1 zoom with 10:1 optical zoom, and have a light sensitivity of greater than 1.5 lux.
  - h. Camera lighting shall minimize reflective glare, have remote variable intensity control, and have lighting quality that provides clear, in-focus picture of the entire inside periphery of the pipe.

C. Inspection Software:

1. The inspection software shall utilize software capable of providing complete survey reports, inspection database, and linked media files.
2. The inspection software shall be the latest version of PACP (Pipeline Assessment and Certification Program) certified by NASSCO.

D. The contractor shall maintain back-up equipment in the even that primary equipment fails to prevent delays in the completion of work.

E. Recording and Documentation:

1. Upon completion of CCTV inspection, all inspection data shall be transferred to an external hard drive. The codec required for proper playback of the video file must be included on the external hard drive.
2. Provide printed label on the external hard drive or other documentation that indicates the following:
  - a. Name of the Owner
  - b. Project Title
  - c. Dates of Inspection
  - d. Inspection Company
  - e. Deliverable Number
  - f. List of Asset IDs Inspected

- F. Video:
1. Provide all inspections with a unique file name per inspection.
  2. Video shall be encoded in .WMV, .MPG, or .AVI format.
  3. The following information shall be displayed on the opening screen of each inspection:
    - a. Inspection Date and Time
    - b. Surveyor's Name
    - c. Project Name
    - d. Sewer Basin Name
    - e. Street Address and City
    - f. Upstream and Downstream Manhole ID
    - g. Direction of Inspection
    - h. Pipe Material
    - i. Pipe Diameter/Size
  4. The following information shall be displayed continuously on-screen during inspection:
    - a. Inspection Date and Time
- G. Still Photography:
1. Provide digital photographs showing the inspection image at all defects, observations, and service connections.
  2. Photos shall have a unique file name describing the image.
  3. Photos shall be encoded in .JPEG format with a minimum resolution of 640 x 480.
  4. Provide a label on the photograph with the upstream and downstream manhole IDS, footage, and defect code.
- H. Database:
1. The database shall contain asset information, inspection information, and defect codes and scores.
  2. The database file type shall be MSAccess, .MDB, or .ACCDB.
  3. The database format shall be NASSCO PACP Standard Exchange Database.
  4. All inspection media shall be linked to the corresponding asset/inspection/defect information within the database.
- I. Inspection Reports:
1. Provide .PDF format inspection reports including:
    - a. A summary of the inspections completed
    - b. Pipe graphs of each inspection showing asset information and defects/observations
    - c. Header containing the following information:
      - 1) Date and Time
      - 2) Inspection Company, Address, and Telephone
      - 3) Surveyor's Name
      - 4) Project Name
      - 5) Sewer Basin Name
      - 6) Location code
      - 7) Street Address and City
      - 8) Upstream and Downstream Manhole ID
      - 9) Upstream Manhole Depth
      - 10) Direction of Inspection
      - 11) Pipe Material
      - 12) Pipe Diameter/Size

- 13) Pre-Cleaning Requirements
- 14) Date Cleaned
- 15) Mapping Length
- 16) Surveyed Length
- 17) Survey Start and End Time
- 18) Additional Information as Needed

## 2.2 SEWER FLOW CONTROL SYSTEM

- A. The sewer flow control system shall provide adequate capacity and size to handle existing flows plus additional flows that may occur during periods of rain. Estimate the peak amount of flow to be bypassed and provide bypass flow capacity of at least 125% of the peak flow estimate.
- B. Plugs:
1. Provide with taps for connection of pressure gauges and air hoses, and flow-through capability.
  2. Use mechanical plugs with rubber gaskets or pneumatic plugs with rubber boots for pipe diameters 24 inches and smaller.
  3. Use inflatable bag stoppers made in two or more pieces for pipe diameters larger than 24 inches.
- C. Piping:
1. Material:
    - a. HDPE pipe shall:
      - 1) Be in accordance with ASTM D3350
      - 2) Have a minimum wall thickness conforming to DR 32.5
      - 3) Have butt-fusion welded joints.
    - b. Ductile Iron Pipe shall:
      - 1) Be in accordance with AWWA C151/A21.51
      - 2) Have rubber gasket push-on joints in accordance with AWWA C111/21.11
      - 3) Have fittings in accordance with AWWA C110/21.20
    - c. Small diameter flexible pipe may be used for low pressure and low flow conditions and gravity sewer lines, as approved by the Owner.
    - d. Pipe material shall have a pressure rating of at least 1.5 times the operating pressure.
    - e. Pipe material may be reused for subsequent flow bypass pumping system placements. The Owner, at their sole discretion, shall have right to reject sections deemed unserviceable.
- D. Bypass Pumps shall:
1. Be fully automatic, self-priming units that do not require the use of foot valves or vacuum pumps in the priming system.
  2. Have a solids handling design with the ability to pump minimum 3-inch diameter solids.
  3. Be able to run dry for long periods of time to accommodate cyclical nature of flows.
  4. Be equipped to minimize noise. Noise levels shall not exceed 86 dBA at a distance of 50 feet from the source and, if more stringent, comply with all local noise ordinances.
  5. Have on standby pump available onsite.
- E. Electric Power Generators shall:

1. Be able to simultaneously start and run all electric powered pumps required for the flow to be controlled.
2. Be equipped to minimize noise. Noise levels shall not exceed 86 dBA at a distance of 50 feet from the source and, if more stringent, comply with all local noise ordinances.
3. Include automatic transfer switch if the flow control system is to operate unattended.

### 2.3 SEWER CLEANING

- A. Sewer cleaning equipment shall be capable of removing dirt, debris, solids, grease, rocks, sand, grit, roots, and obstructions from sanitary sewer mainlines and manholes.
- B. High Velocity Hydro Cleaning Equipment:
  1. All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation.
  2. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned.
  3. The Contractor shall use, in addition to conventional nozzles, a nozzle which directs the cleaning force to the bottom of the pipe for sewers 18-inches and larger.
  4. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and benches and produce at least 2,000 psi of pressure. The gun shall be capable of producing flows from a fine spray to a solid stream.
  5. Equipment shall operate above ground and be a combination of high-velocity (hydro-cleaning) jet and vacuum system, truck-mounted for mobility and ease of operation.
  6. A working pressure gauge shall be used on the discharge of all high-pressure water pumps.
- C. Mechanically Powered Cleaning Equipment:
  1. Bucket machines shall be furnished with buckets in pairs with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drives will not be allowed.
  2. Power rodding machines shall be either a sectional or continuous rod type capable of holding a minimum of 750 feet of rod. The rod shall be specifically heat-treated steel. To ensure safe operation, the machine shall be fully enclosed and have an automatic safety clutch or relief valve.
- D. Root Removal Equipment:
  1. Use tools and accessories designed for removing roots, such as hydraulic root cutters, porcupines, or high-velocity hydro cleaners. Use of equipment shall not result in damage to the host pipe.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify location of piping to be cleaned or inspected with Project Owner.

### 3.2 CCTV INSPECTION

#### A. General

- 1. CCTV inspection shall be done one sewer line at a time, and the flow in the section being televised shall be suitably controlled. The depth of wastewater flow shall not exceed 25% in any pipe diameter. For new sewer lines, post-construction CCTV inspection shall be performed prior to releasing flow into the pipe.
- 2. When depth of flow in a section being worked is above the maximum allowable level for inspection, the flow shall be reduced in accordance with sewer flow control in accordance with this section.
- 3. Poor quality inspections including, but not limited to, loss of color, video distortion, outside interference, etc. will not be accepted by the Owner. Reinspection of pipes that do not meet minimum requirements shall be performed at the Contractor's expense.

#### B. Inspection

- 1. Inspection shall be conducted in the direction of flow (upstream to downstream) except while the camera is being used in a reverse setup.
- 2. Camera Operation:
  - a. The camera shall be moved through the line at a moderate rate, stopping when necessary to permit proper documentation of the sewer line section condition. In no case will the camera be allowed to travel at a speed greater than 30 feet per minute. Stop, for a minimum of 5 seconds, at every lateral, defect, and observation to properly determine each defect condition and lateral status.
  - b. Lens, lighting, and focus shall be readjusted in order to ensure clear, distinct, and properly lighted viewing of defects, laterals, and observations. A reflector in front of the camera may be required to enhance lighting in black pipe.
  - c. The camera lens shall remain above visible water line and may submerge only while passing through clearly identified line sags or vertical misalignments. Otherwise, the inspection shall be conducted at a time of lower flow or flow diversion shall be conducted in accordance with this section.
  - d. The camera height shall be adjusted such that the camera lens is always centered in the pipe being televised.
- 3. Failure of Initial Inspection:
  - a. If the initial survey attempt fails due to a blockage or obstruction, then the sewer line shall be lightly cleaned and re-attempted before a reverse inspection is performed.
  - b. A reverse setup is only allowed in the event that the initial survey must be abandoned due to obstructions, offset joints, etc.
  - c. If a reverse setup is required, establish a new inspection separate from the initial inspection.



C. Reverse Inspection

1. There may be occasions during CCTV inspection of a sewer line when the camera will not be able to pass an obstruction even though flow is continuing. The Contractor shall televise the pipe section from the downstream manhole in order to obtain a complete video inspection. Whenever such conditions arise, the Owner shall be notified to determine if a point repair is necessary. No additional payment shall be made for reverse set-ups required due to an obstruction.
2. If a complete inspection of the pipe section cannot be completed due to multiple obstructions, the Contractor shall notify and provide the Owner with the incomplete inspection. At the request of the Owner, the Contractor shall re-inspect the pipe after the necessary pipe repairs have been made. The decision to repair or not to repair a pipe shall be made by the Owner. The Owner may accept physical inspection that does not adhere to minimum standards herein if adverse conditions are encountered and re-inspection is not advised.
3. The Owner makes no guarantee that all of the sanitary sewer mains proposed to be inspected are clear for the passage of the camera. The equipment, tools, and methods used for securing the passage of the camera are to be at the discretion of the Contractor, with the approval of the Owner.

D. Measurement

1. All measurements shall be recorded in English units.
2. Obtain pipe diameter by physical measurement using calipers or measuring rod in the manhole.
3. Continuous Distance Meter:
  - a. The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a meter device. Marking on the cable, or the like, which would require interpolation of the depth of the manhole, will not be allowed.
  - b. Accuracy must be within 2 tenths of a foot tolerance and shall be checked on a daily basis by use of a walking meter, roll-a-tape, or other suitable device. Accuracy shall be satisfactory to the Owner.
  - c. Shall be zeroed after each segment inspected.
  - d. Defect identifications are to be called out and recorded to the nearest tenth of a foot.
  - e. Inspection will be unacceptable if measurement is inaccurate, or identified defects or features leave doubt as to the accuracy of locations or total length.

E. Documentation

1. Asset and Inspection Information
  - a. All asset and inspection information (header information) shall be entered in the database in accordance with the NASSCO PACP manual.
  - b. All digital videos will become the property of the Owner.
2. Observation and Defect Coding
  - a. All defects and observations shall be coded in the inspection records in the database in accordance with the NASSCO PACP manual.
  - b. All defects and observations codes shall be linked to the corresponding media within the database.

F. Quality Control

1. The Contractor shall submit in electronic format digital videos, photos, and evaluation reports to the Owner for review. The Contractor is required to investigate or correct issues noted by the Owner during review and submit corrected deliverables.

3.3 SEWER FLOW CONTROL

A. Performance Requirements

1. It is essential to the operation of the existing sewerage system and a requirement that there is no interruption in the flow of sewage throughout the duration of the Project, continuity of sewer service must be maintained at all times.
2. Provide, maintain, and operate temporary facilities such as dams, plugs, pumping equipment, pipes, conduit, and necessary power to intercept sewage flow before it reaches the area of Work.
3. Properly size all equipment, components, and appurtenances to maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers, and that will protect public and private property from discharge or damage.
4. Any discharge of sewage including discharges into the construction trench shall not be permitted.

B. General

1. Notify Owner at least 48 hours prior to implementing any sewer flow control system.
2. Operate and maintain sewer flow control systems 24 hours per day, 7 days per week, including holidays, as required, to control flow.
3. Take all necessary precautions to ensure no private or public properties are subjected to a sewage backup or spill. The Contractor shall be solely responsible for all cleanup, damages, and resultant fines in the event of a backup or spill. In the event of a backup or spill, the Contractor shall immediately notify the Owner and begin clean-up procedures.
4. When depth of flow in a pipe section is above the maximum depth specified for inspection, reduce flow by plugging, diverting, or bypass pumping around the work area.
5. Eliminate all flow from sewer manhole-to-manhole segments during point repairs, service connection rehabilitation, manhole construction and sewer pipe replacement or lining within the segment.
6. If flow reaches peak estimated flow that flow control system was designed for, stop all Work that requires flow control, secure the work area, and restore flow in the sewer until flow recedes.
7. After the Work is completed, return flow to the sewer and remove temporary equipment.

C. Plugging or Blocking

1. Flow control may consist of blocking flow with mechanical or pneumatic plugs if only a small amount of flow needs to be controlled and adequate storage is available. Plugging or blocking of flow must be pre-approved by the Owner.
2. Use primary and secondary plugs for each flow control location.
3. When blocking flow is no longer needed for performance and acceptance of the Work, remove plugs in a manner that permits sewage flow to slowly return to normal without surcharging or causing other major disturbances downstream.
4. Remove temporary plugs at end of each working day and restore normal flow. If downstream work is not or cannot be complete during the workday, provide, operate, and

- maintain a bypass pumping system.
5. Use bypass pumping if the Work cannot be scheduled at a time when flow is low or completed during a low flow period.

D. Bypass Pumping

1. When blocking flow in upstream sewer is not appropriate or allowed by the Owner, use flow bypass pumping for reducing flow below the maximum depth or completely bypassing flow.
2. Design, furnish, install, and maintain all power, primary, and standby pumps, appurtenances, tanks, tucks, and bypass piping required to maintain existing flows and services.
3. The Contractor shall obtain approval and secure all permits for placement of temporary bypass pumping systems and pipelines within public right-of-way.
4. Site Verification
  - a. Locate existing utilities in the area of bypass pipelines.
  - b. Minimize disturbance of existing utilities
  - c. Confine bypass discharge pipeline within public rights-of-way, temporary construction easement, or permanent easement.
  - d. When bypass pipeline crosses local streets and private driveways, place bypass pipeline in a trench and cover with temporary pavement.
  - e. Installation of bypass pipelines is prohibited in riparian/wetland areas unless approved by the Owner.
5. Flow bypass shall be done in such a manner that will not damage private or public property, or create a nuisance or public menace. Pumped sewage shall be in an enclosed pipe that is adequately protected from traffic, and shall be redirected into sanitary sewer system or alternatively into an enclosed tank for hauling to the wastewater treatment plant. Dumping or free flow of sewage on private or public property, gutters, streets, sidewalks, or into storm sewers is prohibited.
6. The Contractor shall equip pump engines with noise suppression devices to keep pump noise to a minimum and comply with applicable noise ordinances.

E. Service Lateral Bypassing

1. When it is necessary to temporarily disconnect a service lateral the Contractor shall do so in accordance with Section 33 31 30 – Sanitary Sewer Services.
2. Disconnected sewer service lateral connections shall be accommodated by bypass pumping or containment from time of disconnection to time of reconnections. This shall be accomplished by a mechanical pump and manifold system or by storage system such as a bladder tank system. The storage system shall be capable of holding adequate sewage from each sewer service connection for a period of 24 hours. Each storage system shall be emptied or pumped during each 24-hour period and properly disposed of in accordance with TDEC requirements.
3. The Contractor shall monitor status of flow and storage and pump disconnected laterals more frequently where flows exceed the storage capacity of the lateral or bladder tank system.

F. Field Quality Control and Maintenance

1. The Contractor shall perform a leakage pressure test of the bypass pumping discharge piping using clean water prior to actual operation. Prior to operation, test each section of

discharge piping with maximum pressure equal to 1.5 times the maximum operating pressure of the system. The Owner shall be given 24 hours' notice prior to testing.

2. The Contractor shall inspect bypass pumping system every 2 hours to ensure that the system is working correctly.
3. The Contractor shall ensure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.

G. Cleaning

1. Before bypass pumping systems are broken down and moved to the next section or removed at the completion of the Work, discharge sewage remaining in bypass discharge pipeline and pumping equipment to working sewer. Sewage shall not be spilled or discharged to the ground or environment.
2. Upon completion of bypass pumping operations, clean disturbed areas and restore to previous conditions or better, including pavement restoration.

3.4 SEWER CLEANING

A. General

1. When sewer flow depth is greater than 25%, flow depth shall be decreased by sewer flow control in accordance with this section.
2. Designated sanitary sewers and manholes shall be cleaned with the specified cleaning equipment herein. The cleaning process shall remove all dirt, grease, roots, grit, sand, silt, solids, rags, debris, etc. from each sewer segment, including the manhole(s).
3. Precautions shall be taken to protect the sanitary sewer mains and manholes from damage that might be inflicted by the use of the cleaning process or equipment. Any damage to a sewer caused by improper or careless use of cleaning equipment by Contractor shall be repaired by the Contractor at no additional cost to Owner and to the satisfaction of Owner.
4. Cleaning shall also include the initial manhole wall washing by high-pressure water jet.
5. When hydraulic or high velocity cleaning equipment is used, a suitable sand trap, weir, dam, or suction shall be constructed in the downstream manhole in such a manner that all the solids and debris are trapped for removal.
6. Contractor shall not increase the hydraulic gradient of the sanitary sewers beyond the elevation that could cause overflow of sewage into area waterways or into structures.
7. If water backups a lateral and enters a building or residence during cleaning, the Contractor shall notify Owner of the occurrence. It is the Contractor's responsibility to clean any backups which occur at no additional cost to Owner. If prior knowledge of backups is available, the Contractor shall take measures to prevent another backup from occurring (i.e., plugging the lateral) before cleaning.
8. Cleaning shall restore pipe to a minimum of 95% of original carrying capacity. No more than 5 percent debris shall remain in existing pipe. Pipe shall be 100% of original carrying capacity (no debris) for post construction inspections.
9. Clean using hydraulically propelled, high velocity hydro, or mechanically powered equipment supplemented with additional equipment as required based on conditions of lines at time Work commences and suitable to obtain a clean sewer line free from dirt, sand, rocks, gravel, grease, sludge, roots, and other debris.
10. Begin cleaning at upstream end of system and proceed in downstream direction. Unless

otherwise permitted by the Owner, cleaning pipeline segments upstream of a section of pipe already cleaned will not be allowed. If entire section cannot be cleaned from upstream manhole, it will be assumed a major blockage exists. Contractor shall with the Owner's approval, abandon effort and document what was completed to point of blockage.

11. Notify Owner immediately of any observed pipe failures or instances where the pipe cannot be cleaned.

B. High-Velocity Cleaning

1. Contractor shall operate the equipment so that the pressurized nozzle continues to move at all times.
2. The pressure nozzle shall be turned off or water pressure be reduced anytime the hose is held or delayed in order to prevent damage to the line. In heavy debris the step cleaning method should be used.
3. Contractor shall make a minimum of two passes through pipe segment.

C. Mechanical Cleaning

1. Mechanical cleaning, in addition to normal cleaning when required by Owner, shall be approved equipment and accessories driven by power winching devices.
2. Approved buckets, scrappers, scooters, porcupines, kites, heavy duty brushes, metal pigs and other debris removing equipment/accessories shall be used as appropriate and necessary in the field, in conjunction with the approved power machine(s).

D. Water Usage

1. Any and all Owner water used by Contractor shall be from a metered supply with an approved backflow device to protect the water supply. All metered water supply shall be paid to Owner through the regular billing system.
2. Contractor shall be responsible for obtaining transient water meter(s) from Owner, which shall be installed on the trucks or at fire hydrant(s). All related charges for the set-up shall be considered incidental to the cleaning of the existing sanitary sewer mains.
3. Contractor shall be responsible for preventing contamination of the potable water system. Contractor when drawing water from a public hydrant shall use a backflow preventer or an 18-inch air gap.
4. No fire hydrant shall be obstructed or used when there is a fire in the area.
5. It shall be Contractor's responsibility to obtain approval to use Owner's fire hydrants.
6. Contractor shall remove the water meter(s)/piping etc. from all fire hydrants at the end of each working day.

E. Removal and Disposal of Debris

1. All materials removed from the sewer lines during cleaning operations shall be trapped and removed from the system at the downstream manhole of the section being cleaned. All materials shall be disposed of in compliance with all applicable laws and regulations and in a manner approved by Owner.
2. Passing of debris to a downstream manhole section will not be allowed.
3. Any debris, or liquid waste, sludge, etc. shall not be accumulated on site except in totally enclosed containers that are permitted by Owner and the Tennessee Department of Environment and Conservation (TDEC) for liquid waste hauling.
4. All solids or semi-solids resulting from the cleaning operations shall be removed from the

Site at the end of each workday, hauled to and disposed of at an Owner approved dump site.

5. Under no circumstances shall sewage or solids removed in the cleaning process be dumped onto streets or into ditches, catch basins, storm drains, sanitary sewer manholes, cleanouts, or dumps.

**END OF SECTION 33 01 30**

## **SECTION 33 01 30.51**

### **SEWER CLEANING**

#### **PART 1 – GENERAL**

##### **1.1 SUMMARY**

- A. Section includes sewer line cleaning, manhole cleaning, and internal obstruction removal.

##### **1.2 SYSTEM DESCRIPTION**

- A. Cleaning shall remove sediment, rocks, debris, roots, grease accumulations and obstructions from length of sewer and manholes to be lined.
- B. Cleaning of sewer and manhole walls in vicinity of lining shall remove grease, scale, encrustation and loose mortar so that no foreign intrusion shall cause imperfections in lining (e.g. bumps, folds, dimples).
- C. Sewer cleaning methods shall be washing with high pressure water or other as approved by the Engineer.

##### **1.3 SUBMITTALS**

- A. General: Provide submittals in accordance with Specification 01 33 23.
- B. Submit letter that identifies methods that will be used to remove sediment, debris, grease, scale, encrustations, loose concrete, and roots throughout section of sewer to be cleaned. Include the following:
  - 1. Detailed explanation of cleaning process.
  - 2. Schedule of activities.
  - 3. References where identified cleaning method has been used successfully in the past by Contractor.
  - 4. List of the actions to mitigate impact to Owner during cleaning operation.

##### **1.4 PROJECT CONDITIONS**

- A. Access to manholes shall be provided by Owner.

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS**

- A. Do not use chemicals without written approval of the Engineer. Do not use chemical which may be considered hazardous or detrimental to organisms or equipment of wastewater treatment plant.

### **2.2 EQUIPMENT**

- A. High-Velocity Hydraulic (Hydro-Cleaning) Equipment: Equipment shall be capable of removing dirt, grease rocks, sand, roots, and other materials and obstructions from sewer lines and manholes.
- B. Equipment shall have selection of two or more high-velocity nozzles. Nozzles shall be capable of producing scouring action from 15 to 45 degrees in all size lines designated to be cleaned, with nozzle capable of producing flows from fine spray to solid stream.
- C. Equipment shall carry its own water tank, auxiliary engines, and high pressure water pump.
- D. Combination Unit Pump: Capable of pumping at least 80 gallons per minute (300 liters per minute) at 2,000 psi (13.8 MPa), measured at beginning of hose reel.
- E. Water Pump: Able to run at 2,000 psi (13.8 MPa) while pulling full vacuum, completely independent from vacuum system, with ability to vary vacuum without affecting water pressure.

### **2.3 WATER**

- A. When water from fire hydrants is necessary, apply to Engineer for permission to use potable water source.
- B. Provide temporary piping, valves, certified reduced pressure backflow preventors, equipment, and other items for handling potable water and wastewater.
- C. Do not utilize water source until it has been approved for use by the Engineer.

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Contractor shall be aware of flow conditions, and be able to identify potential access problems to sewer access points.

### **3.2 APPLICATION**



**A. Line Cleaning:** Clean designated sewer lines using approved methods and equipment.

1. Remove internal obstructions such as roots or gaskets by trenchless techniques when obstruction encountered prevents further pipe cleaning.
  - a). Provide special attention during cleaning operation to assure almost complete removal of roots from joints.
  - b). Procedures to remove internal obstructions may include use of equipment such as rodding machines, root saws, bucket machines and winches using root cutters, porcupines, and jet machines equipped with hydraulically driven cutters.
2. If cleaning of entire section cannot be successfully performed from one manhole, set up equipment at other manhole and attempt cleaning again.
  - a). If successful cleaning cannot be performed or equipment fails to traverse entire sewer line section, it will be assumed that major blockage exists.
  - b). Temporarily suspend cleaning effort and immediately notify Engineer.
  - c). Upon removal of obstruction, complete cleaning operation.
3. Employ satisfactory precautions to protect sewer line from damage that might be inflicted by improper use of cleaning equipment.
  - a). Immediately notify Engineer if fresh soil, pieces of pipe, or other visible signs of potential problems occur during cleaning operation.
  - b). Insure that water pressure created does not cause damage due to flooding of property being served by sewer section(s) involved.

**B. Manhole Cleaning:** Include entire manhole interior, including manhole benches and walls. Incorporate into line cleaning operation by scouring walls with high velocity nozzle after pipe segment cleaning operation is complete.

**C. Removal of Debris:** Flush debris downstream and do not remove. In the event that debris removal is necessary, Engineer will coordinate requirements with a Waste Management Liaison.

1. Do not discharge sewage or solids removed from downstream manholes, onto streets, or into ditches, catch basins or storm drains.

### **3.3 FIELD QUALITY CONTROL**

**A.** Where cleaning is in preparation for manhole rehabilitation, comply with requirements of Section 33 05 13, "Manhole Rehabilitation".

### **3.4 CLEANING**

- A. Keep premises free from accumulations of waste materials, rubbish and other debris resulting from work.
- B. Remove waste materials, rubbish, and debris from and about premises.
- C. Remove tools, construction equipment and machinery, and surplus materials.
- D. Restore to original condition portions of site not designated for alterations by Contract Documents.

**End of Section**

## SECTION 33 01 30.72

### ULTRAVIOLET CURED-IN-PLACE PIPE LINING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 specifications sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Cured-in-Place Pipe
- B. Related Requirements:
  - 1. Section 30 01 30.51 – Sewer Inspection, Cleaning, and Flow Control
  - 3. Section 33 31 30 – Sanitary Sewer Services

##### 1.3 COORDINATION

- A. Coordinate Work of this Section with users connected to system.

##### 1.4 DESIGN CRITERIA

- A. Design liner thickness in accordance with ASTM F1216, F1743, or F2019 (as appropriate for the proposed liner product) using the following criteria:
  - 1. Pipe Diameters: Per Project Drawings
  - 2. Ovality: 3 percent, or as shown on plans.
  - 3. Pipe Condition: Assume fully deteriorated.
  - 4. External Water: Ground Surface
  - 5. Short-Term Tensile Strength (ASTM D638):
    - a. Unreinforced: 3,000 psi
    - b. Reinforced: 9,000 psi
  - 6. Tensile Strength Reduction Factor: 50 percent
  - 7. Long-Term Tensile Strength:
    - a. Unreinforced: 1,500 psi
    - b. Reinforced: 4,500 psi
  - 8. Flexural Strength (ASTM D790):
    - a. Unreinforced: 4,500 psi
    - b. Reinforced: 6,500 psi
  - 9. Short-Term Flexural Modulus (ASTM D790):
    - a. Unreinforced: 250,000 psi, or as shown on plans
    - b. Reinforced: 700,000 psi, or as shown on plans
  - 10. Flexural Modulus and Flexural Strength Reduction Factor:

- a. Unreinforced: 50 percent
  - b. Reinforced: 35 percent, contingent upon approval of Owner after review of submittal with long-term test data, otherwise 50 percent shall be used.
11. Long Term Flexural Strength:
- a. Unreinforced: 2,250 psi
  - b. Reinforced: 3,250 psi
12. Long-Term Flexural Modulus:
- a. Unreinforced: 125,000 psi, or as shown on plans
  - b. Reinforced: 455,000 psi, or as shown on plans
13. k Enhancement Factor: 7
14. Soil Modulus: 1,000 psi, or as shown on plans.
15. Soil Density: 120 pcf, or as shown on plans.
16. Highway Live Load: AASHTO HS20-44
17. Safety Factor: 2 minimum
18. Minimum Thickness: 6 millimeters
19. Poisson's Ratio: 0.3
20. Liner shall be watertight.

## 1.5 SUBMITTALS

### A. Action Submittals

- 1. Resin
- 2. Annular Space Sealant
- 3. Service Connection Fittings
- 4. In-Line Curing Temperature Monitoring System

### B. Informational Submittals

- 1. Design Calculations
  - a. Manufacturer's certification of material to values utilized in calculations.
  - b. If reinforced liners are proposed, submit long-term ASTM D790 and ASTM D2990 test data supporting reduction factor used in design
- 2. Manufacturer's installation instructions and procedures, including:
  - a. Wet Out
  - b. Insertion
  - c. Curing
  - d. Cool Down
  - e. Finished Pipe
- 3. Wet out and curing schedule.
- 4. Process control sheets for temperature/time during curing
- 5. Installer's and accredited testing laboratory statement of qualifications
- 6. Manufacturer's Certificate of Compliance certifying compliance with the applicable specifications and standards
- 7. Warranty and/or Special Guarantee
- 8. Manufacturer's instructions for material shipping, storage, and handling requirements
- 9. Certified copies of test reports of factory tests required by the applicable standards and this section.

10. Dye testing results

11. External hard drive of both pre- and post CCTV inspections in accordance with Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control

## 1.6 QUALITY ASSURANCE

- A. Installer shall have a minimum of 3 years' experience with the selected liner product and method of curing.
- B. Superintendent shall have a minimum of 3 years of onsite experience with the selected liner product and method of curing.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products as recommended by the manufacturer to prevent damage. Materials shall be made safe from theft, vandalism, and damage.
- B. All products and materials specified herein shall be inspected at the request of the Owner or Engineer. All materials that fail to conform to these specifications shall be rejected. After delivery to the Site, any materials that have been damaged in transit or are otherwise unsuitable for use in the Work shall be rejected and removed from the Site by the Contractor at no cost to the Owner.
- C. Ship resin directly to wet out facility from manufacturer.
- D. Maintain resin-impregnated tubes in refrigerated truck trailers at a temperature below 45° F to prevent premature curing. Prior to beginning inversion, no portion of the resin-impregnated liner shall be subjected to sunlight or ultraviolet radiation. Resin-impregnated tubes with signs of premature curing shall not be installed and shall be removed from the Site at no cost to the Owner.

## 1.8 SPECIAL GUARANTEE

- A. Provide manufacturer's extended guarantee or warranty, with the Owner named as the beneficiary, in writing, as a special guarantee. The special guarantee shall provide for correction, or at the option of the Owner, removal and replacement of Work specified in this section found to be defective, due to material or workmanship failure, during a period of 5 years after the date of Substantial Completion. A warranty inspection can be completed by the Owner up to 5 years after final acceptance.

## 2.1 CURED-IN-PLACE PIPE

A. Resin:

1. Unless otherwise specified, the Contractor shall furnish a general purpose, unsaturated, polyester, epoxy, isophthalic neopentyl glycol, or thermosetting vinyl ester resin, catalyst system, initiators, or hardeners that provide specified cured physical strengths and properties, and compatible with reconstruction inversion process.
2. Resistant to municipal wastewater environment and immersion in septic sewage at temperatures up to 75° F.
3. Curing:
  - a. Designed to cure properly within selected curing method.
  - b. Initiation temperature: 180° F, maximum for water cure.
4. Resins shall be chemical resistant and tested and manufactured in accordance with ASTM F1216 and ASTM D543.
5. For lines smaller than 24 inches, PET resins, resin fillers, resin additives, and resin enhancement agents are prohibited. Only neat resins are acceptable.
6. For lines 24 inches and larger, any resin additives are contingent upon Owner approval. All enhanced resins shall be submitted as a part of the action submittal process.
7. For reinforced liners, only neat resins are acceptable.
8. Old resins and reworked resins are prohibited, regardless of whether or not they are mixed with new resin.
9. Produce a cured tube resistant to shrinkage that will not corrode or oxidize and is resistant to abrasion from solids, grit, and sand in wastewater.
10. Bond between tube layers shall be strong and uniform. Layers, after cure, shall be saturated with resin.
11. Styrenated resins are prohibited for pipes that will discharge directly to the environment such as treatment plant effluent lines.
12. Manufacturers and Products:
  - a. Reichhold
  - b. Interplastic Corporation
  - c. Ashland Specialty Chemical Company
  - d. AOC

B. Catalysts:

1. Primary catalyst shall not exceed 1% of the resin by volume.
2. Secondary catalyst shall not exceed 0.5% of the resin by volume.
3. Catalysts shall be as required to meet the performance requirements of the liner.

C. Tube:

1. Consist of layers of flexible nonwoven and absorbent polyester felt manufactured under quality-controlled conditions set by manufacturer and applicable requirements set forth in ASTM F1216 and ASTM F1743 that, when cured, will be chemically resistant to reagents as defined in ASTM D543.
2. Lining shall be correct diameter; after installation, there shall be no wrinkles or form permanent fins. Tube shall be capable of stretching to fit irregular pipe sections and fabricated and sized for each section to ensure snug and firm fit inside existing sewer; produce required thickness after resin is cured.

3. Wastewater-contact inside layer of tube shall be coated with an impermeable material compatible with resin and felt and shall not be a dark or non-reflective nature that inhibits proper CCTV inspection.

4. For lines 24 inches and larger: if reinforcement is utilized it shall consist of impregnated flexible fiberglass. Each lot of fiberglass liner shall be inspected for defects and tested in accordance with ASTM F2019.

5. Manufacturers:

- a. Applied Felt
- b. Insituform Technologies
- c. Liner Products
- d. National Liner
- e. Layne Inliner
- f. Mississippi Textile

D. Accessories:

1. Hydrophilic Rubber Joint Seal:

- a. Greenstreak, Inc.
- b. Hydrotite, LMK, Insignia
- c. Adeka, KM-String

2. PVC Saddle Tees: Solvent welded type for 8-inch CIPP sewer main connections. Tee shall fit the existing pipe and have an integral 6-inch branch connection with gasket. The saddle shall include two stainless steel straps. Saddle tees shall meet the requirements of ASTM D3034 and ASMT F477.

3. Connections to CIPP mains greater than 8 inches in diameter shall be with a minimum 6-inch "Inserta-Tee" manufactured by Inserta Fittings Company and specifically designed for the thickness of the installed CIPP liner.

4. Curing Temperature Monitoring System:

- a. ZIA Systems
- b. Pipeline Renewal Technologies, VeriCure

## PART 3 - EXECUTION

### 3.1 WORKER SAFETY

A. Contractor shall implement all current recommendations, guidelines, and regulations of the National Institute for Occupational Safety and Health (NIOSH), and the Occupational Health and Safety Administration (OSHA) for the safety of workers and the public affected by the CIPP installation.

B. Records of any complaints or incidents shall be provided to the Owner and/or Engineer.

### 3.2 PREPARATION

- A. Complete the following activities, unless otherwise approved by the Owner and/or Engineer.
1. Pre-Insertion Cleaning: Rewash, re-clean and ready existing sewer pipe immediately before the pre-insertion television inspection.
  2. Pre-Insertion CCTV Inspection: Inspect sewer pipe before insertion of resin impregnated tube to ensure pipe is clean and existing pipe conditions are acceptable for lining. Provide a digital file or link of the CCTV inspection.
  3. Dye Testing: Where sewer line segments may contain abandoned services, the Contractor shall be responsible for performing dye testing to determine if the services are live and require re-instatement.
  4. Bypassing Wastewater: Contractor shall make provisions for dewatering/bypass of sewage flows during the prosecution of the work.
  5. Line Obstructions: If pre-insertion video CCTV inspection reveals an obstruction in the existing pipe (such as heavy solids, dropped joints, protruding service taps or collapsed pipe which may prevent completion of the inversion process), that is not identified in the Drawings and cannot be removed by sewer cleaning equipment, then a point repair using a shielded coupling may be made with the approval of the Owner and/or Engineer.
  6. Remove active infiltration prior to the installation of the liner.

### 3.3 INSTALLATION

- A. Wet Out:
1. Verify lengths in the field before cutting liner to length.
  2. Wet out shall be vacuum impregnated with resin under controlled conditions.
  3. Use roller system to uniformly distribute resin throughout the tube.
  4. Resin shall fill all voids in the tube material with no air spaces or pockets.
  5. Handle resin impregnated tube to retard or prevent settling until it is ready for insertion.
  6. Use of alternative methods of resin impregnation shall be approved by the Owner and/or Engineer prior to implementation.
- B. Insertion:
1. Install CIPP in accordance with ASTM F1216 (direct inversion) or ASMT F1743 (pull installations) or F2019 (reinforced liners) as appropriate for the liner product being used.
  2. Dewater existing host pipe prior to installation.
  3. Insert wet out tube through an existing manhole or approved access point by means of an inversion method and application of sufficient hydrostatic head to extend the tube to the next designated termination point.
  4. A pull in method using a bladder to expand the tube may be employed if approved by the Owner.
  5. After insertion, maintain sufficient pressure to hold tube tight against the host pipe.
- C. Curing:
1. Complete a curing process control sheet for every lining completed.
  2. UV Curing - Material shall be a polyester needle felt or fiberglass based CIPP liner impregnated with an isophthalic neopentyl glycol resin.



3. Curing parameters, such as curing speed, inner air pressure, and wattage, per the manufacturer.
4. Optimal curing speed or travel speed of energized UV light sources is determined for each length of liner based on liner diameter, liner thickness, and exothermic reaction temperature.
5. Invert liner into pipe with standard pressure drum or pull into pipe using a slip sheet.
6. After completion of inversion process introduce light chain in liner and close ends with couplings.
7. Remove and discard inner film material after curing to provide optimal quality of final product.
8. Control panel operating UV curing unit light chain may be pulled on a trailer attached to UV unit.

D. The finished CIPP shall:

1. Be continuous over entire length from manhole to manhole and be free from visual defects such as foreign inclusions, dry spots, keel, boat hull, pinholes, wrinkles, and other deformities.
2. For lines 24 inches or larger the CIPP shall have no radially positioned (perpendicular to flow) wrinkles, fins or other discontinuities in the lower third of the pipe which exceed more than 3% of the host pipe inside diameter. Have no radial wrinkles, fins or other discontinuities in the upper 2/3rds of the pipe having a height of 5% or more of the host pipe inside diameter, unless approved.
3. When passing through or terminating in a manhole shall be carefully cut out in a shape and manner approved by OWNER.
4. Annular space between existing pipe and the CIPP shall be sealed with a hydrophilic rubber joint seal per manufacturer's instructions.
5. Meet leakage requirements of pressure test as specified in Section 33 31 13 Sanitary Sewers, Manholes, and Appurtenances.

### 3.4 SEALING AND BENCHES IN MANHOLE

- A. CIPP shall make a tight-fitting seal with existing pipe(s) in manhole. For CIPP that is installed continuous through manhole, the top half of the pipe shall be neatly cut off and not broken or sheared off at least 2 inches away from wall. The channel in the manhole shall be a smooth continuation of the pipe(s) and shall be merged with other pipes or channels, if any.
- B. At each pipe opening into manhole, hydrophilic rubber joint seal shall be bonded with adhesive to the host sewer pipe or to the opening in the manhole barrel to hold it in place during inversion and creating a water-tight seal after curing.
- C. Seal CIPP and existing pipe in manhole as stated above before proceeding on to next manhole section. Manholes shall be individually inspected for liner cut-offs, benches, and sealing of liner annular space.

### 3.5 MANHOLE DROP CONNECTIONS

- A. Drop connections on existing sewer mains shall be abandoned prior to the installation of CIPP by plugging the manhole to pipe connection with a bulkhead and filling the drop assembly with flowable fill.
- B. Use of internal manhole drop connections shall be indicated on the Drawings or directed and approved by the Owner and/or Engineer.

### 3.6 SERVICE LATERALS

- A. Shutdown
  - 1. Notify Owner and/or Engineer at least one week prior to the shutdown when it is necessary to shut down a private service line while Work is in progress and before the service lines are reconnected. Notify building occupants with an Owner approved door hanger not less than 36 hours prior to shut down.
  - 2. No service is to remain shut down without sewer flow control or a leak free temporary connection. Commercial sewer services shall be maintained when businesses are open.
- B. Temporary Service Reinstatements:
  - 1. The exact location and number of service connections shall be determined from a pre-CCTV inspection and field located by marking existing service connections. Contractor shall determine and identify all active services. Contractor shall perform temporary service cut outs at active service connections immediately after liner has cured. Initial internal service cut outs shall be made to the lesser of a 6-inch diameter opening or 90 percent of the original diameter of the connection. Do not damage liner pipe and allow to normalize to ambient temperature before 6-inch diameter hole is drilled out.
  - 2. If the service cannot be replaced through excavation, then internally reinstate the service to 100% of original opening, and provide a smooth opening with no ragged edges. The Owner must approve all permanent lateral cut outs.
  - 3. Services shall not be reconnected from abandoned or vacant lots, unless directed otherwise by the Owner and/or Engineer. Restore and correct missed or faulty reconnections as well as damage caused to property owners for not reconnecting the services soon enough or for not giving notice to the owners.
- C. Permanent Service Connection by Excavation:
  - 1. Excavate existing active service connections. Disconnect at joints and existing sewer (now the carrier pipe for the liner) and remove to expose the liner to the extent necessary. Coat cut out hole in liner with approved resin/epoxy that will cure at the ambient temperature.
  - 2. Install PVC saddle tee for the new sewer service lateral over the cut out. Saddle shall be a one-piece saddle attached to the liner with epoxy so that a complete seal is accomplished when the strap-on saddle is tightened with two stainless steel bands; one on each side. The stub-out attached to the saddle shall protrude into liner a distance equal to the wall thickness of liner.

3. All permanent lateral re-instatements shall be completed within 30 days of the initial temporary cut out.
4. Services which are reconnected to rehabilitated liner shall be shown on the record drawings with the distance from the nearest downstream manhole, depth at clean out, and the cleanout distant from mainline.
5. Replace sewer service laterals per Section 33 31 13 – Sanitary Sewers, Manholes, and Appurtenances.

### 3.7 TESTING FOR ACCEPTANCE

- A. Sampling and Measuring: Two minimum 12-inch long samples shall be cut from the cured liner installation; sample shall be collected and prepared in accordance with restrained sample method described in ASTM F1216 or ASTM F2019. Samples removed for testing shall be individually labeled and logged to record the following:
  1. Owner's project number and title.
  2. Sample number.
  3. Segment number of line as noted on supplements.
  4. Date and time of sample.
  5. Name of Contractor.
  6. Location and by whom tested.
  7. Street name and address.
  8. Test results
- B. Field Thickness testing shall be in accordance with ASTM D2122. The average thickness, calculated from four measurements on each specimen, shall be equal to or greater than the required design thickness. Plate samples may be used in lieu of restrained samples for pipes greater than 18 inches in diameter and in accordance with ASTM F1216.
- C. Send samples to an independent accredited laboratory and test for modulus of elasticity and flexural strength in accordance with ASTM D790, as directed by Owner. Failure of any test can be grounds for rejection of the CIPP liner. At the direction of Owner, the second sample shall be tested. Testing results shall be provided to the Owner within 7 days of receipt.
- D. Destructive Testing: In cases where test results of samples from the 12-inch long pipe section are lower than required values, at the direction of Owner and/or Engineer, Contractor shall cut samples from liner along length of pipe. The size and shape of the samples shall be determined by Owner and/or Engineer. The Contractor shall repair the CIPP liner and host pipe at no additional cost to Owner. Failure of the thickness test shall be grounds for rejection for the CIPP liner.
- E. Resin Sampling: "Wet-out" facility resin mixing equipment shall have a valve downstream of the mixing functions and immediately upstream of the application of the mixed resin to the tube where Owner and/or Engineer can draw resin samples.

- F. Contractor's batch mix facilities, if any, shall provide for sampling of the mixed batch. Submitted "wet-out" schedule cannot be modified without 24-hour notice to Owner and/or Engineer. Resin samples shall be drawn at times determined by Owner and/or Engineer. The Owner and/or Engineer drawing the samples will arrive unannounced and shall be afforded immediate access to the equipment.
- G. CCTV televising shall be done after service connections have been made, unless required earlier by Owner and/or Engineer. Provide CCTV digital files or link within two weeks after permanent lateral reinstatements have been completed.
- H. Lines shall be leakage tested as specified in Section 33 31 13 – Sanitary Sewers, Manholes, and Appurtenances.
- I. No visible leak around liner at manhole connections will be allowed.
- J. Correct failed liner or liner deemed unacceptable by Owner and/or Engineer as a result of the post-video inspection or test reports for structural values and thickness.

END OF SECTION

**SECTION 33 05 13**  
**MANHOLE REHABILITATION**  
**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. Section includes requirements for refurbishing of sewer manholes.

**1.2 REFERENCES**

American Society of Testing and Materials (ASTM)

- C78 Flexural Strength of Concrete
- C109 Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
- C293 Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading)
- C321 Bond Strength of Chemical-Resistant Mortars
- C348 Flexural Strength of Hydraulic Cement Mortars
- C496 Splitting Tensile Strength of Cylindrical Concrete Specimens
- C596 Drying Shrinkage of Mortar Containing Portland Cement
- C666 Resistance of Concrete to Rapid Freezing and Thawing
- C882 Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
- C952 Bond Strength of Mortar to Masonry Units
- C1012 Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution
- C1202 Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration

**1.3 SUBMITTALS**

- A. General: Provide submittals in accordance with Specification 01 33 23.
- B. Manufacturer's Data: Manufacturer's technical literature on coating material, and description of installation method that includes the following:
1. Environmental requirements for application and worker safety, including ventilation, humidity, and temperature ranges.
  2. Maximum storage life and storage requirements.
  3. Mixing and proportioning requirements (as applicable).
  4. Application film thickness per coat of primer and finish coat.

5. Curing time required.

C. Method for finishing anticipated connections to modified manhole and sewer, including detail drawings.

#### **1.4 QUALITY ASSURANCE**

A. Product application shall be performed only by workmen trained and experienced with specified material.

B. Certification: Applicators to perform coating installation work, including spray operators as applicable, shall be certified by manufacturer.

C. Contractor Experience: Minimum of three projects with similar applications of specified material.

### **PART 2 – PRODUCTS**

#### **2.1 MANUFACTURERS**

A. Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include the following:

Strong Systems, Inc.  
Master Builders, Inc.

#### **2.2 MATERIALS**

Provide manhole coating system that complies with requirements specified for one of the following two systems.

A. Strong-Seal System: Manufactured by Strong Systems, Inc.

1. Strong-Seal QSR

a). Compressive Strength: ASTM C109.

(1). 200 psi (1.4 MPa) in 15 minutes.

(2). 1,400 psi (10 MPa) in 6 hours.

b). Shrinkage: ASTM C596; Zero percent when cured at 90 percent relative humidity.

c). Bond: ASTM C321; 150 psi (1.0 MPa) at 28 days.

d). Cement: Sulfate-resistant.

e). Density (when applied): 105 pcf (1680 kg/cubic meter) plus or minus 5 pcf (80 kg/cubic meter).

2. Strong-Seal MS-2C: Made with calcium aluminate cement, and the following minimum characteristics in 28 days.
  - a). Compressive Strength: ASTM C109; 5,000 psi (34 MPa).
  - b). Tensile Strength: ASTM C496; 300 psi (2.1 MPa)
  - c). Flexural Strength: ASTM C78; 780 psi (5.4 MPa).
  - d). Shrinkage: ASTM C596; Zero percent at 90 percent relative humidity.
  - e). Bond: ASTM C952; 130 psi (900 kPa).
  - f). Density (when applied): 120 pcf (1920 kg/cubic meter) plus or minus 5 pcf (80 kg/cubic meter).

**B. EMACO S 88-CA Repair Mortar System: Manufactured by Master Builders, Inc.**

1. Compressive Strength: ASTM C109.
  - a). 4,500 psi (31 MPa) in 24 hours.
  - b). 10,000 psi (70 MPa) in 28 days.
2. Flexural Strength: ASTM C348; 1,250 psi (8.62 MPa) in 28 days.
3. Slant Shear Bond Strength: ASTM C882 modified; 3,000 psi (21 MPa) in 28 days.
4. Permeability: ASTM C1202; 1,000 Coulombs maximum.
5. Freeze-Thaw Resistance: ASTM C666, Procedure A; 300 cycles - Minimum Durability Factor - 98 percent.
6. Sulfate Resistance: ASTM C1012; 15 weeks - 0.1 percent expansion.

## **2.3 EQUIPMENT**

**A. Strong Seal System: Apply sprayed-on concrete lining with specially designed machine consisting of the following:**

1. Optimized progressive cavity pump capable of producing minimum of 250 psi (1.7 MPa) pumping pressure.
2. Contrablend mixer with twin ribbon paddle with end discharge.
3. Air system for spray application of concrete.
4. Equipment shall be complete with water storage and metering systems.

**B. Repair Mortar System: Apply repair mortar with low pressure spray using Moyno Pump plastering-type machine.**

## **PART 3 – EXECUTION**

### **3.1 PREPARATION**

- A. Protection: Place covers over sewer line inverts to prevent extraneous materials from entering sewer lines.**

- B. Manhole Ring and Cover Adjustment:** If identified in Contract documents, adjust manhole cover to match existing grade in accordance with Drawings.
- C. Surface Preparation:** Remove foreign material from manhole walls and bench using high-pressure water spray with minimum pressure of 1200 psi (8.3 MPa).
  - 1. Remove loose and protruding brick, mortar, and concrete using mason's hammer and chisel, or scraper.
  - 2. Pull out existing manhole steps, or cut off flush with inside manhole barrel.
  - 3. Fill large voids.

### **3.2 APPLICATION**

- A. Strong Seal System:** Apply patching mix in accordance with manufacturer's recommendations to manhole invert, bench and large voids in wall.
  - 1. Rebuild manhole benches with patching mix in accordance with Drawings.
    - a). Repair inverts with visible damage or infiltration. After blocking flow through manhole and thoroughly cleaning invert, apply patching mix to invert in expeditious manner.
    - b). Trowel mix uniformly onto damaged invert, extending out onto base of manhole sufficiently to tie into liner to be applied.
    - c). Finished invert surfaces shall be smooth and free of ridges.
    - d). Flow may be re-established in manhole within 30 minutes after placement of mix.
  - 2. Apply sprayed-on concrete lining with specially designed machine specified in Article 2.2.
    - a). Surface prior to spraying on concrete shall be damp without noticeable free water droplets or running water.
    - b). No applications shall be made if temperatures within manhole are below 40 degrees F (4 degrees C), or above 95 degrees F (35 degrees C) for 24 hours after application.
    - c). Apply materials to minimum uniform thickness to insure that cracks, crevices, and voids are filled, and somewhat smooth surface remains after light troweling.
    - d). After initial set of first coat (normally 15 minutes to 1 hour), apply second coat. Minimum combined thickness of two coats shall be 1/2 inch (13 mm).
    - e). Trowel surface again to smooth finish. Avoid over-troweling that will bring water to surface and weaken it.



- f). Remove bench cover and spray bench so that finished configuration is in accordance with the Drawings.
- g). Cure final application minimum 4 hours before being subjected to active sewage flow.

**B.** Repair Mortar System: Mix repair mortar in accordance with manufacturer's recommendations.

1. Manhole surfaces receiving repair mortar shall be saturated and in surface-dry condition.
2. Spray mortar lining on manhole walls minimum 1/2-inch (13-mm) thickness, and smoothly finish by hand-troweling.
  - a). Start finishing when finger pressure does not penetrate surface, but marks it lightly.
  - b). Use evaporation retarder, "Confilm", as manufactured by Master Builders, to aid in finishing.
3. Rebuild manhole benches with repair mix in accordance with Drawings.
  - a). Repair inverts with visible damage or infiltration.
  - b). After blocking flow through manhole and thoroughly cleaning invert, apply repair mix to invert.
  - c). Trowel mix uniformly onto damaged invert, extending out onto base of manhole sufficiently to tie into lines to be applied.
  - d). Finished invert surfaces shall be smooth and free of ridges.
  - e). Flow may be re-established in manhole within 30 minutes after placement of mix.

### **3.3 MANHOLE STEPS**

**A.** If identified on Contract documents, install manhole steps in accordance with Section 33 31 13 "Sanitary Sewers, Manholes and Appurtenances" and Drawings.

### **3.4 FIELD QUALITY CONTROL**

**A.** Test manholes in accordance with requirements of Section 33 31 13, "Sanitary Sewers, Manholes and Appurtenances".

### **3.5 CLEANING**

- A.** Keep premises free from accumulations of waste materials, rubbish and other debris resulting from work.
- B.** Remove waste materials, rubbish, and debris from and about premises.
- C.** Remove tools, construction equipment and machinery, and surplus materials.

- D. Restore to original condition portions of site not designated for alteration by Contract documents.

**End of Section**

## **SECTION 33 31 13**

### **SANITARY SEWERS, MANHOLES, and APPURTENANCES – NH**

#### **PART 1 – GENERAL**

##### **1.1 SUMMARY**

A. This Section includes the following:

1. Furnishing and installing sanitary sewers
2. Furnishing and installing building sewer service laterals
3. Furnishing and installing pre-cast concrete manholes
4. Furnishing and installing manhole frames and covers
5. Miscellaneous sewerage system appurtenances
6. Testing

##### **1.2 SUBMITTALS**

A. General: Provide submittals in accordance with Specification 01 33 23.

1. Name, address and telephone number of suppliers of all manufactured products.
2. Product data containing information and instructions relating to the storage, handling, installation, and inspection of furnished pipe, fittings and appurtenances.
3. Pipe and fitting manufacturers' Certificate of Compliance with specified standards and tests for each lot of pipe and fittings supplied. Immediately turn certificates over to Engineer. Materials delivered to the job site without accompanying certificates will be subject to rejection.
4. Shop drawings and technical data for pre-cast concrete sanitary manholes, including frames and covers, pipe penetration and wall joint sealing systems, and water proof coatings.
5. Certified copy of all leakage tests including all failures and retests.

##### **1.3 QUALITY ASSURANCE**

A. Pipe and fittings shall be produced in a plant of recognized reputation that is regularly engaged in the production of pipe conforming to the specified standards. Pipe and pipe fittings of the same type shall be the product of a single manufacturer.

- B. All pre-cast concrete manhole sections and all castings shall be the product of a single manufacturer who can furnish evidence of satisfactory experience in the production of high quality products of the type indicated and specified.
- C. Provide at least one skilled mason who shall be present at all times during the installation of inverts, shelves and chimneys and who shall personally direct the masonry work performed under this Section.
- D. Comply with applicable regulations and standards of all local, state, and federal regulatory authorities having jurisdiction.

#### **1.4 DELIVERY, STORAGE AND HANDLING**

- A. Carefully handle all pipes and fittings when loading and unloading. Lift pipes by hoists or lower on skid-ways in manner to avoid shock. Lower pipe into trench with suitable equipment as recommended by manufacturer. Do not dump or drop pipe or fittings. Those that are dumped or dropped are subject to rejection by Engineer.
- B. Each length of pipe delivered to the job site shall be clearly marked with the name of the manufacturer, class of pipe and pipe diameter. Store in accordance with manufacturer's recommendations.
- C. Pre-cast manhole sections shall not be shipped until the concrete has attained a compressive strength of 3,000 psi or until 5 days after fabrication, whichever is longer.
- D. All pre-cast manhole sections shall be lifted and moved by use of suitable lifting slings, plugs, and holes so as not to damage ship-lap joints or edges.
- E. All materials found at anytime during the work to be defective will be rejected, marked and promptly removed from the job site.

#### **1.5 PROJECT CONDITIONS**

- A. Verify existing utility and connection locations and elevations. Affirm that sewerage system piping may be installed in compliance with original design and referenced standards. Immediately notify the Engineer of any conflicts which may require design modifications and do not initiate or resume construction until such conflicts have been resolved.
  - 1. Locate existing sanitary sewerage system piping and structures that are to be abandoned and closed.

## **1.6 SEQUENCING AND SCHEDULING**

- A.** Coordinate construction schedule, service interruptions, traffic control, leakage testing and project start-up with Owner, Engineer and regulatory authorities having jurisdiction.
- B.** Coordinate building sewer service lateral construction with interior building sanitary sewerage piping.
- C.** Coordinate with other utility work.

## **PART 2 – PRODUCTS**

### **2.1 PIPE AND FITTINGS**

- A.** General: Provide pipe and pipe fitting materials compatible with each other.
- B.** Ductile-Iron Pressure Pipe: AWWA C151, Class 52, for push-on joints.
  - 1. Lining: AWWA C104, cement lining.
  - 2. Gaskets: AWWA C 111, rubber.
  - 3. Ductile-Iron Fittings: AWWA C110, ductile-iron, or AWWA C153, ductile-iron compact fittings.
    - a. Lining: AWWA C104, cement lining.
    - b. Gaskets: AWWA C111, rubber.
- C.** PVC (Polyvinyl Chloride) Sewer Pipe and Fittings:
  - 1. Gravity Sewer - ASTM D3034, SDR 35, elastomeric gasket joints. Gaskets to meet ASTM F477, elastomeric seal.
  - 2. Force Main (Pressure) Sewer – ASTM D2241 or ASTM D1785, SDR 26, elastomeric gasket joints.
- D.** Non-pressure Couplings: Rubber or elastomeric sleeve and stainless steel band assembly fabricated to match outside diameters of pipes to be joined.
  - 1. Sleeves: ASTM C 425, rubber for vitrified clay pipe; ASTM C 443, rubber for concrete pipe; ASTM C 564, rubber for cast-iron soil pipe; and ASTM F 477, elastomeric seal for plastic pipe. Sleeves for dissimilar or other pipe materials shall be compatible with pipe materials being joined.
  - 2. Bands: Stainless steel, one at each pipe insert.

- E. Non-pressure Joint Seals: Rubber or elastomeric compression gasket, made to match pipe inside diameter or hub, and adjoining pipe outside diameter.
1. Gaskets: ASTM C 425, rubber for vitrified clay pipe; ASTM C 443, rubber for concrete pipe; ASTM C 564, rubber for cast-iron soil pipe; and ASTM F 477, elastomeric seal for plastic pipe. Gaskets for dissimilar or other pipe materials shall be compatible with pipe materials being joined.

## 2.2 MANHOLES

- A. Precast Concrete Manholes: ASTM C 478, pre-cast reinforced H-20 loading rated concrete, of depth indicated with provision for rubber gasket joints.
1. Base Section: 6-inch minimum floor thickness and 5-inch minimum thickness for walls and base riser section, and having a base section with integral floor.
  2. Riser Sections: 5-inch minimum thickness; 48-inch minimum diameter, and barrel heights to provide depth indicated.
  3. Top Section: Eccentric cone type, unless concentric cone or flat-slab-top type is indicated.
  4. Horizontal Joint Sealant: Double row, Bitumastic.
  5. Pipe Connectors: Lock-Joint Flexible Manhole Sleeve or Kor-N-Seal Joint Sleeve, for each pipe connecting to base section.
  6. Inverts and Shelves: Brick paved.
  7. Mortar and Parging: ASTM C 270, Type S, using ASTM C 150, Type II Portland cement.
  8. Bricks: Bricks for shelves, inverts, and grade adjustment shall conform to Env-Wq 704.13 (a) (9), Grade SS hard brick. No more than five (5) brick courses shall be allowed for grade adjustment.
  9. Manhole Mortar: Mortar for pointing and sealing manholes shall conform to Env-Wq 704.13 (c).
  10. All manholes shall be water proofed, at the factory, with two seal coats applied to the exterior of the manhole in accordance with the seal coating manufacturer's recommendations. Water proofing shall be masonry seal MSP-1 waterproofing material as made by the Masonry Seal Foundation, 7500 West Ridge Road,

Elyria, Ohio, or Foundation Coating 47-461 as made by TNEMEC. Exterior of all joints shall be coated with waterproofing after setting.

**B. Reinforcement:** Steel conforming to the following:

1. Fabric: ASTM A 185, welded wire fabric, plain.
2. Reinforcement Bars: ASTM A 615, Grade 60, deformed.

**C. Precast Concrete Structure Steps:** Manholes shall not be provided with steps. Steps for other structures, if required shall be as follows: Stainless steel or plastic covered steel or plastic shaped so they cannot be pulled out of the concrete wall in which they are secured. All steps shall meet the requirements of ASTM C478 for load carrying capacity and pull-out resistance and steps shall not be secured with mortar. The steps shall have a drop section or raised abutments to prevent sideways slippage off the step, the foot contact surface shall have non-skid safety serrations and steps shall be approximately 14" X 10".

**D. Manhole Frames and Covers:** ASTM A 48, Grade 30, heavy-duty, grey cast iron, H-20 loading rated, 30-inch minimum clear opening, 6-inch minimum riser with 4-inch minimum width flange, and 31-3/4-inch diameter cover, indented top design, with 3-inch lettering "SANITARY SEWER" cast into cover, coal tar epoxy coated.

1. Standard Frame and Cover: Quality Water Products, Style 30, or equivalent.
2. Water-Tight Frame and Cover: Quality Water Products Style C-47 WT.

## **2.3 IDENTIFICATION**

**A. Metallic-Lined Plastic Underground Warning Tapes:** Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick, solid green in color with continuously printed caption in black letters "CAUTION - SEWER LINE BURIED BELOW."

## **PART 3 – EXECUTION**

### **3.1 PREPARATION OF FOUNDATION FOR BURIED SANITARY SEWERAGE SYSTEMS**

- A.** Grade trench subgrade to provide a smooth, firm, stable, and rock-free foundation, throughout the length of the pipe.
- B.** Remove unstable, soft, and unsuitable materials below subgrade to depth directed by Engineer. Refill to subgrade with course gradation crushed stone or screened gravel.

- C. Place stone bedding and shape bottom of trench to fit bottom of pipe. Dig bell holes at each pipe joint to relieve the bells of all loads and to ensure continuous bearing of the pipe barrel on the bedding.

### **3.2 PIPE APPLICATIONS FOR UNDERGROUND SANITARY SEWERS**

- A. Gravity Sewers: PVC SDR 35 sewer pipe and fittings or DI Class 52 pressure pipe and fittings, materials and sizes as indicated on plan profile drawings.
- B. Building Sewer Service Laterals: PVC SDR 35 sewer pipe and fittings, 4-inch minimum diameter.

### **3.3 INSTALLATION - GENERAL**

- A. General Locations and Arrangements: Drawings (plans and details) indicate the general location and arrangement of the underground sanitary sewerage system piping. Location and arrangement of piping layout take into account many design considerations. Install the piping as indicated, to the extent practical.
- B. Install piping beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Place stone haunching and chink pipe to grade. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's recommendations for use of lubricants, cements, and other installation requirements. Place and compact initial backfill and suitable backfill materials as indicated in "Section 31 23 16 – Earthwork".
- C. Use manholes for changes in direction and at all main intersections. Use wye or tee fittings for branch connections, except where direct tap into existing sewer is indicated.
- D. Use proper size increasers, reducers, and couplings, where different size or material of pipes and fittings are connected. Reduction of the size of piping in the direction of flow is prohibited.
- E. When installing below pavement sewers at depths less than 6-feet or cross-country sewers less than 4-feet, install 2-inch thick extruded polystyrene insulation 6 inches over piping. Width of insulation shall be a minimum of 24 inches, centered on the centerline of pipe. Joints between sheets shall be covered with a 12-inch long sheet of insulation, centered on the joint. Any variation from the minimum depth requirements (six feet under pavement or four feet under cross country areas) must be granted a waiver prior to construction in accordance with the requirements of Env-Wq 716.02.
- F. Install building sewer service laterals, of sizes and in locations indicated or directed. Plug service at street right-of-way, connect to existing building sewer or terminate or connect to



building sanitary drains at a point 5 feet beyond foundation exterior wall, as indicated or directed.

- G. When installing building sewer service laterals at depths less than 3 feet, install 1-inch-thick extruded polystyrene over piping. Width of insulation shall extend minimum of 12 inches beyond each side of pipe. Install directly over and center on pipe center line.
- H. Tunneling: Install pipe under streets or other obstructions that cannot be disturbed, by tunneling, jacking, or a combination of both.

### **3.4 PIPE JOINT CONSTRUCTION AND INSTALLATION**

- A. Join and install ductile-iron pipe with ductile-iron push-on joint fittings and rubber gaskets in accordance with AWWA C600.
- B. Join and install PVC pipe as follows:
  - 1. Pipe and gasketed fittings, joining with elastomeric seals in accordance with ASTM D 3212.
  - 2. Installation in accordance with ASTM D 2321.
- C. Join different types of pipe with standard manufactured couplings and fittings intended for that purpose.

### **3.5 MANHOLES**

- A. General: Install manholes complete with accessories as indicated. Utilize overlapping joint type for pre-cast concrete construction. Construct continuous brick paved inverts and shelves between inlets and outlet. Set tops of frames and covers flush with finish surface where manholes occur in pavements. Elsewhere, set tops 3 inches above finish surface, unless otherwise indicated.
- B. Place pre-cast concrete manhole sections as indicated, and install in accordance with ASTM C 891.
- C. Provide a double row of bitumastic joint sealant at horizontal wall section joints.
- D. Apply bituminous mastic coating at joints of sections.

### **3.6 INSTALLATION OF IDENTIFICATION**

- A. Install continuous plastic metallic lined underground warning tape during back-filling of trench for underground water service piping. Locate 2-feet above pipe crown and centered on pipe.

### **3.7 FIELD QUALITY CONTROL**

- A. Perform testing of sewer system in accordance with local authorities having jurisdiction.
- B. Gravity Sewer Testing: All new gravity sewers shall be tested for water tightness by the use of low-pressure air tests. The Engineer shall observe all testing. Low-pressure air testing shall be in conformance with ASTM F 1417-92 (2005) “Standard Test Methods for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air”; or Uni-Bell PVC Pipe Association Uni-B-6, “Low-Pressure Air Testing of Installed Sewer Pipe” (1998). All new gravity sewer pipes shall be cleaned and visually inspected using a lamp and shall be true to line and grade following installation and prior to use. All new gravity sewer pipe shall be deflection tested not less than 30 days nor more than 90 days following installation. The maximum allowable deflection of flexible sewer pipe shall be 5% percent of average inside diameter. A rigid ball or mandrel with a diameter of at least 95% of the average inside pipe diameter shall be used for testing pipe deflection. The deflection test shall be conducted without mechanical pulling devices. Sections which do not permit ball passage shall be reinstalled to attain satisfactory results.
- C. Force Main and Low Pressure Sewer Testing: Force mains shall be tested in accordance with Section 5 of AWWA C600-10 “Installation of Cast Iron Water Mains and Their Appurtenances”, at a pressure equal to the greater of 150 percent of the design operating total dynamic head or at least 100 psi. The Engineer shall observe all testing.
- D. Manhole Testing
  - (a) Manholes shall be tested for leakage using a vacuum test in accordance with the ASTM C1244 standard in effect when the testing is performed. A manhole may be backfilled prior to performing a vacuum test, but if the manhole fails the vacuum test, backfill shall be removed so repairs to the manhole can be made from the outside of the manhole prior to retesting.
  - (b) The manhole vacuum test shall conform to the following:
    - (1) The initial vacuum gauge test pressure shall be 10 inches Hg; and
    - (2) The minimum acceptable test hold time for a 1-inch Hg pressure drop to 9 inches Hg shall be:
      - a. Not less than 2 minutes for manholes less than 10 feet deep in depth;
      - b. Not less than 2.5 minutes for manholes 10 to 15 feet deep; and
      - c. Not less than 3 minutes for manholes more than 15 feet deep;
  - (c) The manhole shall be repaired and retested if the test hold times fail to achieve the acceptance limits specified in (b), above.
  - (d) Inverts and shelves shall not be installed until after successful testing is completed.

(e) Immediately following completion of the leakage test, the frame and cover shall be placed on the top of the manhole or some other means used to prevent accidental entry by unauthorized persons, children, or animals, until the contractor is ready to make final adjustment to grade.

1. Cleaning: Clear interior of piping and structures of dirt and other superfluous material as work progresses. Place plugs in ends of uncompleted pipe at end of day or whenever work stops.
  2. Flush piping between manholes, if required by local authority, to remove collected debris.
- E. Interior Inspection:** Inspect piping to determine whether line displacement or other damage has occurred.
1. Make inspections after pipe between manholes and manhole locations has been installed and approximately 2 feet of backfill is in place, and again at completion of project.
  2. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects correct such defects, and re-inspect.

### **3.8 PROTECTION OF WATER SUPPLIES**

- A.** There shall be no physical connection between a public or private potable water supply system and a sewer or sewer appurtenance which would permit the passage of sewage or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer or sewer manhole.
- B.** No sewer shall be located within the well protective radii established in Env-Ws 300 for any public water supply wells or within 100 feet of any private water supply well.
- C.** Sewers shall be located at least 10 feet horizontally from any existing or proposed water main.
- D.** A deviation from the separation requirements of B or C above shall be allowed where necessary to avoid conflict with subsurface structures, utility chambers and building foundations, provided that the sewer is constructed in accordance with the force main construction requirements specified in Env-Wq 704.06.
- E.** Whenever sewers must cross water mains, the sewer shall be constructed as follows:
1. Vertical separation of the sewer and water main shall be not less than 18 inches, with the water above sewer; and,
  2. Sewer joints shall be located at least 6 feet horizontally from the water main.

**END OF SECTION**