ADDENDUM NO. 1
November 24, 2021

CDBG 20 NR WATER MAIN REPLACEMENT & EXTENSIONS
CDBG CONTRACT NO. 20DB-OO-04-55-02-N06
TOWN OF CALLAHAN, FLORIDA
MITTAUER & ASSOCIATES, INC. PROJECT NO. 0302-31-1

PROJECT MANUAL:

SECTION 00410 - BID FORM:

Delete Section 00410, Bid Form, in its entirety and substitute therefor the attached revised Section 00410, Bid Form.

SECTION 01150 - MEASUREMENT AND PAYMENT:

Delete Section 01150, Measurement and Payment, in its entirety and substitute therefor the attached revised Section 01150, Measurement and Payment.

SECTION 02441 - DIRECTIONAL DRILL:

Add attached Section 02441, Directional Drill.

DRAWINGS:

SHEET NO. 23 - BUILDING - ELECTRICAL FLOOR PLAN & DETAILS:

In NOTE 3.a., add the words “& BOXES” to the end of the note.

SHEET NO. 24 - BUILDING - ELECTRICAL SCHEDULES & DIAGRAM:

In the ONE-LINE DIAGRAM, delete the words “UNDERGROUND” AND “PANEL M”.

END OF ADDENDUM NO. 1

SECTION 00410

BID FORM

CDBG 20 NR WATER MAIN REPLACEMENT & EXTENSIONS

CDBG CONTRACT NO. 20DB-OO-04-55-02-N06

TOWN OF CALLAHAN, FLORIDA

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

ARTICLE 1—BIDDER

SUBMITTED BY: _____ **DATE:** _____

Company Name (printed or typed)

_____

Address

_____

City, State, Zip

BIDDER'S CONTACT: _____

Name

PHONE NO.: _____

FAX NO.: _____

EMAIL ADDRESS: _____

CONTRACTOR'S FLORIDA LICENSE NO.: _____

ARTICLE 2—OWNER

2.01 This Bid is submitted to:

Town of Callahan
542300 US Hwy 1 (P.O. Box 5016)
Callahan, Florida 32011

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

ARTICLE 3—ATTACHMENTS TO THIS BID

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

A. Required Bid security;

B. If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign;

ARTICLE 4—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

4.01 *Unit Price Bids*

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Item Description	Est. Qty	Unit	Unit Price	Cost
1	Mobilization and General Conditions	1	LS	$	$
2	6" PVC Water Main	3,300	LF	$	$
3	6" Fusible PVC Water Main, Directionally Drilled	250	LF	$	$
4	Ductile Iron Fittings - Cement Lined	1,200	lbs	$	$
5	Fire Hydrant Assembly	4	Each	$	$
6	Remove Existing Fire Hydrants	1	Each	$	$
7	Tapping Sleeve & Valve				
a.	8" x 6"	1	Each	$	$
b.	6" x 6"	3	Each	$	$
8	Cut, Cap, and Abandon Existing 2” Mains	2	Each	$	$
9	Reconnect Existing Water Services				
a.	Single Short	1	Each	$	$1
b.	Single Long	5	Each	$	$
c.	Double Short	1	Each	$	$
d.	Double Long	2	Each	$	$
10	Removal and Replacement of Unsuitable Soils	500	LF	$	$
11	Concrete Encasement and Specials	20	CY	$	$
12	Asphaltic Roadway/Sidewalk/Driveway Restoration	200	LF	$	$
13	Asphaltic Overlay	500	SY	$	$

Item No.	Item Description	Est. Qty	Unit	Unit Price	Cost
14	Concrete Driveway/Sidewalk Restoration	200	LF	$	$
15	Stabilized Roadway/Driveway Restoration	100	LF	$	$
16	Grassing				
a.	Seed and Mulch	1,500	LF	$	$
b.	Sodding	1,500	LF	$	$
17	Flushing, Pressure Testing, and Disinfection	1	LS	$	$
18	Depot Park Pavilion and Storage Building	1	LS	$	$
19	Depot Park Sitework	1	LS	$	$
20	Demobilization and Project Closeout	1	LS	$	$
TOTAL BASE BID					**$**
ADDITIVE ALTERNATE					
1	Depot Park Conventional Framing	1	LS	$	$
2	Depot Park Additional Electrical and Lighting	1	LS	$	$
3	Depot Park Building Insulation	1	LS	$	$
TOTAL ADDITIVE ALTERNATE					**$**
TOTAL BID (BASE BID + ADDITIVE ALTERNATE)					**$**

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 5—TIME OF COMPLETION

5.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

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

ARTICLE 6—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

6.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

6.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

6.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 7—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

7.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

12. Bidder is licensed to engage in the business of contracting in the State of Florida by the Construction Industry Licensing Board.

7.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 7.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.

c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

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

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Address for giving notices:

_____

_____

_____

Bidder's Business License No._____

Affix corporate seal, if applicable.

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 GENERAL: Measurement and payment will be based upon actual quantities of work completed and accepted in accordance with the Contract Documents. No separate payment will be made for incidental clearing, excavation, trenching, dewatering, backfilling, compaction, finish grading, surveying or other incidental items of work not shown in the Agreement.

1.02 ESTIMATED QUANTITIES: Where quantities are shown they are approximate and are given only as a basis of calculation upon which the award of the contract is to be made. Owner or Engineer do not assume any responsibility for the final quantities, nor shall Contractor claim misunderstanding because of such estimate of quantities. Final payment will be made only for the satisfactorily completed quantity of each item.

1.03 METHOD OF MEASUREMENT:

A. Measurement of Length: Unless otherwise specified for the particular items involved, all measurements of distance for items to be paid for on the basis of length shall be taken horizontally or vertically.

B. Measurement of Area: In the measurement of items paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the actual dimensions measured along the surface of the completed work within the neat lines shown or designated.

1.04 PAYMENT:

A. Lump Sum Items: Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum item.

B. Unit Price Items: Where payment for items is shown to be paid for on a unit price basis, separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed, but required for satisfactory completion of the Work, shall be considered to be included in the scope of the appropriate listed work items.

1.05 EQUIPMENT AND MATERIALS IN STORAGE: Partial payment for materials and equipment in proper storage at the site of the work or other approved storage site will be made for those items for which the Contractor has submitted paid invoices to the Engineer.

1.06 BID ITEMS:

A. Mobilization and General Conditions:

1. Measurement: The quantity for payment shall be on a lump sum basis and shall include all costs associated with mobilizing all labor, equipment, and materials necessary to perform the work and all administrative costs such as bonds, insurance, etc. Bid item shall be limited to 10% of the total bid, half of which shall be for mobilization, bonds, and insurance and the remaining half of which shall be for general conditions spread evenly over the construction period.

2. Payment: Payment shall be full compensation for mobilizing all materials, equipment and labor and securing all bonds necessary to perform the work, and all general conditions.

B. PVC Water Main:

1. Measurement: The quantity for payment shall be the actual number of linear feet of PVC main of the size identified satisfactorily furnished and laid using conventional construction methods (i.e., excavation) or directionally drilled as measured along the length of the centerline of the completed pipeline, without deduction for the length of valves and fittings.

2. Payment: Payment of the applicable unit price per linear foot shall be full compensation for furnishing all labor, materials, and equipment, and constructing the main complete including trace wire, detection tape, etc.

C. 6" Fusible PVC Water Main, Directionally Drilled:

1. Measurement: The quantity for payment shall be on a horizontal linear foot basis and shall include all items necessary to directional drill the indicated length and diameter of fusible PVC water main at the specified locations.

2. Payment: Payment of the linear foot price shall be full compensation for furnishing all labor, materials, and equipment to directional drill fusible PVC pipe of the specified diameter at the specified locations. Price shall include all equipment, mobilization, pipe, pipe couplings/adapters, testing, clean-up, etc.

D. Ductile Iron Fittings - Cement-Lined:

1. Measurement: The quantity for payment shall be on the basis of the number of pounds of ductile iron fittings with cement lining (excluding accessories) satisfactorily furnished and installed. For the purposes of determining the pounds of fittings installed, the “compact” (i.e. AWWA C-153) fitting weights shall be utilized.

2. Payment: Payment of the applicable unit price per pound shall be full compensation for furnishing all labor, materials and equipment to satisfactorily install ductile iron fittings. No separate payment shall be made for thrust restrainers or detection tape, required to be installed with ductile iron fittings.

E. Fire Hydrant Assembly:

1. Measurement: The quantity for payment shall be the number of fire hydrant assemblies installed as identified on the drawings.

2. Payment: Payment of the applicable unit price shall be full compensation for installing fire hydrant, gate valve and box, hydrant tee, pipe, tie rods, and associated restoration.

F. Remove Existing Fire Hydrant Assembly:

1. Measurement: The quantity for payment shall be the number of fire hydrant assemblies removed as identified on the Drawings.

2. Payment: Payment of the applicable unit price shall be full compensation for removing existing fire hydrant, capping existing hydrant lead, and associated restoration.

G. Tapping Sleeves and Valves:

1. Measurement: The quantity for payment shall be the number of tapping sleeves and tapping valves furnished and installed of the identified size.

2. Payment: Payment of the applicable unit price shall be full compensation for locating the existing main to be connected to, excavating and exposing the existing main, installing tapping sleeve and tapping valve, restraint of existing main as required, connection of new pipe to tapping valve, and associated restoration.

H. Cut and Cap Existing 2" Mains:

1. Measurement: The quantity for payment shall be the number of existing 2" water mains that are cut and capped.

2. Payment: Payment of the applicable unit price shall be full compensation for locating and exposing the existing main (including excavation and dewatering), cutting the existing main, furnishing and installing a cap on the end of the main, providing restraint of the existing main as required, and associated restoration.

I. Reconnect Existing Water Services:

1. Measurement: The quantity for payment shall be the number of existing water services of the specified type (single or double, short or long) reconnected to the newly-installed water main. Long services are defined as those crossing a street or roadway.

2. Payment: Payment of the applicable unit price shall be full compensation for installing tapping saddle and corporation stop on newly-installed or existing main, installing service tubing from newly-installed water main to existing meter box (including drilling under roadway), and connection to existing meter box assembly including all required connections/adapters, and associated restoration.

J. Removal and Replacement of Unsuitable Soils:

1. Measurement: The quantity of payment shall be the actual number of linear feet (as measured along the pipe centerline) of unsuitable soils removed and replaced with suitable backfill material, as determined by the Engineer.

2. Payment: Payment of the applicable unit price per linear foot of unsuitable soils shall be full compensation for furnishing all labor, materials, and equipment to remove the unsuitable soils and hauling and disposal of excess material unsuitable for backfill.

K. Concrete Encasement and Specials:

1. Measurement: The quantity for payment shall be the number of cubic yards of concrete satisfactorily furnished and installed for encasing water or sewer mains or for other special conditions as directed by the Engineer. The volume of concrete for encasement shall be limited to 6 inches around the outside diameter of the pipe being encased minus the volume of pipe, per foot of length.

2. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, and equipment to place the concrete around the pipe, provide pipe support, forming, vibratory placement, and related items.

L. Asphaltic Roadway/Sidewalk/Driveway Restoration:

1. Measurement: The quantity of payment shall be the actual number of linear feet (as measured along the pipe centerline) of asphaltic roadway/driveway surface open cut and restored in accordance with specifications.

2. Payment: Payment of the applicable unit price per linear foot of asphaltic roadway/driveway restoration shall be full compensation for furnishing all labor, materials, and equipment to saw cut, remove and dispose of existing pavement, install suitable base and subgrade materials, and recompaction in accordance with pavement restoration requirements. Asphaltic overlay shall be paid for separately under its respective pay item. No separate payment shall be made for incidental restoration items (i.e., curb, grassing, driveways, etc.) adjoining asphalt roadway restoration, unless such items are crossed by pipeline, although any such disturbed items must still be restored.

M. Asphaltic Overlay:

1. Measurement: The quantity for payment shall be the actual number of square yards of asphaltic overlay of the identified thickness installed. Limits of asphaltic overlay are indicated on the drawings. If no so indicated, overlay limits shall correspond to asphaltic roadway/driveway restoration limits or as directed by Engineer/Owner.

2. Payment: Payment of the applicable unit price per square yard of asphaltic overlay shall be full compensation for furnishing all labor, materials, and equipment to install asphaltic overlay to the limits indicated on the drawings. Item includes adjustments to any manhole covers, valve boxes traffic control devices, or similar items necessary to make flush with overlain surface.

N. Concrete Driveway/Sidewalk Restoration:

1. Measurement: The quantity for payment shall be the actual number of linear feet (as measured along the pipe centerline) of concrete driveway/sidewalk/curb open cut and restored in accordance with specifications.

2. Payment: Payment of the applicable unit price per linear foot of concrete driveway/sidewalk/curb restoration shall be full compensation for furnishing all labor, materials, and equipment to open cut existing driveway/sidewalk/curb, remove and dispose of existing concrete, recompact open cut area, and install new concrete driveway/sidewalk/curb. Width of concrete driveway replacement shall be 10 foot minimum or to nearest concrete joint existing prior to construction, whichever is greater. No separate payment shall be made for incidental grass restoration adjoining concrete driveways/sidewalks/curbs. Replacement of existing curb is not required if curb is not damaged as a result of Contractor's operations.

O. Stabilized/Gravel Roadway/Driveway Restoration:

1. Measurement: The quantity for payment shall be the actual number of linear feet (as measured along the pipe centerline) of stabilized/gravel roadway surface open cut and restored in accordance with specifications.

2. Payment: Payment of the applicable unit price per linear foot of stabilized/gravel roadway restoration shall be full compensation for furnishing all labor, materials, and equipment to install suitable base and subgrade materials and recompact in accordance with details and specifications. No separate payment shall be made for incidental grass restoration adjoining stabilized gravel roadways.

P. Grassing:

1. Measurement: The quantity for payment shall be the actual number of linear feet of grass of the specified type satisfactorily replaced as measured along the centerline of the pipe. The entire width of disturbed area shall be grassed.

2. Payment: Payment of the applicable unit price shall be full compensation for furnishing all labor, materials, and equipment necessary to replace grass as shown, directed, or specified including all necessary grading, soil preparation, fertilizer, and irrigation. Where pipe is to be installed in areas whose restoration has a separate pay item (i.e., asphalt roadway restoration, concrete driveway restoration, etc.), no separate payment for grassing in these areas will be made even though any disturbed grassed areas must be restored.

Q. Flushing, Pressure Testing, and Disinfection:

1. Measurement: The quantity for payment shall be on a lump sum basis and shall include all items related to flushing, pressure testing, and disinfection of all newly installed water mains and services.

2. Payment: Payment of the lump sum price shall be full compensation for furnishing all labor, materials, and equipment necessary to flush, pressure test and disinfect water main including temporary flushing connections, flushing water, chlorination, flushing water dechlorination and disposal, sediment control/removal, associated restoration, etc.

R. Depot Park Pavilion and Storage Building:

1. Measurement: The quantity for payment shall be on a lump sum basis.

2. Payment: Payment of the lump sum price shall be full compensation for all labor, materials, equipment, and incidentals necessary to construct the Pavilion and Storage Building described in the Project Manual and within the building envelope.

S. Depot Park Sitework:

1. Measurement: The quantity for payment shall be on a lump sum basis.

2. Payment: Payment of the lump sum price shall be full compensation for the site improvements associated with the Pavilion and Storage Building described in the Project Manual.

T. Demobilization and Closeout:

1. Measurement: The quantity for payment shall be on a lump sum basis.

2. Payment: Payment of the applicable lump sum price shall be full compensation for demobilizing all materials and equipment from the work site(s), preparation of record drawing documents, and submittal of all required closeout documents.

U. Depot Park Conventional Framing (Additive Alternate No. 1):

1. Measurement: The quantity for payment shall be on a lump sum basis.

2. Payment: Payment of the lump sum price shall be full compensation for all labor, materials, equipment, and incidentals to modify the proposed base bid from pre-engineered roof trusses to a conventionally-framed roof system as described in the Project Manual.

V. Depot Park Additional Electrical and Lighting (Additive Alternate No. 2):

1. Measurement: The quantity for payment shall be on a lump sum basis.

2. Payment: Payment of the lump sum price shall be full compensation for all labor, materials, equipment, and incidentals to furnish and install the additional electrical and lighting elements described in the Project Manual.

W. Depot Park Building Insulation (Additive Alternate No. 3):

1. Measurement: The quantity for payment shall be on a lump sum basis.

2. Payment: Payment of the lump sum price shall be full compensation for all labor, materials, equipment, and incidentals to furnish and install roof and wall insulation as described in the Project Manual.

END OF SECTION

SECTION 02441

DIRECTIONAL DRILL

PART 1 - GENERAL

1.01 DESCRIPTION: Work under this section of the specifications consists of furnishing all materials, labor and equipment and performing all operations in connection with the installation of the underground utilities using the Horizontal Directional Drilling (HDD) installation method, also commonly referred to as a Directional Bore or Directional Drill. This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, and restoration of underground utilities.

1.02 QUALITY ASSURANCE:

A. The requirements set forth in this Specification specify a wide range of procedural precautions necessary to ensure that the very basic, essential aspects of a proper Directional Bore installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this Specification.

B. Adherence to the specifications contained herein, or the Engineer's approval of any aspect of any Directional Bore operation covered by this Specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract.

C. The Directional Drilling subcontractor shall have been in business for a minimum of three (3) years and shall have successfully completed a minimum of ten (10) other drills which utilized pipe both at least 12" in diameter and 500' long. The Contractor's experience shall be in the type of pipe being proposed, i.e., HDPE or PVC pipe.

D. In order to unify responsibility for proper operation and service of the directional drill, it is the intent of these Specifications that all system components, labor, and equipment shall be furnished by a single subcontractor (unitary source).

1.03 SUBMITTALS:

A. Prior to beginning work, the Contractor must submit to the Engineer a report of the procedure and equipment to be used on the project. The report will ensure that no drilling mud pits shall be used and that drilling mud from the bore hole shall be continuously removed with a vac truck.

1. A list of equipment expected to be used for the Directional Bore, including special equipment and materials required for various soil conditions.

2. Time schedule for completing each Directional Bore, including any delays due to particular soil conditions.

3. Qualifications of the subcontractor and certification of the pipe welders.

4. The Contractor shall provide written verification of existing utility locations, both horizontal and vertical, that are located within the drill path. Utilities shall be located in accordance with ASCE Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data (CI/ASCE 38-02), Quality Level A.

5. The Contractor shall provide a conceptual drill path routing based on information obtained through Task 4 and provide documentation of all drilling entry and exit point considerations. All work shall be completed within FDOT right-of-way, Town right-of-way, or acquired easements. If a profile is not shown within the Drawings, the minimum clearance beneath all roadways shall be 10 bore diameters.

6. Environmental Protection Plan: Contractor shall provide an erosion and control plan for all drilling operations and any drainage, wetland, waterway, or other area designated for such protection by contract documents, state, federal, and local regulations. Contractor shall place hay bales, or approved protection, to limit intrusion upon project area. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains, and other measures. Contractor shall adhere to all applicable environmental regulations including environmental condition stated in local, state, and federal permits. Fuel may not be stored in bulk containers (greater than 25 gallons) within 200' of any water-body or wetland.

B. Shop Drawings: Submit shop drawings and product data for pipe material, drilling mud, polymers, and equipment furnished under this Section in accordance with the General Conditions.

C. Pipe Installation Certificate: Upon completion of the directional drills, the subcontractor shall provide a written report, through the Contractor and endorsed in writing by the Contractor, certifying that the pipe has been properly installed, checked, pressure tested, and is ready for placement into routine permanent service. As part of the Contractor’s submittal, a complete as-built drawing shall be submitted which shows the pipe location in 3 dimensions, x, y, and z axis, at intervals not to exceed 10'.

1.04 JOB CONDITIONS:

A. Planned night time work is expressly prohibited and will not be allowed unless approved by the Department of Transportation, the Owner, and the Engineer.

B. All crossing operations shall be accomplished during daylight hours and shall not begin after the hour pre-established as the latest starting time that will allow completion during daylight hours.

C. When hazards of nighttime work are carefully considered and determined to be insignificant, night time work may be allowed only to complete a properly planned crossing, and only if, in the opinion of the Engineer, the delay was caused by reasonably unavoidable circumstances, and that such night time work is necessary to avoid placing an undue economic hardship on the Contractor.

D. In emergency situations, or where delay would increase the likelihood of a failure, nighttime work may be allowed to complete a delayed crossing that is already in progress.

1.05 PRODUCT DELIVERY: The pipe and all equipment shall be factory prepared components delivered undamaged to the site. They shall be capable of being set in place and field connected with minimal field assembly. Material stored at the site shall be done in accordance with DOT criteria if it is stored within the DOT right-of-way.

PART 2 - PRODUCTS

2.01 EQUIPMENT:

A. General: All equipment in the Directional Bore shall have the capacity, stability, and necessary safety features required to fully comply with the specifications and requirements of this section without showing evidence of undue stress or failure. It shall be the responsibility of the Contractor to assure that the equipment to be used in the Directional Bore is in sound operating condition. Backup equipment may be required in the event of an equipment breakdown and where the condition of the equipment to be used indicates that routine component replacement or repair will likely be necessary during the Directional Bore.

B. Directional Drilling System: The directional drilling equipment shall consist of truck-mounted field power unit and a frame-mounted drill unit. For small-sized rigs with capacities up to 40,000 pounds of push/pull and drill lengths of up to 500', the drill unit shall be dolly-mounted. For mid-size rigs with capacities of 40,000 to 100,000 pounds of push/pull and drill lengths of 500'

to 2,000', the drill unit shall be trailer mounted as a package. A minimum crew of three people is required to operate the small-sized units and five people to operate the mid-size units. All tunneling system components shall be in sound operating condition with no broken welds, excessively worn parts, badly bent, or otherwise misaligned components. All ropes, cables, clamps, and other non-mechanical but essential items shall be in sound condition and replaced immediately when need is apparent.

1. Field Power Units: The field power unit shall be a self-contained system designed to provide a supply of high pressure bentonite cutting fluid to the drill unit. It shall contain, at minimum, a 1,000 gallon fluid storage tank for small-sized rigs and 3,000 gallons for mid-size rigs, as well as a complete bentonite mixing system. The cutting fluid is to be mixed on site without the need for an external water supply. It shall permit changes to be made to the bentonite concentration during tunneling in response to changing soil conditions. The field power unit shall contain the power take-off driven high pressure bentonite pumping system.

2. Directional Drill System: A dolly-mounted version of the drill system shall include a thrust frame. Both the trailer-mounted and dolly-mounted drill system shall be designed to rotate and push 10-foot (3-meter) minimum hollow drill sections into the tunnel being created by the boring head. The drill sections may be made of a high strength steel which permits them to bend to a 30-foot (9-meter) radius without yielding. Drill end fittings shall permit rapid make-up of the drill sections while meeting the torque, pressure, and lineal load requirements of the system. The boring head itself shall be capable of housing a probe used by the Magnetic Guidance System (MGS) to determine tool depth and location from surface and to orient the head for steering. For stream, river, or other non-accessible crossings, a wireline steering tool system shall be utilized to eliminate the need for a walkover locating system.

3. Restrictions: Other devices or utility placement systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved by the Engineer prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular condition of the project. Water sluicing methods, jetting with compressed air, or boring or tunneling devices with vibrating type heads that do not provide positive control of the line and grade shall not be allowed.

C. Spoils Equipment: The bentonite removal system shall be a self-contained vacuum truck which has sufficient vacuum and capacity to remove excess bentonite mixture from the project site as required or directed by the Engineer.

D. Magnetic Guidance System: A Magnetic Guidance System (MGS) probe and interface shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The tracker shall be capable of tracking at all depths up to one hundred feet and in any soil condition, including hard rock. It shall enable the driller to guide the drillhead by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction). The tracker shall be accurate to ±2% of the vertical depth of the borehole at sensing position at depths up to one hundred feet. Ferrous materials shall not influence or affect the MGS readings or accuracy.

Components: The Contractor shall supply all components and materials to install, operate, and maintain the MGS. This shall include, but not be limited to, the following:

1. MGS Probe and Interface
2. Computer, Printer, and Software
3. DC Power Source, Current Control Box, and Tracking Wire

The Magnetic Guidance System (MGS) shall be a Sharewell TruTracker MGS, or other approved wire guidance system, and shall be set-up and operated by personnel experienced with this system. “Walk-over” tracking systems shall not be used for stream, river, or other non-accessible crossings, except as directed by the Engineer.

E. If equipment breakdown or other unforeseen stoppages occur and forward motion of the directional cutting head is halted at any time other than for reasons planned in advance (addition of drill stems, etc.), the boring path shall be immediately filled with a proper bentonite solution.

F. The boring tool shall have steering capability and have an electronic tool detection system. The position of the tool during operation shall be capable of being determined accurately both horizontally and vertically within 2% of the vertical depths of the boreholes. The boring tool shall have a nominal steering radius of 9 meters.

2.02 PIPE:

A. Fusible PVC: For directional drills, fusible PVC pipe may be utilized where allowed on the Drawings. Pipe shall be blue in color and made of compounds conforming to ASTM D1784 with a cell classification of 12454**.** It shall be manufactured in accordance with all requirements of AWWA C900

DR-18 and supplied in 40 foot lengths. Fusible PVC pipe shall be extruded with plain ends. ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.

Fusible PVC pipe lengths shall be assembled in the field with butt-fused joints. Fusion technician shall be qualified by the pipe supplier to install fusible PVC pipe of the type and size specified. Qualification shall be current as of the actual date of fusion performance on the project. The fusion technician shall follow the pipe supplier's guidelines and recommendations for pipe fusion procedure. Only appropriately sized and outfitted fusion machines that have been approved by the fusible PVC pipe supplier shall be used for the fusion process. Fusible PVC pipe shall be installed in such a manner so as not to exceed the recommended bending radius nor maximum safe pulling force of the pipe as established by the pipe supplier.

The pipe shall be of the size called for on the Drawings with the following properties:

PROPERTIES FOR FUSIBLE PVC DR-14 PIPE				
Nominal Pipe Size	Nominal OD (in.)	Minimum Wall (in.)	Average ID (in.)	Weight LB/FT
4"	4.80	0.34	4.07	3.11
6"	6.90	0.49	5.85	6.42
8"	9.05	0.65	7.68	11.08
10"	11.10	0.79	9.42	16.65
12"	13.20	0.94	11.20	23.55

B. Certa-Lok C900/RJ Restrained Joint PVC Pipe: Pipe joints shall utilize non-metallic couplings with locking splines. High strength, flexible thermoplastic splines shall be inserted into mating, precision machined grooves in the pipe and coupling to provide full 360º restraint with evenly distributed loading. Couplings shall be designed for use at or above the pressure class of the pipe with which they are utilized and shall incorporate twin elastomeric sealing gaskets meeting the requirements of ASTM F477. Joints shall be designed to meet the zero leakage test requirements of ASTM D3139. Every pipe and coupling shall pass the AWWA C900 hydrostatic proof test requirements of 4 times the pressure class for 5 seconds. Pipe and couplings shall meet all approvals per Certa-Lok C900/RJ Restrained Joint PVC Pipe manufactured by CertainTeed Corporation, and all pipe and couplings shall be marked in accordance with the requirements established for Certa-Lok C900/RJ Restrained Joint PVC Pipe manufactured by CertainTeed Corporation.

2.03 DRILLING FLUIDS:

A. A mixture of premium Wyoming Bentonite clay and potable water is to be used as the cutting fluid for the Directional Bore. The Bentonite mixture used shall have the minimum viscosities as measured by a March Funnel:

Rock Clay	60 seconds
Hard Clay	40 seconds
Soft Clay	45 seconds
Sandy Clay	90 seconds
Stable Sand	120 seconds
Loose Sand	150 seconds
Wet Sand	150 seconds

These viscosities may be varied to best fit the soil conditions encountered.

B. No other chemicals or polymer surfactant shall be used in the drilling fluid without written consent of the Engineer and after a determination is made that the chemicals to be added are not harmful or corrosive to the facility and are environmentally safe.

C. Drilling fluid pressures and flow rates shall be continually monitored and recorded by the Contractor. The pressure shall be monitored at the pump. These measurements shall be made during pilot bore drilling, reaming, and pullback operations.

2.04 TRACER WIRE: All non-metallic water main pipe directionally drilled shall have a #8 gauge, 49 strand 302 stainless steel, HMW-HDPE type insulation trace wire (blue in color) attached for locating purposes. Half-hitch knots or other means shall be used to fasten the wire to the pipe at 10 to 20' spacings. Trace wire shall be run into valve boxes. Watertight splicing connectors shall be utilized for all splices. Contractor shall be responsible for continuity of trace wire between valve boxes.

PART 3 - EXECUTION

3.01 PERSONNEL REQUIREMENTS:

A. A competent and experienced supervisor representing the Contractor and Drilling Subcontractor shall be present at all times during the actual crossing operations. A responsible representative that is thoroughly familiar with the equipment and type work to be performed must be in direct charge and control of the operation at all times. In all cases, the supervisor must be continuously present at the job site during the actual Directional Bore operation.

B. The Contractor and Subcontractor shall have a sufficient number of competent workers on the job at all times to ensure the Directional Bore is made in a timely and satisfactory manner. Adequate personnel for carrying out all phases of the actual Directional Bore operation must be on the job site at the beginning of work.

C. All HDPE pipe welding shall be completed by a certified welder which is certified by the manufacturer of the pipe.

D. The Engineer and FDOT must be notified a minimum of 48 hours in advance of starting work. The Directional Bore shall not begin until the Engineer or his representative is present at the job site and agrees that proper preparations for the operation have been made. The Engineer's approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility of the satisfactory completion of the work as authorized under the Contract.

E. If the Contractor fails to begin the Directional Bore at the agreed time, the Engineer will establish the next mutually convenient time to begin. To avoid undue hardship of either party, reasonable and mutual cooperation should be exercised where starting times are concerned.

3.02 INSTALLATION:

A. The Contractor shall be responsible for providing a Maintenance of Traffic (MOT) Plan to the agency having authority over the road right-of-way for approval. The MOT Plan shall show the location of all barricades, signs, and alternate routes for local traffic and pedestrian safety. Erection of the appropriate safety and warning devices in accordance with the Florida Department of Transportation (FDOT) Manual on Traffic Control and Safe Practices shall be completed prior to beginning work.

B. All excavation for entry and recovery pits and any other excavation necessitated by the Directional Bore shall be as specified in FDOT's Standard Specifications for Road and Bridge Construction. The cost of restoring pavement, curb, sidewalk, driveways, lawns, storm drains, etc., and other landscaped facilities shall be borne by the Contractor as part of the lump sum unit price for the directional drill.

C. The following is a sequence of steps which must be adhered to for the Directional Bore operation:

1. Drill Path: Prior to drilling, Contractor shall utilize all verified locate information to determine drill pathway. Marked-up drawings (see Site Preparation paragraph) shall be on site at all times and referred to during the drill operation.

2. Guidance System: Contractor shall provide and maintain instrumentation necessary to accurately locate the pilot hole (both horizontal and vertical displacements), measure pilot string torsional and axial and measure drilling fluid discharge rate and pressure. The Engineer shall have access to instrumentation and readings at all times during operation.

3. Pilot Hole: The pilot hole shall be drilled along the path shown on the drill path drawings or as modified by the Contractor and approved by the Engineer in the field. Unless approved otherwise by the Engineer, the pilot hole tolerances shall be as follows:

   a. Elevation: As shown on the plans.

   b. Alignment: ±1 foot.

   c. Curve Radius: The pilot hole radius shall be no less than 80% of the maximum bending radius as recommended by the pipe manufacturer of the pipe being installed. In no case shall the bending radius be less than 30 pipe diameters, unless approved otherwise by the Engineer.

   d. Entry Point Location: The exact pilot hole entry point shall be within ±1 foot of the location shown on the Drawings or as directed by the Engineer.

   e. Exit Point Location: The exit point location shall be within ±1 foot of the location shown on the Drawings or as directed by the Engineer in the field.

   f. Limitations on Depth: The planned depths shall be maintained as shown on the Drawings unless the Engineer demonstrates that Contractor's shallower or deeper installation is acceptable.

4. Pull Back: After successfully reaming bore hole to the required diameter, Contractor will pull the pipe through the bore hole. In front of the pipe will be a swivel and reamer to compact bore hole walls. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations, Contractor will not apply more than the maximum safe pipe pull pressure at any time. Maximum allowable tensile force imposed on the pull section shall be equal to 80% of the pipe manufacturer's safety pull (or tensile) strength.

   a. Torsional stress shall be minimized by using a swivel to connect a pull section to the reaming assembly.

b. The pullback section of the pipeline shall be supported during pullback operations so that it moves freely and the pipe is not damaged.

c. External pressure shall be minimized during installation of the pullback section in the reamed hole. Damaged pipe resulting from external pressure shall be replaced at no cost to the Owner.

d. Buoyancy modification shall be at the discretion of the Contractor and shall be approved by the Engineer. The Contractor shall be responsible for any damage to the pull section resulting from such modifications.

e. In the event that pipe becomes stuck, Contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, Contractor will notify the Engineer. Owner, Engineer, and Contractor will discuss options and then work will proceed accordingly.

f. For HDPE DR-17 pipe with a pulling length greater than 500 LF, the Contractor shall utilize a break-away link. Contractor shall provide a break-away link between the swivel and the pipe or a combination swivel and break link. Break-away link shall be rated at 80% of pipe manufacturer's safe pull (tensile) strength. Break pins shall be color coded for easy identification. Contractor shall provide rated break-away link for each material and pipe size(s) for the project.

5. Pipe Assembly:

a. Pipe shall be welded/fused together in one length, if space permits. Pipe may be placed on pipe rollers before pulling into bore hole to minimize damage to the pipe. It is critical that all original oxidized pipe surface be removed in order for fusion to take place. The scraping process requires that approximately 0.10" of the outer "skin" be removed in order to penetrate the oxidation and contamination barrier. Oxidized pipe surface simply will not bond.

b. Acceptability of Damaged Pipe: Cuts or gouges that reduce the wall thickness by more than 10% is not acceptable and must be cut out and discarded.

c. Butt Fusion Testing: When requested by the Engineer, butt fusion testing will be performed. The test fusion shall be

allowed to cool completely, and then fusion test straps shall be cut out. The test strap shall be 12" (min) or 30 times the wall thickness in length with the fusion in the center and 1" (min) or 1.5 times the wall thickness in width. Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new test fusion shall be made, cooled completely, and tested.

d. General Requirements for Open-cut Construction: Mains shall be constructed of the materials specified and as shown on the Drawings. Pipe and fittings shall be carefully handled to avoid damage and, if feasible, while they are suspended over the trench before lowering, and they shall be inspected for defects and to detect cracks. Defective, damaged, or unsound pipe or fittings shall be rejected. Each section of the pipe shall rest upon the pipe bed for the full length of its barrel. Any pipe which has its grade or joint disturbed after laying shall be taken up and re-laid. Only suitable soils (no heavy clay) shall be utilized in the backfill operation up to 12 inches above the pipe. All precautions shall be taken to prevent sand or other foreign material from entering the pipe during installation. If necessary, a heavy, tightly woven canvas bag of suitable size shall be placed over each end of the pipe before lowering into the trench and left there until the connection is made to the adjacent pipe. Any time the pipe installation is not in progress, the open ends of the pipe shall be closed by a watertight plug or other method approved by the Engineer. Plugs shall remain in pipe ends until all water is removed from the trench. Any sand or foreign material that enters the pipe shall be removed from the pipe immediately. No pipe shall be installed when trench conditions (standing water, excess mud, etc.) or the weather (rain, etc.) is unsuitable for such work, except by permission of the Engineer. Any section of pipe already laid which is found to be defective or damaged shall be replaced with new pipe. The Contractor shall coordinate utility locates with Sunshine State One-Call of Florida, Inc. (#800-CAREFUL), at a minimum. The cover over all piping less than 24 inch size shall be a minimum of 30 inches in unpaved areas and 36 inches in paved areas with a maximum of 60 inches, unless approved otherwise by the Engineer. Cover for pipe under pavement shall be measured from the finished grade. Any reduction in pipe cover will require approval from the Engineer. Greater depths will be permitted where required to miss obstructions only. Lines shall be located as shown on the Drawings. The Contractor shall investigate well in advance of pipe laying any conflicts which may require readjustments in planned locations and advise the Engineer of the results of

these investigations so that the Engineer may give instructions as to the modifications required.

3.03 TESTING AND DISINFECTION:

A. Flushing of Completed Pipelines: Each section of completed pipeline shall be as thoroughly flushed as is possible. A minimum flow shall be used for flushing that will ensure a velocity in the pipe of 2.5 ft. per second. Water required for testing and flushing shall be furnished by the Owner at existing pipes and outlets. Contractor shall be responsible for providing suitable temporary backflow preventer devices for use during flushing operations.

B. Leakage Test: Leakage and pressure tests shall be conducted in the presence of the Engineer. The Contractor shall provide all necessary apparatus including a pump, flow measuring device, piping connections and fittings and the necessary labor to conduct the tests. The pressure test shall be performed in two phases. In the first phase, an initial test pressure of 150 psi or the rated pipe pressure, whichever is less, shall be applied and allowed to stand for a minimum of 2.0 hours and a maximum of 3.0 hours without make-up pressure. The initial pressure test phase allows the pipe to stabilize in regards to diametric expansion and longitudinal stretching. In the second phase of the pressure test, the test pressure shall be returned to 150 psi or the rated pipe pressure, whichever is less, and held for 2.0 hours. The allowable amounts of make-up water are given in the following:

ALLOWANCE FOR EXPANSION UNDER TEST PRESSURE* (Reference ASME B31.8, Appendix N)		
Nominal Pipe Size (in.)	Allowance for Expansion (U.S. Gals./100 Feet of Pipe)	
	2-Hour test	3- Hour test
3	0.15	0.25
4	0.25	0.40
6	0.60	0.90
8	1.0	1.5
10	1.3	2.1
11	2.0	3.0
12	2.3	3.4
14	2.8	4.2
16	3.3	5.0

ALLOWANCE FOR EXPANSION UNDER TEST PRESSURE* (Reference ASME B31.8, Appendix N)		
Nominal Pipe Size (in.)	Allowance for Expansion (U.S. Gals./100 Feet of Pipe)	
	2-Hour test	3- Hour test
18	4.3	6.5
20	5.5	8.0
22	7.0	10.5
24	8.9	13.3
28	11.1	16.8
32	14.3	21.5
36	18.0	27.0
40	22.0	33.0
48	27.0	43.0
54	35.0	55.0

* These allowances only apply to the test period and not to the initial expansion phase.

For fusible PVC pipe, no pipe installation will be accepted if the leakage exceeds the quantities specified in AWWA C605, which is represented by the following equation.

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

Where:
Q = Quantity of makeup water (allowed) in gallons per hour
L = Length of pipe section being tested, in feet
D = Nominal diameter of the pipe, in inches
P = Average test pressure during the hydrostatic test, in pounds per square inch (gauge)

C. Disinfection of Complete Potable Water Main Pipeline: Following completion, the Contractor shall disinfect all potable water distribution mains and service lines in accordance with AWWA C651. Water shall be fed slowly into the system applying sufficient chlorine to produce a dosage in excess of 50 ppm at the farthest point in the system from the point of application. The chlorine solution then shall be retained in the line for a period of 24 hours. At the end of this time if a minimum chlorine residual of 5 ppm is not obtained, the procedure shall be repeated. During the disinfection process all valves shall

be operated. After disinfection, the water shall be flushed from the system at its extremities until excessive chlorine residuals are eliminated. Water samples for bacteriological examination shall be taken as directed by HRS Department of Health and submitted to the nearest approved bacteriological laboratory. Disinfection shall not be considered satisfactory until laboratory reports are satisfactory to the State Department of Health.

3.04 SCHEDULE:

A. Connection to Existing System:

1. All connections to existing mains shall be made after complete disinfection of the proposed system and shall be made under the direction of the owners of the existing system. Valves separating the mains being installed from existing mains shall be operated by or under the direction of said owner's representative. The cost of the work in making the connections shall be paid for by the Contractor.

2. In the event the proposed main is to be connected to a main which has one or more active services between the point of connection and the first connection and the first existing line valve, a temporary plug or cap shall be installed on the new main until the pressure tests and disinfecting are completed. Upon satisfactory completion, the cap or plug shall be removed from both mains and the connection made with pipe which has been scrubbed out with a solution of chlorine and water. The connection shall be made as swiftly as possible and any water in the ditch shall be kept below the level of the pipe. The pipeline shall then be placed in service by the Owner's personnel.

3. In the event any existing users will be without water while a connection is being made, the Contractor shall notify the users when the water will be turned off and when the service will be resumed. In some instances, these connections may have to be made at night. No user shall be without water service without prior approval from the Owner.

3.05 RECORDS:

A. An accurate log shall be kept by the Contractor on all installations. The purpose of this log is to record and report the data necessary to isolate and identify all common factors associated with underground crossing failures.

B. The MGS data shall be recorded every 10 feet during the actual crossing operation. The Contractor shall furnish "As-Built" plan and profile drawings based on these recordings showing the actual location horizontally and vertically of the installation and all utility facilities found during the installation.

The MGS data shall be certified accurate by the Contractor to the capability of the MGS System.

3.06 RESTORATION OF DAMAGED SURFACES, STRUCTURES AND PROPERTY: Where pavement, trees, shrubbery, fences or other property and surface structures not designated as pay items, have been damaged, removed or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the contract documents, state laws, municipal ordinances or the specific direction of the Engineer, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced and repaired at the expense of the Contractor to a condition equal to that before work began within a time frame approved by the Engineer.

3.07 CLEAN-UP: The Contractor shall maintain the site of the work in a neat condition. The Contractor shall remove all excess materials, excess excavated materials, and all debris resulting from his operations within a time frame approved by the Engineer.

END OF SECTION