



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

February 20, 2026

SUBJECT FAP Route 303 (IL 173)
Project NHPP-1JD1(749)
Section FAP 0303 22 CR
Lake County
Contract No. 62T82

Item No. 094, February 27th, 2026, Letting
Addendum B

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

- Revised Schedule the Quantities.
- Revised pages i-ii of the Table of Contents of the Special Provisions.
- Revised pages 2-5 of the Special Provisions.
- Added pages 123-133 of the Special Provisions.
- Revised sheets 1-9 of the Plans.
- Added sheets 23A-B of the Plans.

Prime contractors must utilize the enclosed material when preparing their bid and must include any changes to the Schedule of Prices in their bid.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Jack A. Elston'.

Jack A. Elston, P.E.
Bureau Chief, Design and Environment

MTS

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MAINTENANCE OF ROADWAYS (D1)

Effective: September 30, 1985

Revised: November 1, 1996

Beginning on the date that work begins on this project, the Contractor shall assume responsibility for normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance shall include all repair work deemed necessary by the Engineer, but shall not include snow removal operations. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

If items of work have not been provided in the contract, or otherwise specified for payment, such items, including the accompanying traffic control and protection required by the Engineer, will be paid for in accordance with Article 109.04 of the Standard Specifications.

STATUS OF UTILITIES (D1)

Effective: June 1, 2016

Revised: January 1, 2020

Utility companies and/or municipal owners located within the construction limits of this project have provided the following information regarding their facilities and the proposed improvements. The tables below contain a description of specific conflicts to be resolved and/or facilities which will require some action on the part of the Department's contractor to proceed with work. Each table entry includes an identification of the action necessary and, if applicable, the estimated duration required for the resolution.

UTILITIES TO BE ADJUSTED

Conflicts noted below have been identified by following the suggested staging plan included in the contract. The company has been notified of all conflicts and will be required to obtain the necessary permits to complete their work; in some instances, resolution will be a function of the construction staging. The responsible agency must relocate, or complete new installations as noted below; this work has been deemed necessary to be complete for the Department's contractor to then work in the stage under which the item has been listed.

Pre-Stage

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
STA 18+00 to 22+00 RT	Gas Main	Cut-off 8" PL Medium Pressure and 6" Steel High Pressure for Placement of Proposed Culvert	North Shore Gas	15 days

Stage 1

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME

Stage 2

STAGE / LOCATION	TYPE	DESCRIPTION	RESPONSIBLE AGENCY	DURATION OF TIME
STA 18+00 to 22+00 RT	Gas Main	Replace 6" Steel High Pressure with 8" Steel High Pressure after Proposed Culvert placement	North Shore Gas	20 days

No conflicts to be resolved (or if there are conflicts they are to be listed as noted above)

Pre-Stage: 15 Days Total Installation

Stage 1: _____ Days Total Installation

Stage 2: 20 Days Total Installation

The following contact information is what was used during the preparation of the plans as provided by the Agency/Company responsible for resolution of the conflict.

Agency/Company Responsible to Resolve Conflict	Name of contact	Phone	E-mail address
North Shore Gas	Jay Hammer	(847) 263-4678	jay.hammer@northshoregasdelivery.com
North Shore Water Reclamation District	Nick Wolf	847-623-6060	niwolf@northshorewrd.org

UTILITIES TO BE WATCHED AND PROTECTED

The areas of concern noted below have been identified by following the suggested staging plan included for the contract. The information provided is not a comprehensive list of all remaining utilities, but those which during coordination were identified as ones which might require the Department's contractor to take into consideration when making the determination of the means and methods that would be required to construct the proposed improvement. In some instances, the contractor will be responsible to notify the owner in advance of the work to take place so necessary staffing on the owner's part can be secured.

All Stages

STAGE / LOCATION	TYPE	DESCRIPTION	OWNER
STA 17+00 to 22+00	Aerial Lines	Telecommunication Lines	AT&T
STA 17+00 to 22+00	Aerial Lines	Electrical Lines	ComEd
STA 17+00 to 22+00	Aerial Lines/ facilities	Electrical Lines	Comcast

Note: Existing facilities within the limits of construction to be protected from damage by contractor. If excavation will be performed near poles or large equipment will be used near existing overhead lines, facility protection may be required. If facility protection is required, please call 1-800-334-7661 to create a ticket for line and/or pole protection as soon as possible.

No facilities requiring extra consideration (*or listed as noted above*)

The following contact information is what was used during the preparation of the plans as provided by the owner of the facility.

Agency/Company Responsible to Resolve Conflict	Name of contact	Phone	E-mail address
North Shore Water Reclamation District	Nick Wolf	847-623-6060	niwolf@northshorewrd.org
AT&T	Tom Laskowski	630-573-5643	tl7895@att.com
ComEd	Nathan Onchuck	779-231-3026	Nathan.Onchuck@comed.com
Comcast	Robert Stoll	224-229-5849	STOLL2@comcast.com

The above represents the best information available to the Department and is included for the convenience of the bidder. The days required for conflict resolution should be considered in the bid as this information has also been factored into the timeline identified for the project when setting the completion date. The applicable portions of the Standard Specifications for Road and Bridge Construction shall apply.

Estimated duration of time provided above for the first conflicts identified will begin on the date of the executed contract regardless of the status of the utility relocations. The responsible agencies will be working toward resolving subsequent conflicts in conjunction with contractor activities in the number of days noted.

The estimated relocation duration must be part of the progress schedule submitted by the contractor. A utility kickoff meeting will be scheduled between the Department, the Department's contractor and the utility companies when necessary. The Department's contractor is responsible for contacting J.U.L.I.E. prior to all excavation work.

DIRECTIONAL DRILLING CONTINGENCY PLAN

If any conduit is installed via horizontal directional drilling (HDD), a contingency plan for frac-outs shall be submitted by the Contractor due to the proximity of wetlands to the project limits. A draft contingency plan prepared by Lake County Stormwater Management Commission (SMC) is included below.

SMC DIRECTIONAL DRILLING TECHNICAL STANDARD (Revised February 20, 2025)

This document represents the technical standard for projects using horizontal directional drilling (HDD) and reflects procedures and practices to protect water quality by reducing sediment discharge from work areas, reducing potential for runoff to carry construction materials into wetlands and waters of Lake County and clarifying expectations for spill prevention and response procedures relevant to HDD construction methods. This includes practices to reduce the risk of runoff carrying drilling fluid from inadvertent returns (IRs), also known as “frac-outs,” to wetlands and other water resources through prevention and response planning.

HDD is often the method of choice for installing utilities where open cuts are not practical or would result in excessive environmental impacts. This technique typically has an entry pit and an exit pit, with no disturbance in between. HDD is often used for drilling under roads, wetlands, creeks, etc. However, every directional drilling project has the potential for IRs of drilling mud into the environment.

While IRs are most likely to occur near the bore entry and exit points, where the drill head is shallow, they can occur in any location along a directional bore. IRs have occurred in upland locations and in wetland locations and from drilling depths of five feet to over 20 feet. IRs have adversely impacted upland and wetland ecosystems, affected environmental aesthetics and have frequently resulted in backlash from property owners and the public in general. Further, clean-up of the drilling mud is more time consuming and expensive than preventing or at least immediately containing and remediating the IR. Drilling mud typically consists of a mixture of water, bentonite clay, and an emulsifier such as guar gum. The primary problem is the bentonite. Bentonite is a very effective waterproofing agent and is used for sealing wells, creating impermeable slurry walls, etc. Bentonite in wetlands has a similar sealing action and can destroy a wetland’s ability to interact with the ground water. Furthermore, bentonite can smother benthic communities (things that live in the bottom sediments) and create water that is so murky that little light reaches submerged plant life. Getting bentonite out of a wetland without significantly impacting the wetland in the process can be nearly impossible. Therefore, a contingency plan is needed to direct an immediate and effective response for inadvertent drilling mud returns into the environment.

There are three primary ways to keep drilling mud out of the environment:

1. Minimize drilling pressures to keep the mud from fracturing out of the soil, and if an IR is identified, **immediately slow or stop drilling.**
2. **Immediately contain and remove IR material** with a vacuum truck, other mechanical means, or by hand if necessary.

The most practical method for containment of drilling mud in upland areas is construction of a barrier placed around the IR to contain the mud to a small area. The barrier can be made of lightweight materials such as aluminum or plastic and should have handles so it can be easily taken to the IR area. The barrier may be sandbags, rolled erosion control products, silt fence or other measure as long as it is effective and can be installed immediately.

Containment in wetlands and flowing streams is more difficult because once it is suspended in water, bentonite is so fine it will pass through most containment structures like silt fence or turbidity barriers. The most practical approach in open water is to immediately stop drilling and isolate the area using a turbidity barrier or containment box, as appropriate. The contained water must then be removed using a vacuum truck or treated with appropriate anionic polymers and removed by vacuum or manual methods.

3. Use anionic polymers to remove suspended drilling mud from water.

Polymers are branched organic molecules that grab onto small, suspended particles, and form one large particle that is heavy enough to settle out of the water. There are essentially two kinds of polymers, cationic and anionic. **Cationic polymers can be toxic to freshwater aquatic life (they stick onto gills) and shall not be used.**

At the discretion of the Enforcement Officer, anionic polymers are required to be available onsite when drilling will be under or wetlands or water bodies. There are a wide variety of types and forms of anionic polymers available, but they do not all work equally as well in removing suspended clay from water. A knowledgeable polymer vendor must evaluate the project-specific conditions and recommend appropriate polymers and how to use them. This evaluation and recommendation should occur during the design phase of the project so appropriate polymers are available on-site during all phases of the work.

At a minimum, a directional drilling contingency plan is a written plan with two components: an HDD summary and a contingency strategy for IRs. This plan may be part of the project SWPPP. The level of detail required for permitting will be based on size, presence, and proximity of sensitive areas such as wetlands, water bodies, buffers, stormwater inlet locations, utility lines, etc.

HDD Summary

For each drill path, the HDD summary needs to include a site-specific project description, disclose sensitive areas and risk factors, and document risk management measures. Risk factors can include features such as high sand or gravel content, peat soils, shallow

groundwater, steep slopes, signs of scour, cobbles, artesian aquifers, presence of wetlands, water bodies, nearby storm sewer inlets, etc.

The project as described in the narrative and site-specific sensitive areas described in the summary should be clearly shown and labeled on the project site plans, along with appropriate soil erosion/sediment control details and notes.

Inadvertent Return Contingency Plan Contents

The IR Contingency Plan is a short-term plan to identify, respond to, and contain IRs at the project site. The plan should outline the appropriate responses by the drill rig operator, inspector, crew, and foreman to an IR event.

General Information Requirements

1. Name, address, phone number and e-mail address of onsite drilling company representative;
2. Plans depicting location of drill paths, bore pits, temporary stockpiles, staging areas, access paths, associated soil erosion and sediment control measures, location and designations for wetlands and waters (typically based off a site assessment or wetland determination report prepared by or under the supervision of a Lake County Certified Wetland Specialist), and minimum depth of cover under wetland/water resources (e.g., shown in a cross-section).
3. Material Safety Data Sheets (MSDS) for drilling mud constituents;
4. Name, address, phone number, and e-mail address of the anionic polymer vendor (as required at the discretion of Enforcement Officer);
5. The specific type(s) of anionic polymer appropriate to site conditions as determined by the anionic polymer vendor, along with catalog cut sheets for each recommended polymer, directions for use and any limitations; and
6. A brief narrative discussing the directional drilling operation for the specific project, including identification of sensitive areas (e.g., specific wetlands and water bodies, nearby utility lines, stormwater intakes, etc.) and proposed methods of minimizing the potential for IRs and ensuring they are properly contained.

Minimum HDD Operational Requirements

1. During active drilling operations, at least one vacuum truck shall be staged onsite or where it can reach any place along a drill corridor within 10 minutes, or as directed by the Enforcement Officer. At least one additional vacuum truck shall be readily available or on stand-by at a nearby location (within 1-hour travel time). **When work occurs proximal to or beneath wetlands or water bodies, a vacuum truck shall be staged in the immediate vicinity to enable immediate response in the event of an IR.**
2. During active drilling operations, at least one designated person shall walk the drilling route and visually inspect for IRs. This may be accomplished by a designated field crew member or a Designated Erosion Control Inspector (DECI)

- see the Lake County Stormwater Management Commission (SMC) website for current DECI list.
3. At the discretion of the Enforcement Officer, adequate polymer shall be onsite and readily available to treat at least one (1) IR into wetlands or water bodies, with the understanding that any polymer that is used will be promptly replaced.
 4. When drilling under wetlands or water bodies, the installation shall have a minimum depth of three (3) feet (preferably >5 feet) below the bottom of the wetland/water body or the thalweg (deepest part) of the stream channel.
 5. IRs in uplands or near sensitive areas but not affecting the sensitive area are to be summarized in a weekly report to Enforcement Officer detailing the amount of drilling mud released, the method of containment, remediation method used and any additional relevant information.
 6. Enforcement Officer must be contacted immediately if an IR occurs in a sensitive area. Telephone numbers and e-mail addresses of designated staff shall be included in the contingency plan. Each IR must be summarized in daily reports to the Enforcement Officer detailing the amount of drilling mud released, the method of containment, remediation method used and any additional relevant information.
 7. In addition to a pre-construction deposit, SMC typically will require an inspection deposit for project reviews involving directional drilling under or near sensitive areas.

Enforcement Officer or the local community may have additional requirements to the above list depending on the location, length and depth of the proposed directional drilling project.

The attached contingency plan template can be used to satisfy the minimum contingency plan requirement, provided the applicant modifies it to be site-specific and uses it to minimize environmental impacts from IRs.

The project-specific plan must be reviewed and approved prior to issuance of a Watershed Development Permit (WDP) and referenced as a specific condition of the WDP or wetland approval (including a Letter of No Wetland Impact—LONI—approval), as applicable. It is recommended to incorporate a reference to the contingency plan (or a summary of the key plan elements) on the erosion control sheet and/or within stormwater pollution prevention (SWPP) sheet in the drawing set so contractors can ensure their bids include provisions to implement the contingency plan measures.

Pre-Construction Meeting

The directional drilling contingency plan shall be discussed at the pre-construction meeting. The meeting ideally is on-site but may be virtual if an on-site meeting is not possible. Attendees should include the owner, the general contractor, the drill contractor, and regulatory authority.

The drill operator and the individual designated to walk the drill section to look for IRs should physically walk the project alignment and discuss the potential signs of IRs. If the

project crosses aquatic resources, the environmental representative and regulatory authority (if available) should attend the walk-through.

REMOVE AND DISPOSE EXISTING FORCE MAIN

This Special Provision applies to the proposed sanitary force main to be owned, operated, and maintained by the North Shore Water Reclamation District (NSWRD).

All work and materials required under this item shall conform to the Standard Specifications for Water and Sewer Construction in Illinois, latest edition, except as modified herein.

Description:

This work shall consist of furnishing all labor, materials, equipment, and incidentals required to remove and dispose of the existing force main where proposed force main or proposed box culvert structure is to be placed at the same location; including disposal of the force main pipe; backfilling of the excavation with compacted granular backfill material from bottom of the force main trench to the bottom of the proposed force main or proposed box culvert structure bedding material.

Method of Measurement:

This item will not be measured but will be paid as a lump sum price.

Basis of Payment:

This work shall be paid for at the contract lump sum price for REMOVE AND DISPOSE EXISTING FORCE MAIN. The lump sum price shall include all labor, materials, equipment, and all incidental work necessary to perform the removal. Trench backfill shall be paid for separately under TRENCH BACKFILL, per cubic yard.

REMOVE AND RE-INSTALL PIPE CULVERTS

This Special Provision applies to the proposed sanitary force main to be owned, operated, and maintained by the North Shore Water Reclamation District (NSWRD).

Description:

This work shall consist of furnishing all labor, materials, equipment, and incidentals required to remove and salvage existing culvert and flared end section and re-install the culvert and flared end section at the same slopes, elevations and location as the existing storm sewer; including excavation and disposal of any spoils; bedding and backfill material and all incidental work necessary. The contractor shall store the salvaged material onsite and perform re-installation upon the completion of the force main installation.

The work shall be performed according to Section 550 of the "Standard Specifications".

Method of Measurement:

Remove and re-install pipe culverts will be measured for payment in place in feet. The measurement will be made according to Article 550.09 of the "Standard Specifications".

Basis of Payment:

This work shall be paid for at the contract unit price per foot for REMOVE AND RE-INSTALL PIPE CULVERTS. The unit price shall include all labor, materials, equipment, and all incidental work necessary to complete the work as specified herein. Trench backfill shall be paid for separately under TRENCH BACKFILL, per cubic yard.

SANITARY FORCE MAIN, 8"

This Special Provision applies to the proposed sanitary force main to be owned, operated, and maintained by the North Shore Water Reclamation District (NSWRD). All work and materials required under this item shall conform to the Standard Specifications for Water and Sewer Construction in Illinois, latest edition, except as modified herein.

Description:

This work shall consist of furnishing, delivering, installing, fusing, testing, and placing into service an 8-inch diameter High-Density Polyethylene (HDPE) sanitary force main by horizontal directional drilling (HDD), including all pipe, fittings, tracer wire, appurtenances, and connections, complete and in place, as shown on the Drawings and as specified herein including all soil erosion and sedimentation control measures.

The force main shall be installed by HDD along the alignment shown on the Drawings. Prior to commencing HDD operations, the Contractor shall submit a frac-out contingency plan for review and approval by the Engineer. A vector truck shall be on-site during all active drilling operations.

Piping and connection points shall be located as shown on the Drawings unless otherwise directed by the Engineer. The Engineer reserves the right to make reasonable adjustments to alignment and fitting locations to avoid conflicts or to accommodate field conditions. Such adjustments shall not be considered a change in the work and shall not be cause for additional compensation unless the quantity of pipe installed is increased beyond that shown on the Drawings.

Where the term "pipe" is used, it shall include pipe, fittings, and appurtenances unless otherwise specified.

Constraints and Sequencing:

The existing sanitary force main shall remain in continuous service until the proposed force main has been installed, pressure tested, inspected, and accepted by the North Shore Water Reclamation District (NSWRD).

The proposed force main shall be constructed to the limits necessary to complete tie-in connections to the existing force main. All new piping shall be successfully pressure tested and approved prior to performing any tie-in work.

Tie-in connections to the existing force main shall require a shutdown coordinated with NSWRD. The Contractor shall provide a minimum of seven (7) calendar days' advance written notice to NSWRD prior to the proposed shutdown. The duration of the shutdown shall not exceed eight (8) hours unless otherwise approved in writing by NSWRD.

Bypass pumping is not anticipated if the tie-in work is completed within the allowable shutdown period; however, this shall be confirmed with NSWRD during coordination. In the case bypass pumping does become necessary, the Contractor shall be solely responsible for maintaining continuous sewage flow. The Contractor shall furnish all labor, equipment, materials, and incidentals necessary to implement and maintain such measures.

Temporary operations may include pumping from the wet well to temporary storage facilities and hauling sewage to a downstream sanitary manhole within the same system, subject to review and approval by NSWRD.

Discharge of sewage to the ground surface, storm sewer system, waterways, or waters of the State will not be permitted.

The Contractor shall prepare and submit a detailed Tie-In Connection Plan and Schedule to NSWRD for review and approval prior to commencing tie-in work. The plan shall describe sequencing, bypass pumping methods, storage capacity, hauling procedures, contingency measures, and emergency contacts.

Final acceptance of the force main shall be subject to inspection and approval by NSWRD.

Materials:

High Density Polyethylene (HDPE) Pipe and Fittings

- A. Pipe and fittings shall be 8-inch diameter, minimum DR11, conforming to AWWA C906 and manufactured from PE4710 resin listed by the Plastic Pipe Institute as TR-4.
- B. Pipe shall conform to ASTM D3350 with a minimum cell classification of 445474C or 445574C and shall have DIPS outside diameters.

- C. Pipe shall be green or green striped for sanitary sewer applications. DR rating and cell classification shall be clearly marked.
- D. Pipe shall be homogenous, free of defects, and shall not contain recycled material except that generated in the manufacturer's own facility from resin of the same specification.
- E. Butt fusion fittings and molded fittings shall meet or exceed the material cell classification of the pipe.
- F. Molded fittings shall conform to ASTM D3261. Fabricated fittings shall conform to ASTM F2206.
- G. Electrofusion fittings shall conform to ASTM F1055.
- H. Mechanical Fittings: The use of mechanical coupling and saddles shall be approved by the owner or engineer prior to installation. Mechanical Fittings shall be designed for use and compatible with HDPE pipe. Mechanical fittings shall have a pressure rating equal to or greater than the pipe and shall be epoxy coated to resist corrosion from wastewater and harsh chemicals.
 - a. Couplings without self-restraining capabilities (integrated serrated teeth or grippers) shall include a plan for external restraint or isolation from pipeline generated forces.
 - b. Mechanical Saddles shall have wide straps for distribution of clamping loads. No U- bolts shall be allowed.
 - c. When required by mechanical coupling manufacturer, pipe stiffeners shall be employed to support the interior wall of the HDPE. The stiffeners shall support the pipe's end and control the "necking down" reaction to the pressure applied during normal installation. The pipe stiffeners shall be formed of 304 or 316 stainless steel, with a wedged style design to fit the HDPE manufacturers published average inside diameter of the specific size and DR of the HDPE.

Locator Wire

- A. Nylon coated 3/16" bare cable diameter, 7x19 strand core type 304 stainless steel wire rope shall be installed with all non-metallic conduits. The locator wire shall be continuous from vault to vault. If splicing is necessary, proper electrical connectors are to be used.

An access point shall be installed for the locator wire at the terminus of the pipe installation if not at a vault. The access point shall be manufactured by Copperhead Industries or approved equal.

Execution: **General:**

- A. All HDPE pipe and fittings shall be cut, joined, and installed in accordance with the manufacturer's recommendations. Joining, laying, and pulling of polyethylene pipe shall be accomplished by personnel experienced in working with polyethylene pipe systems.

Transportation, unloading and storage:

- A. The manufacturer shall package product in a manner designed to deliver the pipe and fittings to the project neatly, intact and without physical damage. During transportation each pipe shall rest on suitable pads, strips skids, or blocks securely wedged or tied in place.
- B. During loading, transportation, and unloading, every precaution should be taken to prevent damage to the pipe. The handling of the pipeline shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Cuts or gouges that reduce the wall thickness by more than 10% are not acceptable and must be cut out and discarded
- C. Exercise care in transporting and handling pipe and fittings in order to avoid damage to materials or coatings. Lifting shall be by hoist or on skids when hand lifting is not feasible. Dropping shall not be permitted. Store pipe as recommended by the manufacturer. Damaged pipe and fittings shall be replaced.

Installation:

- A. Should the pipe ends become dirty or dusty during the storage of the pipe, a thorough cleaning of the pipe shall be done just before the joint of pipe is fused and installed. At this time, a visual check shall be made by placing the pipe in an inclined position to assure that all foreign material and dirt is removed from the inside of the pipe. The pipe shall be kept clean during and after installation. At the termination of pipe installation, the open end of the pipeline shall be closed off by a suitable cover until installation operations are resumed.
- B. HDPE pipe shall be installed by horizontal directional drilling as indicated on the plans, per ASTM F1804 and ASTM F1962. All work areas shall be protected with straw wattles or silt fence at the perimeter in accordance with Lake County Stormwater Management's requirements.
- C. HDPE pipe installed by open cut construction limited to points of connection as indicated on the plans, per ASTM D2774 and ASTM D2321. All work areas shall be protected with straw wattles or silt fence at the perimeter in accordance with Lake County Stormwater Management's requirements.
- D. Locator Wire shall be installed with the pipe and taped to the top of the pipe at 5-foot intervals. Locator wire shall terminate at access points at each end of the installation.

- E. Pipe bedding shall be installed as indicated on the plans within the construction details.

Fusion and Joining HDPE Pipe:

- A. Sections of HDPE pipe shall be joined into continuous lengths on the job site above ground. The joining method shall be the butt heat fusion method (per ASTM D2620) and shall be performed in strict accordance with the pipe manufacturer's recommendations. Joining shall utilize controlled temperature and pressure to produce a fused leak-free joint. The butt heat fusion equipment used in the joining procedures shall be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to, temperature requirements, alignment, and interfacial fusion pressure. Only personnel certified by pipe manufacturer as fusing technicians shall perform this work.
- B. HDPE pipes may also be joined as necessary at or near valves and fittings by using approved electrofusion couplings and electrofusion processor. Electrofusion processor shall be "Friatec", "Central", or approved equal. Only personnel certified by pipe manufacturer shall perform this work.
- C. The use of mechanical joints will require a mechanical connector with restraint capabilities at all mechanical joints. Restrained joints shall use full circumference clamping and will only be considered subject to pre-approval by the NSWRD. All fittings shall be specifically designed and pre-approved for use with HDPE pipe and sanitary sewer applications and installed in strict conformance with the manufacturer's instructions.

Testing:

A. Hydrostatic Testing

- a. After installation and prior to tie-in, the force main shall be hydrostatically tested in the presence of NSWRD. The contractor shall provide all labor, materials and equipment to perform testing.
- b. Testing shall be conducted in accordance with ASTM F2164 and manufacturer recommendations.
- c. Test pressure shall be 1.5 times the design operating pressure of the pipe and shall be maintained for a minimum of two (2) hours.
- d. No visible leakage or pressure loss is permitted. Any leakage, joint failure, or defect shall be corrected and the test repeated until satisfactory.

B. Locator Wire Continuity Test

- a. Before final approval of the force main, a locator wire continuity test, monitored by NSWRD personnel, shall be conducted in order to confirm proper installation of the locator wire.

Method of Measurement:

Sanitary force main shall be measured for payment in place by the linear foot of installed HDPE pipe.

Basis of Payment:

This work shall be paid for at the contract unit price per linear foot for SANITARY FORCE MAIN, 8". The unit price shall include all labor, materials, equipment, fusion, fittings, testing, bypass pumping, sewage hauling, tie-in connections, HDD operations, locator wire and access points, and all incidental work necessary to complete the installation. Trench backfill shall be paid for separately under TRENCH BACKFILL, per cubic yard.