

**ADDENDUM NO. 2
FMS #4 EMERGENCY GENERATOR
FIELD MAINTENANCE SHOP #4 - SEAFORD
DE ARNG PROJECT #: 2024-04**

Date of Report: June 11, 2026
FE&ES Comm. No.: 24-1614

- 1.0 This addendum, Addendum No. 2, shall be made part of the Project Manual and Drawings dated May 2026 for the "FMS #4 Emergency Generator at the DE ARNG Field Maintenance Shop #4 - Seaford".
- 2.0 No Change in date and time bids are due. They are due **1:00PM local time on Wednesday, June 17, 2026**, at the Main Lobby of the Biden National Guard/Reserve Center, 1 Vavala Way, New Castle, Delaware 19720, at which time they will be publicly read aloud in the Conference Room.
- 3.0 Changes to Specifications
 - 3.1 **Add** Specification Section "33 01 00.1 Utility Conduits & Piping by Directional Boring" in its entirety.
 - 3.2 Section 26 32 13, Article 2.1.B.3: **Change** "diesel" to "natural gas".
 - 3.3 Section 26 32 13, Article 2.7.1: **Omit** "and sub-base fuel tank (when used)" from Article.
 - 3.4 Section 26 32 13, Article 3.02.A: **Omit** Article A in its entirety.
- 4.0 Changes to Drawings
 - 4.1 No changes to Drawings.
- 5.0 Questions/Clarifications
 - 5.1 Can electrical conduits to generator be installed by directional boring instead of sawcutting and trenching?
Reply: Yes. Contractor, at their option; may install underground electrical services from the building exterior/automatic transfer switch to the new generator either by open cut excavation or by directional boring. All site areas disturbed by this work shall be restored to match existing. Installation of services by directional boring must comply with new Specification Section "33 01 00.1 Utility Conduits & Piping by Directional Boring".
 - 5.2 Can gas piping to generator be installed by directional boring instead of sawcutting and trenching?
Reply: Yes. Contractor, at their option; may install underground gas service to the new generator either by open cut excavation or by directional boring. All site areas disturbed by this work shall be restored to match existing. Installation of services by directional boring must comply with new Specification Section "33 01 00.1 Utility Conduits & Piping by Directional Boring".

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5.3 Can new gas piping be surface mounted on the building from the existing gas riser to the Northwest corner of the Work Bays before transitioning to underground?

Reply: Yes. Gas piping may be run above grade, surface mounted on the Building from the existing gas riser to the Northwest corner of the Work Bays due to limited access and working clearances between the Building and elevated wash rack.

6.0 Substitution Requests

6.1 Gillette Generator: Not Approved. Insufficient product documentation provided for review.

Original Signature on File

Matthew Galinskie, AEE

MG/mg

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Attachments:

cc: All Registered Plan Holders

P-File

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SECTION 33 01 00.1

UTILITY CONDUITS & PIPING BY DIRECTIONAL BORING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

- A. Applicable provisions of the entire specification, including Addenda, shall govern this section as fully as if repeated herein.
- B. Refer specifically to the technical provisions of Section 23 04 99, "COMMON WORK REQUIREMENTS FOR HVAC."
- C. Refer specifically to the technical provisions of Section 26 04 99, "COMMON WORK REQUIREMENTS FOR ELECTRICAL."

1.02 SCOPE OF WORK

- A. The work specified in this section consists of furnishing and installing underground utilities using the directional boring (horizontal directional drilling, HDD) method of installation, also commonly referred to as guided horizontal boring. This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration.

1.03 QUALITY ASSURANCE

- A. The requirements set forth in this document specify a wide range of procedural precautions necessary to insure 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. 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.

1.04 SUBMITTALS

- A. **WORK PLAN:** Prior to beginning work, the Contractor must submit to the Engineer a general work plan outlining the procedure and schedule to be used to execute the project. Plan should document the thoughtful planning required to successfully complete the project.
- B. **EQUIPMENT:** Contractor will submit specifications on directional boring equipment to be used to ensure that the equipment will be adequate to complete the project. Spares inventory shall be included.
- C. **MATERIAL:** Specifications on material to be used shall be submitted to Engineer. Material shall include the pipe, fittings and any other item which is to be an installed component of the project.

- D. PERSONNEL: Documentation of training and relevant experience of personnel shall be submitted.

1.05 AS-BUILT DOCUMENTATION

- A. Contractor shall maintain a daily project log of boring operations and a guidance system log with a copy given to Engineer at completion of project. As-built drawings shall be certified as to accuracy by contractor.

PART 2 - PRODUCTS

2.01 POLYETHYLENE (PE) PIPE AND FITTINGS FOR NATURAL GAS DIRECTIONAL BORES

- A. PE Pipe shall be UL listed for gaseous fuels use, plain end for fusion welding conforming to ASTM F 714 and ASTM D 3035. Minimum pressure rating shall be 160 psi.
- B. Pipe shall be Polyethylene, pipe sizes as shown on the drawings.

2.02 POLYETHYLENE (PE) PIPE AND FITTINGS FOR ELECTRICAL DIRECTIONAL BORES

- C. Pipe shall be HDPE, UL listed for electrical use, plain end for fusion welding conforming to ASTM F 714 and ASTM D 3035.
- D. Pipe shall be SDR-13.5. Pipe sizes as shown on the drawings.

2.03 EQUIPMENT REQUIREMENTS

A. GENERAL

- 1. The directional boring equipment shall consist of a directional boring rig of sufficient capacity to perform the bore and pullback the pipe, a boring fluid mixing & delivery system of sufficient capacity to successfully complete the crossing, a guidance system to accurately guide boring operations and trained and competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

B. BORING SYSTEM

1. BORING RIG

- a. The directional boring machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power boring operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations. The rig shall be grounded during boring and pull-back operations. Sufficient

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spares shall be kept on hand for any break-downs which can be reasonably anticipated.

2. BORE HEAD

- a. The bore head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and boring fluid jets.

3. MUD MOTORS

- a. Mud motors shall be of adequate power to turn the required boring tools.

4. DRILL PIPE

- a. Shall be constructed of high quality 4130 seamless tubing, grade D or better, with threaded box and pins. Tool joints should be hardened to 32-36 RC.

C. GUIDANCE SYSTEM

1. The Guidance System shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

D. BORING FLUID (MUD) SYSTEM

1. MIXING SYSTEM: A self-contained, closed, boring fluid mixing system shall be of sufficient size to mix and deliver boring fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. The boring fluid reservoir tank shall be a minimum of 500 gallons. Mixing system shall continually agitate the boring fluid during boring operations.
2. BORING FLUIDS: Drilling fluid shall be composed of clean water and an appropriate additive. Water shall be from a clean source with a pH of 8.5 - 10. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Boring fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall.
3. DELIVERY SYSTEM: The mud pumping system shall have a minimum capacity of 250GPM and be capable of delivering the boring fluid at a constant minimum pressure of 100Psi. The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used boring fluid and boring fluid spilled during boring operations shall be contained and properly disposed of. A berm, minimum of 12" high, shall be maintained around boring equipment, boring fluid mixing system, entry and exit pits and boring fluid recycling system (if used) to prevent spills into the surrounding environment. Pumps and or vacuum truck(s) of

sufficient size shall be in place to convey excess boring fluid from containment areas to storage facilities.

2.04 OTHER EQUIPMENT

A. PIPE ROLLERS

1. Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe.

B. PIPE RAMMERS/PULLERS

1. Hydraulic or pneumatic pipe rammers or pullers may only be used if necessary and with the authorization of Engineer.

C. MISCELLANEOUS

1. 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 conditions of the project.

PART 3 - EXECUTION

3.01 DIRECTIONAL BORING METHOD

- A. General: Installation of the underground conduit system shall be by the directional boring method to the limits indicated on the drawings and as specified herein.

B. OPERATING EXPERTISE:

1. The Contractor must demonstrate expertise in trenchless methods by providing a list of FIVE utility references for whom similar work has been performed in the last two years. The references shall include a name and telephone number where contact can be made to verify the contractor's capability. The Contractor must provide documentation showing successful completion of ELECTRICAL projects used for reference. Conventional trenching experience will not be considered applicable.
2. The directional boring equipment shall be the GuideDril system manufactured by UTILX Corporation's Flow Mole service or approved equal.

C. DRILLING EQUIPMENT

1. The system must be remotely steerable and permit electronic monitoring of tunnel depth and location. The system must be able to control the depth and direction of the pipe and must be accurate to a window of ± 2 inches.
2. The system must be capable of turning 90 degrees in a 35 foot radius.

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3. The system shall utilize a fluid-cutting process, using a liquid clay such as bentonite. This clay must be totally inert and contain no risk to the environment.
4. Liquid clay shall remain in the tunnel to increase stability of the tunnel and provide a lubricant to reduce frictional drag when the pipe is installed.
5. Spoils shall be recovered by use of a vacuum system mounted on a vehicle for removal of the spoils to an approved spoils site. Spoils shall not be discharged into sewers or storm drains.
6. The equipment must be capable of completing the boring in a single bore.
7. Equipment must be fitted with a permanent alarm system capable of detecting an electrical current. The system will have an audible alarm to warn the operator when the drill head nears electrified cables.

D. SAFETY

1. All crews are to be provided with grounded safety mats, heavy gauge ground cables with connectors, hot boots and gloves to minimize the risk of electrocution.
2. Upon completion of boring and pipe installation, the Contractor will remove all spoils from the starting and termination pits. The pits are to be restored to their original condition.

3.02 NOTIFICATION

- A. The Engineer must be notified 48 hours in advance of starting work. The Directional Bore shall not begin until the Engineer is present at the job site and agrees that proper preparations for the operation have been made. The Engineer approval for beginning the installation shall in no way relieve the Contractor of the ultimate responsibility for the satisfactory completion of the work as authorized under the Contract. It shall be the responsibility of Engineer to provide inspection personnel at such times as appropriate without causing undue hardship by reason of delay to the Contractor.

3.03 PERSONNEL REQUIREMENTS

- A. All personnel shall be fully trained in their respective duties as part of the directional boring crew and in safety. Training shall be provided specific to the project if any potential hazards may be encountered which has not already been included in personnel's training.

3.04 BORING PROCEDURE

- A. SITE PREPARATION: Prior to any alterations to worksite, contractor shall photograph or video the entire work area, including entry and exit points. One copy of which shall be given to Engineer and one copy to remain with contractor for a period of one year following the completion of the project. Worksite as indicated on drawings, shall be graded or filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work

areas.

- B. BORE PATH SURVEY: Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.
- C. ENVIRONMENTAL PROTECTION: Contractor shall place silt fence between all boring operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or boring fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200' of any waterbody or wetland.
- D. UTILITY IDENTIFICATION: Contractor shall notify all companies with underground utilities in the work area via the state or local "one-call" to obtain utility locates. Once the utilities have been located Contractor shall physically identify the exact location of the utilities by vacuum or hand excavation, when possible, in order to determine the actual location and path of any underground utilities which might be within 20 feet of the bore path. Contractor shall not commence boring operations until the location of all underground utilities within the work area have been verified.
- E. SAFETY: Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of Attendance and topic submitted to Engineer.
- F. PIPE: Pipe shall be connected together in one length prior to pull-back operations, if space permits. Steel pipe welds will be X-rayed prior to being placed in bore hole. Pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.
- G. PILOT HOLE: Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100'. In the event that pilot does deviate from bore path more than 5% of depth in 100', contractor will notify Engineer and Engineer may require contractor to pull-back and re-drill from the location along bore path before the deviation. In the event that a boring fluid fracture, inadvertent returns or returns loss occurs during pilot hole boring operations, contractor shall cease boring, wait at least 30 minutes, inject a quantity of boring fluid with a viscosity exceeding 120 seconds as measured by a Marsh funnel and then wait another 30 minutes. If mud fracture or returns loss continues, contractor will cease operations and notify Engineer. Engineer and contractor will discuss additional options and work will then proceed accordingly.
- H. REAMING: Upon successful completion of pilot hole, contractor will ream bore hole to a minimum of 25% greater than outside diameter of pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the boring equipment and mud system are designed to safely handle.

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- I. **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. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pullback operations, contractor will not apply more than the maximum safe pipe pull pressure at any time. In the event that pipe becomes stuck, contractor will cease pulling operations to allow any potential hydrolock to subside and will commence pulling operations. If pipe remains stuck, contractor will notify Engineer. Engineer and contractor will discuss options and then work will proceed accordingly. Site Restoration
- J. **SITE RESTORATION:** Following boring operations, contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original.

END OF SECTION

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