

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
338/IL 59	2011-035-1	DUPAGE		
CONTRACT 60P42				
FED.ROAD.DIST.NO.	ILLINOIS	FED. AID PROJECT		

Guided Horizontal Drilling System (HDD) (Continued)

The Contractor shall cause to have prepared in written form, a list of all materials showing quantities, size, and types of materials the Contractor needs to complete the entire Project and present it to the Project Engineer two weeks after the Project is awarded and prior to the start of Work. Failure by the contractor to inventory the materials prior to start of work and inform the City in writing shall indicate to the City of Naperville all materials are correct in size, quantity and type to do all the work required for a complete installed project.

The Contractor shall follow the following material pick up procedures:

- A. Material from the warehouse shall be issued from the "Material Issue Desk" located inside the west service door marked "Water Meter Pickup".
- B. Material shall be issued to the correct WF #. This WF # shall be provided after award. The person picking up material shall have the WF # so we can provide the correct materials to do the work. The person picking up the material shall sign the material ticket indicating materials picked up, condition, quantity and date. The ticket shall be given to the company engineer on the work site.
- C. Material shall be released from the stockyard to the Contractor contacting the warehouse personnel at the "Material Issue Desk".
- D. The Contractor shall be allowed inside the stockyard only when accompanied by warehouse personnel.
- E. Material shall be loaded on trucks, trailers or pickups only with proper restraints to secure material for public safety on the roadways. Warehouse will not supply straps, blocking or other restraints.
- F. Material pick-up - Monday through Friday, 7:00 a.m. to 3:00 p.m. Contractors will not be loaded on Saturdays, Sundays or Holidays.
- G. The warehouse is closed daily from 12:00 p.m. to 12:30 p.m.
- H. Between 7:00 a.m. and 8:00 a.m. City of Naperville crews will be loaded first. After they are loaded, it will be first come, first served.
- I. For any discrepancies in type and quantity of materials to be received, please call the Project Engineer. The Project Engineer will be identified at the preconstruction meeting.
- K. Please call Terry Skala at (630) 420-4136 for questions regarding all warehouse

The contractor is advised this work is located in an area of heavy tree growth, with a high degree of low growing shrubs and vegetation. The lots are fenced in. Also, many lots have dogs which need to be put up before entering. The subdivision is typical for Naperville and the contractor shall work with the people in this subdivision to save and protect all trees and landscaping. The contractor shall develop a plan. To work in this environment, the plan shall be reviewed by the city of Naperville.

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Guided Horizontal Drilling System (HDD) (Continued)

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pullback the pipe, a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the drill, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused, a guidance system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, trained and competent personnel to operate the system. All equipment shall be in good, safety 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.

The Contractor shall provide a typical drilling system as follows:

Drilling Rig:
The directional drilling machine shall consist of a power 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 power system shall be self contained with sufficient pressure and volume to power drilling 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 drilling and pull back operations. There shall be a system to detect electrical current from the drilling string and an audible alarm which automatically sounds when an electrical current is detected.

Drill Head:
The drill head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.

Mud Motors (if required):
Mud motors shall be a adequate power to turn the required drilling tools.

Drill Pipe:
Shall be constructed of high quality 4130 seamless tubing, grade D or better.

The contractor's supervision assigned to this work must be experienced in work of this nature and must have successfully completed similar work using guided horizontal drilling systems.

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Guided Horizontal Drilling System (HDD) (Continued)

As part of the bid submission, the contractor shall submit a description of such and name the supervision that will be on the work site for the duration of the work

A guided horizontal drilling system consists of the following major components:

- Directional/ steering head
- Electronic navigation system which may include an electronic transmitter and above ground locator and/or a remote guidance system that confirms the position and orientation of the steering head.
- Mobile drilling rig
- Power unit
- High pressure water pumps
- Water/slurry mixing tank

The exact size and manufacture of the guided horizontal drilling system is at the discretion of the contractor. Contractor's selection shall consider the overall project requirements and the anticipated ground damage, digging conditions, water conditions, fence locations, tree conflicts, noise abatement, and seasons of the year and restoration of work area.

The contractor shall furnish the following information;

The guided horizontal drilling system provided shall have the following minimum capabilities: (contractor to fill in blanks)

- Thrust and pullback _____
- Spindle torque _____
- Drilling fluid pressure and flow rate _____

GUIDANCE AND LOCATION

Contractor shall keep the drill head on line and within the maximum deviations from the planned installation.

The contractor shall furnish the following information;

- Maximum lateral (horizontal) deviation _____
- Maximum vertical deviation _____

A Magnetic Guidance System (MGS) or proven gyroscopic system shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at all depths up to eighty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction) the guidance system shall be accurate to +/-2% of the vertical depth of the borehole at sensing position at depths up to one hundred feet and accurate within 4 feet horizontally. The guidance system shall be of a proven type and shall be operated by personnel trained and experience with this system. The operator shall be aware of any magnetic anomalies on the surface of the drill path and shall consider such influences in the operation of the guidance system if using a magnetic system.

Bore Tracking and Monitoring:

At all times during the pilot bore the Contractor shall provide and maintain a bore tracking system that is capable of accurately locating the position of the drill head in the x, y, and z axes. The Contractor shall record these data at least once per drill pipe length of every twenty five (25) feet, whichever is most frequent.

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PROJECT TITLE				ROUTE 59 ROAD IMPROVEMENTS			
PROJECT DESCRIPTION				DETAILS AND STANDARDS			
ENGINEER	BCC	DRAFTING DATE	5-11-12	MAP #	4211,4212,4223	SCALE	N.T.S.
DESIGN BY	DL	DRAFTED BY	PSM	REVISIONS DATE		AT&T JOINT AGREEMENT #	N/A
CHECKED BY		APPROVED BY		CAD FILE	0060648001D46.DWG	SHEET #	46 OF 63
Naperville						Department of Public Utilities Electric Division	
						WORK REQUEST # 60468	