

05-03

**ROGERS WATER UTILITIES WATER SYSTEM
ROGERS, ARKANSAS**

**SPECIFICATIONS FOR DIRECTIONAL BORE
FOR WATER SERVICES
AUGUST 2006**

1. **SCOPE**

This specification governs the bore and pull back operation for the installation of casing pipe for water services using the directional bore method.

2. **MATERIALS**

- a. Casing pipe for water services shall be 4 inch diameter polyvinyl chloride (PVC) pipe, Schedule 80 and conform to ASTM D1785-06. Fittings for the PVC pipe shall be Schedule 80 and conform to ASTM D2476-06. Casing spacers are not required for the installation of the carrier pipe (copper tubing).
- b. Pumpable flowable fill shall conform to Section 04-06 Flowable Fill of the RWU specification.

3. **PERMITS**

All work within the state highway right-of-way and/or the railroad right-of-way shall conform to the specifications and requirements of the Arkansas Highway and Transportation Department (AHTD) and/or Arkansas Missouri Railroad (AMR). All work within City of Rogers right-of-way and/or Benton County right-of-way shall conform to the specifications and requirements of the Rogers Water Utilities. The Contractor shall keep a copy of the required permit at the job site and comply with all the terms and conditions of said permit.

4. **GENERAL**

- a. The depths and locations of bore and receiving pits (working pits) shall be established by the Contractor in accordance with the horizontal alignment and grade as shown on the project construction plans.
- b. The working pits shall adhere to OSHA requirements. Barricades shall be furnished around working pits to safeguard traffic and pedestrians.
- c. All discharge from dewatering of the working pits shall be directed into approved receiving basins in accordance with all applicable regulatory requirements.

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- d. The working pits shall be in locations that in no way interfere with the operation of highways, streets, driveways, railroads or other facilities. Working pits shall not weaken or damage any embankment, utility or structure.

5. TOLERANCES

The casing pipe shall be straight (end to end) and installed to horizontal alignment and grade as shown on the project construction plans. Should the misalignment of the casing pipe preclude the installation of a water service to the tolerances specified, the Contractor shall perform corrective measures in accordance with Item 7 of this specification.

6. CONSTRUCTION

- a. The directional bore machine shall be located at the low or downstream end, if possible.
- b. The directional bore machine shall be equipped with a spoil transportation equipment using drilling fluid. The drilling fluid shall be compatible for the soil condition. The drilling fluid, such as bentonite, shall be used lubricating the casing during pull back operation.
- c. The drill bit head shall not be greater than the diameter of the casing pipe.
- d. The directional bore machine shall be equipped with an output signal that is located within the drill bit head. The output signal from the drill bit head shall allow the operator of the directional bore machine to track the location of the drill bit head.
- e. Spoil material and drilling fluid shall be removed from the working pits and disposed of properly.
- f. After the completion of the pilot hole and the casing pipe installation, the Engineer shall check the two ends of the casing pipe that are located within the bore and receiving pit for horizontal alignment and grade in accordance with Item 5 of this specification. The results of the horizontal alignment and grade checks shall be presented to RWU personnel for review and approval.
- g. After the horizontal alignment and grade check of the ends of the casing pipe, the casing pipe shall be Lamp Tested to determine the grade alignment (straight barrel) by the Engineer and RWU personnel. A “full moon” shall be visible

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through the casing pipe for grade alignment. The casing pipe alignment shall be regular and in one direction.

- h. The Contractor shall clean the interior of the casing pipe and remove all spoil material and drilling fluid.
- i. After completion of the pilot bore/casing pipe installation, water service installation and the backfill operation, the Contractor shall restore the profile of the right-of-way and/or surface to its original condition.

7. REJECTION OF PILOT HOLE/CASING PIPE

In the event that an obstruction is encountered during the pilot bore or the pilot hole/casing pipe is misalignment, the casing pipe is to be removed from the borehole and the borehole shall be filled with pumpable flowable fill at a sufficient pressure to fill all voids. The cost of the pumpable flowable fill, removal of casing pipe and re-bore/re-installing the casing pipe is incidental to the cost of the project.