

## **SECTION 33 05 23 TRENCHLESS UTILITY INSTALLATION**

### **PART 1 GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Boring or jacking pipe or box culvert.

#### **1.2 REFERENCES**

- A. ASTM A 53: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

#### **1.3 SUBMITTALS**

- A. Details of jacking pit bracing, casing or conduit, and jacking head to be used.
- B. Dimensions and support of pilot tunnel (if used).
- C. Details of steel rails in pilot tunnel (if used), including true line and grade.
- D. Copy of applicable permits from agency having jurisdiction.

#### **1.4 PERFORMANCE REQUIREMENTS**

- A. Jack conduit to line and grade indicated. Modify the jacking operation to correct any deviation. Correct any misalignment in line or grade at no additional cost to OWNER.
- B. The methods and equipment used in jacking casing or conduit are CONTRACTOR's choice.
- C. Use workers experienced in jacking operations.

### **PART 2 PRODUCTS**

#### **2.1 STEEL CASING**

- A. ASTM A 53, Grade B steel pipe for jacking operations, minimum wall thickness of 0.375 inch, minimum yield stress of 42,000 psi. Use a casing with a diameter equal to the outside bell diameter of the pipe plus a minimum 4 inches.
- B. Fillet weld joints continuous around casing and reinforce joints to withstand jacking operations.

#### **2.2 CONCRETE PIPE**

- A. When concrete pipe is to be jacked, use a pipe section designed to support the superimposed loads and the loads that may be placed upon the pipe during jacking operations.
- B. Use pipe sections that have a watertight joint.

#### **2.3 SOIL CEMENT**

- A. Portland cement treated fill, Section 31 05 15.
- B. Grout: Cement, Section 03 61 00.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Coordinate utility locations, Section 01 31 13.

### **3.2 JACKING PROCEDURE**

- A. When casing is to be jacked through a plastic clay, continue uninterrupted operations until the casing has been jacked between specified limits.
- B. Equip leading section of casing with a jacking head securely attached to prevent any wobble or variation in alignment during the jacking operation.
- C. Protect the driving end against spalling or other damage, and install sufficient bearing shims to intermediate joints to properly distribute jacking stresses. Remove and replace any section showing signs of Failure.
- D. No Excavation in excess of the outer dimensions of the conduit being jacked will be allowed unless approved. Avoid any loss of earth outside the jacking head.
- E. Upon completion of jacking operations, pressure grout voids around outside face of the conduit. Grouting around jacked conduit must be started immediately after jacking operations have finished.
- F. During the jacking operation, backpack with soil cement any annular space occurring outside of conduit that could affect any surface structure or facility.

### **3.3 PILOT TUNNEL**

- A. Construct tunnel where casing 60 inches or greater inside diameter is to be jacked for a distance greater than 32 feet.
- B. Remove supports for tunnels as jacking progresses.

### **3.4 PIPE SUPPORT IN CASING TUNNEL**

- A. Unless indicated otherwise, use redwood skids throughout the length of the pipe tied at every pipe diameter length to brace pipe installed in casing to prevent shifting or flotation during backfilling of annular ring between the casing and carrier pipe.
- B. Backfill annular ring with Section 03 61 00 hydraulic cement grout except when indicated otherwise.
- C. Install pipe barrels to rest upon support blocks with the pipe bells clearing the casing invert by at least 1/2 inch.
- C. Whenever clay pipe is installed in a casing, use mechanical compression joints.

END OF SECTION