

SAN ANTONIO RIVER AUTHORITY  
UTILITIES DEPARTMENT

SECTION 33-05-07  
JACKING, BORING OR TUNNELING PIPE

**PART 1 GENERAL**

**1.1 DESCRIPTION:**

**A. RELATED WORK SPECIFIED ELSEWHERE:**

Section 01-33-00 – Submittals  
Section 31-50-00 - Trench Excavation Protection  
Section 33-05-05 - Sewer Excavation, Trenching and Backfilling  
Section 33-05-06 - Sanitary Sewer Testing  
Section 33-31-00 - Sanitary Sewers  
SAWS ITEM NO. 300 Concrete (Natural Aggregate)  
SAWS ITEM NO. 301 Reinforcing Steel  
SAWS ITEM NO. 550 Trench Excavation Safety Protection  
SAWS ITEM NO. 307 Concrete Structures

**B. SCOPE:**

This item shall govern for the furnishing and installation of pipe by the methods of jacking, boring, or tunneling as shown on the plans and in conformity with this specification. All work within the City Street, County Street, State highway, or railroad right of way must meet the requirements in this section as a minimum and shall meet the requirements of the permit issued by the City, County, State or Railroad Owner when their requirements are more stringent. Approval of all completed work in the right of way must be obtained from the OWNER prior to final acceptance.

**C. SUBMITTALS:**

CONTRACTOR shall submit manufacturer's product data, instructions, recommendations, shop drawings, and certifications.

The Contractor must submit a jacking plan for approval by the OWNER.

The CONTRACTOR must submit a boring plan for approval by the OWNER.

**PART 2 PRODUCTS**

**2.1 PIPE:**

For sanitary sewers, materials shall conform to the OWNER's approved product list, *Section 333100 - Sanitary Sewers*, or as specified on the plans and specifications provided by the OWNER.

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2.2 CASING SPACERS:

All products shall conform to the OWNER'S approved product list. The CONTRACTOR should review this list prior to start of construction.

2.3 CASING PIPE:

Material, length, and thickness specified on project plans.

2.4 GROUT:

Grout for annular spaces shall be sand cement slurry containing a minimum of seven (7) sacks of Portland Cement per cubic yard of slurry. All slurry shall be plant batched and transit mixed.

**PART 3 EXECUTION**

3.1 JACKING:

- A. Suitable pits or trenches shall be excavated for the purpose of jacking operations. When pits or trenches are cut such work shall in no way interfere with the operation of railroads, streets, highways or other facilities and shall not weaken or damage such facilities. Barricades, lights, signs and other warning devices shall be provided at the CONTRACTOR'S expense according to the regulations established in the TxDOT "Texas Manual on Uniform Traffic Control Devices" to safeguard traffic and pedestrians. CONTRACTOR shall also follow all OSHA trench safety rules and regulations.
- B. The pipe to be jacked shall be set on guides to support the section of pipe being jacked and to direct it in the proper line and grade. Earthen material shall be excavated just ahead of the pipe and material removed through the pipe, and the pipe forced through the opening thus provided.
- C. The excavation for the underside of the pipe, for at least one-third (1/3) of the circumference of the pipe, shall conform to the contour and grade of the pipe. A clearance of not more than two inches (2") may be provided for the upper half of the pipe. If voids should develop, or if the excavation is greater than the outside diameter of the pipe (including coating) by more than one inch, as determined by the OWNER, the space shall be filled by pressure grouting with a grouting method approved by the OWNER.
- D. The distance that the excavation shall extend beyond the end of the pipe shall depend on the character of the material, but it shall not exceed two feet (2') in any case.
- E. Generally, the pipe shall be jacked from downstream end. Permissible lateral or vertical variation in the final position of the pipe from line and grade shall be within  $\pm 3$  inches of plan grade on the upstream end of the bore, or as determined by the OWNER.
- F. Any pipe damaged in jacking operations shall be removed and replaced at the CONTRACTOR'S expense.

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- G. All carrier pipe placed in casing shall be supported with bolt on style casing spacers as shown in the plans and specified herein.
- H. The pits or trenches excavated to facilitate this operation shall be backfilled immediately after work has been completed and inspected by OWNER. Backfilling shall conform to *Section 330505 - Sewer Excavation, Trenching and Backfilling*.

3.2 BORING:

- A. Excavation for Boring pits and installation of shoring shall be as outlined under Jacking. The boring shall be done using a pilot hole. The pilot hole shall be bored the entire length of the crossing and shall be used as a guide for the larger hole to be bored. The use of water or other fluids in connection with the boring operation will be permitted only to the extent to lubricate cuttings; jetting will not be permitted.
- B. Variation in line and grade shall apply as specified under Jacking. Pressure grouting requirements and procedures are the same as specified under Jacking.
- C. All carrier pipe placed in casing shall be installed as outlined under Jacking.
- D. Backfilling of pits and trenches shall apply as specified under Jacking.

3.3 TUNNELING:

- A. Tunneling may be used when the size of the proposed pipe or the use of a monolithic sewer would make the use of tunneling more satisfactory than "Jacking or Boring"
- B. The excavation for pits and the installation of shoring shall be as specified under Jacking.
- C. The lining of the tunnel shall be of the material shown on the plans.
- D. Pressure grouting requirements and procedures are the same as specified under Jacking.
- E. All carrier pipe placed in casing shall be installed as outlined under Jacking.
- F. Backfilling of pits and trenches shall apply as specified under Jacking.

3.4 CASING END PLUGS:

- A. Casing shall be plugged on both ends before backfilling. Plugs shall consist of minimum of 2 LF of low strength grout (1,500 psi minimum). The plug shall create a watertight seal between the casing and the carrier pipe. Any casing spacers within the grouted sections shall be greased or treated otherwise to prevent bonding of the grout to the casing spacer.

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3.5 TRENCH PROTECTION:

All excavation and trenching shall conform to *SAWS ITEM NO. 550 Trench Excavation Safety Protection*.

**PART 4 MEASUREMENT AND PAYMENT:**

- A. Materials and installation will be measured in the field and the linear feet considered for payment will be the actual horizontal distance installed, from beginning of the casing to the end of the casing. Materials on hand will not be paid. Measurements exceeding the proposal quantity will not be considered for payment unless approved by OWNER in writing in advance.
- B. This item will be paid for at the contract linear foot unit price bid for "Jacking, Boring or Tunneling Pipe" for the diameter of pipe indicated as based on the actual horizontal distance, which price shall be full compensation for the work specified including line cleaning, air testing and television inspection.

**END OF SECTION**