DIVISION III
GENERAL CONSTRUCTION REQUIREMENTS

SECTION 33

BORING AND JACKING

33. 1 GENERAL

The installation of a casing pipe by the method of boring and jacking shall be governed by these specifications. The overall work scope shall include, but not be limited to, boring and jacking pits and equipment, sheeting, steel casing pipe, skid, steel straps, coatings, location signs as required, miscellaneous appurtenances to complete the entire WORK as shown on the STANDARD DRAWINGS, and restoration. Applicable provisions of Division III, IV, and V shall apply concurrently with these specifications. Boring and jacking operations shall be performed within the right-of-way and/or easements shown on the DRAWINGS.

33. 2 PIPE MATERIAL

33. 2. 1 STEEL CASING

Steel casings shall conform to the requirements of ASTM Designation A139 (straight seam pipe only) Grade "B" with a minimum yield strength of 35,000psi. The casing pipes shall have the minimum nominal diameter and wall thickness (in inches) as shown on the following table:

Carrier Nominal Diameter	Casing Outside Diameter	Casing Wall Thickness
4	16	.250
6	18	.250
8	20	.250
10	24	.250
12	30	.312
16	30	.312
18	36	.375
20	36	.375
24	42	.500
30	48	.500
36	54	.500
42	60	.500

Field and shop welds of the casing pipes shall conform with the American Welding Society (AWS) standard specifications. Field welds shall be complete penetration, single-bevel groove type joints. Welds shall be airtight and continuous over the entire circumference of the pipe and shall not increase the outside pipe diameter by more than 3/4-inch.

33. 2. 2 CARRIER PIPE

The carrier pipe shall be pressure class 350 ductile iron pipe with restrained joints. Ductile iron pipe shall comply with the specification outlined in Division IV and V.

33. 2. 3 INSPECTION

All casing pipe to be installed may be inspected at the site of manufacture for compliance with these Specifications by an independent laboratory selected and paid for by the CITY. The manufacturer's cooperation shall be required in these inspections.

All casing pipe shall be subjected to a careful inspection prior to being installed. If the pipe fails to meet the specifications it shall be removed and replaced with a satisfactory replacement at no additional expense to the CITY.

33. 3 PIPE HANDLING

Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe or coatings. Pipe shall not be dropped. All pipe shall be examined before laying, and no piece shall be installed which is found to be defective. Any damage to the pipe or coatings shall be repaired to the satisfaction of the CITY.

33. 4 CONSTRUCTION

33. 4. 1 WORK COORDINATION

It shall be the CONTRACTOR'S responsibility to perform the boring and jacking work in strict conformance with the requirements of the agency in whose right of way or easement the work is being performed. Any special requirements of the agency such as insurance, flagmen, etc., shall be strictly adhered to during the performance of WORK. The special requirements shall be performed by the CONTRACTOR at no additional cost to the CITY.

33. 4. 3 DEWATERING

Dewatering through the casing during construction shall not be permitted. All dewatering methods shall be approved by the CITY before construction work begins.

33. 4. 4 CARRIER PIPE SUPPORT

The carrier pipes shall be supported within the casing pipes so that the pipe bells do not rest directly on the casing. The load of the carrier pipes shall be distributed along the casing by casing spacers as shown on the STANDARD DRAWINGS. Casing spacers shall be bolt on style split shells made of either T-304 stainless steel or fusion coated steel (a minimum 0.010 inches thick coating of PVC shall be provided over the entire band). The shell shall be lined with a PVC liner 0.090 inches thick with 85-90 Durometer. All nuts and bolts shall be high strength low alloy in accordance to AWWA C111. Runners shall be made of a high molecular weight polymer with inherent high abrasion resistance and a low coefficient of friction.

A conditional alternative pipe support method, composed of four - 4 foot long 4 inch by 4 inch pressure treated wood skids that are notched for and use one inch wide stainless steel bands, have a beveled leading edge, and that are placed 90 degrees to each other around the carrier pipe, may be used on a case by case basis as approved specifically by the DIRECTOR in writing. Should the wood skids experience slippage around the carrier pipe, the use of a cascade type casing spacer shall be required.

33. 4. 5 JACKING PITS

Excavation adjacent to the roads shall be performed in a manner to adequately support the roads. Bracing, shoring, sheeting, or other supports shall be installed as needed. CONTRACTOR shall install suitable reaction blocks for the jacks as required. Jacking operations shall be continuous and precautions shall be taken to avoid interruptions which might cause the casing to "freeze" in place. Upon completion of jacking operations, the reaction blocks, braces, and all other associated construction materials shall be completely removed from the site. All excavation activities shall comply with the Florida Trench Safety Act.

33. 4. 6 MISCELLANEOUS REQUIREMENTS

Correct line and grade shall be carefully maintained. Earth within the casing shall not be removed too close to the cutting edge in order to prevent the formation of voids outside the casing. If voids are formed, they shall be satisfactorily filled with grout by pumping.

The sections of steel casing shall be field welded in accordance with the applicable portions of AWWA C206 and AWS D7.0 for field welded pipe joints. CONTRACTOR shall wire brush the welded joints and paint with Inertol Quick-Drying Primer 626 by Koppers Company or approved equal. After completion of jacking, CONTRACTOR shall clean the interior of the casing of all excess material.

The annular space between the carrier pipe and casing shall be filled with clean sand, if required in the Bore and Jack permit. Masonry plugs are to be installed at each open end of the casing. Plugs shall be suitable for restraining the earth load while allowing drainage of the casing.