Technical Specification 014.01

BORING AND JACKING

1.0 General

a) The intent of this specification is to provide general technical guidance for the installation of pipelines installed to carry water or sewage, under gravity flow or pressure flow, through a carrier pipe that is installed inside an outer protective casing pipe.

2.0 Requirements

a) Pipelines under roadways or as specified elsewhere shall be encased in a larger pipe or conduit called the casing pipe. Casing pipes shall be installed at the locations indicated on the plans and also in accordance with the NCDOT encroachment permit (for State Roads) and shall be installed by boring and jacking operations.

b) Pipelines shall be located in accordance with the approved plans and NCDOT encroachment permit for public rights-of-way, and as directed by the Engineer and / or Brunswick County staff for private rights-of-way and public utility easements.

c) Unless otherwise approved by NCDOT all casing and carrier pipes installed within NCDOT rights-of-way shall be installed perpendicular (90 degrees) to the paved street in the right-of-way.

d) Casings and carrier pipes shall not obstruct culverts, bridges, the flow line of drainage ditches, etc.

e) Any replacement of a carrier pipe shall be considered a new installation, subject to the requirements of these specifications.

f) Where laws or orders of public authority prescribe a higher degree of protection than specified herein, then the higher degree of protection so prescribed shall supersede the applicable portions.

g) Pipelines and casing pipe shall be suitably insulated from underground conduits carrying electric wires.

3.0 Carrier Pipe

a) Carrier line pipe and joints shall be of accepted material and construction as approved by the Engineer and in accordance with County Technical Specifications and Standard Details. Joints for carrier line pipe operating under pressure shall be mechanical joint or welded type.

b) Joints for gravity sewer mains shall have an approved bell-and-spigot restraint mechanism.

c) All carrier pipes shall be pressure class 350 ductile iron pipe.

4.0 Casing Pipe

a) The inside diameter of the casing pipe shall be as shown on the approved plans. The wall thickness shall be as specified in Table 4.1 below. The casing pipe and joints shall be of leak proof construction with welded seams at each joint continuous along the entire circumference of the casing pipe. Both ends of the casing pipe shall be sealed against water intrusion by the use of 8-inches of solid masonry as shown on the standard details, and the lower end shall have a one (1) inch PVC condensation drain. Refer to the bore-and-jack Standard Detail.

Table 4.1
Minimum Wall Thickness for Steel Casing Pipe

Nominal Thickness Inches	Nominal Diameter Inches
0.250	Under 14 - 28
0.312	30
0.375	32 - 36
0.500	Over 36

b) When casing is installed without benefit of a protective coating, and said casing is not cathodically protected, the wall thickness shown above shall be increased to the nearest standard size, which is a minimum of 0.063 inches greater than the thickness shown.

5.0 Steel Pipe

a) Steel pipe shall have minimum yield strength of 35,000 psi, and shall be spiral-welded steel pipe, uncoated, as manufactured by Armco Steel Corporation, or equal.

6.0 Length of Pipe

a) Casing pipe under roadways shall extend from the back slope of ditch on one side of the roadway to the back slope of ditch on the other side of the roadway, or as directed by the Engineer. In no case shall the casing extend less than three (3) feet beyond the back of curb, sidewalk, or pavement edge, measured at right angles to the centerline of the road. All extensions of casing pipe shall also comply with all conditions in the NCDOT encroachment permit as applicable.

b) No part of any sending and / or receiving pit shall be within three (3) feet of the edge of pavement of any paved street or alley. This includes any pits dug for water and / or sewer service lateral installations by any approved methods.

7.0 Construction

. a) Casing pipe shall be so constructed as to prevent leakage of any substance from the casing throughout its length. Casing shall be so installed as to prevent the formation of a waterway under the roadway with an even bearing throughout its length, and shall slope to one end (except for longitudinal occupancy). Ends of casing pipe shall be sealed by using brick and mortar or by the use of an approved end seal per the Standard Detail. Casing pipe that has welded joints shall be welded by a certified welder – refer to County Standard Detail WS-6 (Note 6) on Sheet 3 of 7 of the County General Water and Sewer Details.

b) Where casing and/or carrier pipe is cathodically protected, the Engineer shall be notified and suitable test made to ensure that other structures and facilities are adequately protected from the cathodic current in accordance with the recommendations of current Reports of Correlating Committee on Cathodic Protection, published by the National Association of Corrosion Engineers.

8.0 Method of Installation

a) Bored or jacked installations shall have a bored hole diameter essentially the same as the outside diameter of the pipe. If voids develop causing the bored hole diameter to be greater than the outside diameter of the pipe by more than approximately 1 inch, remedial measures as approved by the Engineer shall be taken. Boring operations shall not be stopped if such stoppage would be detrimental to the roadway.

b) Not less than ten (10) days prior to commencing any boring and jacking, the contractor shall submit a "Boring and Jacking Plan" to the Engineer for review, outlining in detail his proposed methodology for accomplishing all boring and jacking. The plan shall include, but not be limited to, location and angle, type and size of equipment and materials to be used on each bore, estimated time of completion, etc.

9.0 Depth of Installation

a) Casing pipe under roadways shall be installed to the depth indicated on the plans for sewer and a minimum of three (3) feet of cover for waterlines, and shall comply with all depth requirements contained within a NCDOT encroachment permit as applicable.

10.0 Valves and/or Manholes

a) Accessible valves and /or manholes shall be installed on each side of the roadway as shown on the approved plan sheets.

11.0 Execution of Work

a) The execution of the work on all roadways shall be subject to the inspection and direction of the Engineer and / or County staff, and shall be installed as shown on the approved plans and in conformance with this specification.

12.0 Measurement

a) All casing pipe shall be measured from the exact beginning of the casing pipe to the end of the casing pipe on the opposite side of the roadway.

13.0 Payment

a) Payment for casing pipe shall be made at the contract unit price per linear foot for the various types and sizes of casings, which price shall be full compensation for all materials, excavation of bore pit, excavation of receiving pit, backfill, required bonds, etc., complete in place, as specified, to the satisfaction of the Engineer and Brunswick County.