

**AMENDMENTS TO OPSS 416 (FEB 90) –
CONSTRUCTION SPECIFICATION FOR JACKING AND BORING**

OPSS 416.09.01.01 is superseded by:

Measurement will be in metres along the centre line of the pipe from inside face to inside face of maintenance holes or chambers or from the end of the pipe where no manhole maintenance holes or chamber is installed. The measurement will not include the distance through any structure including maintenance holes and chambers.



**CONSTRUCTION SPECIFICATION FOR
JACKING AND BORING**

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416.01 SCOPE

This specification covers the requirements for the installation of pipes by jacking and boring methods.

416.02 REFERENCES

This specification refers to the following standards, specifications or publications:

Ontario Provincial Standard Specifications, Construction:

OPSS 517 Dewatering

Ontario Provincial Standard Specifications, Material:

OPSS 1004 Aggregates - Miscellaneous
OPSS 1820 Concrete Pipe

American Water Works Association:

AWWA C200-80 Steel Water Pipe 6 Inches and Larger
AWWA C206-82 Field Welding of Steel Water Pipe

Canadian Standards Association:

CAN/CSA-A5-M88 Portland Cement

416.04 SUBMISSION AND DESIGN REQUIREMENTS

Plans shall be submitted showing proposed locations of shafts, pits or approach tunnels, and details of the proposed method, materials and equipment to be used, at least two weeks prior to commencement of the work.

Design assumptions and material data shall be submitted for review by the Engineer, when materials other than those specified are proposed for use.

A written agreement regarding the disposal site setting out the terms, conditions and ultimate responsibility for the materials as placed, shall be obtained from the property owner and submitted to the Engineer.

416.05 MATERIALS

416.05.01 Pipe Materials

Concrete pipe shall conform to OPSS 1820.

Steel pipe shall conform to AWWA C200 with welded joints.

416.05.02 Cement Grout

Grout shall consist of a mixture of one part Portland cement conforming to CAN/CSA-A5-M88 and two parts mortar sand conforming to OPSS 1004 wetted with only sufficient water to make the mixture plastic.

416.07 CONSTRUCTION

416.07.01 Method of Installation

Method of installation to be used by the Contractor shall be reviewed with the Engineer prior to commencing the work and shall be subject to the following limitations.

- a. Only smooth walled steel or concrete pipe shall be used.
- b. Hydraulically operated jacks in adequate number and capacity shall be provided to ensure smooth and uniform advancement without overstressing of the pipe.
- c. A jacking head shall be provided to transfer and distribute jacking pressure uniformly over the entire end bearing area of the pipe. In the case of concrete pipe, the jacking head shall be suitably padded.
- d. Two or more lubricated guide rails or sills shall be provided of sufficient length to fully support the pipe at the specified line and grade in the jacking pit.

416.07.02 Construction Shafts

Construction shafts shall be provided at the downstream end at the locations specified.

Shafts shall be maintained in a drained condition.

A 3.5 m high close boarded fence shall be installed around the perimeter of the working area with gates and truck entrances at the shafts and the fence shall be removed on completion of the work.

416.07.03 Dewatering

Dewatering shall conform to OPSS 517.

416.07.04 Pipe Installation

Pipe shall be installed to the line and grade specified.

Long delays shall be avoided between jacking operations.

Butt welding of pipe joints shall conform to AWWA C 206 when steel pipe is used.

The space between concrete pipe and the wall of the excavation shall be kept filled with a bentonite slurry.

Joints shall be protected from crushing by placing 15 mm thick plywood on spigot shoulder. The plywood shall be cut to form a ring with the outer surface conforming to the outer circumference of the pipe.

416.07.05 Grouting

All voids remaining between the pipe and the excavation wall shall be grouted as soon as the pipe is jacked.

416.07.06 Excavated Materials

Satisfactory re-usable excavated material required for backfill shall be separated from unsuitable excavated material.

416.07.07 Disposal of Materials

Unsuitable or surplus material shall be disposed off site.

Excavated material which cannot be incorporated into the work shall be disposed as specified. If the Authority cannot make use of the unwanted excavated material, arrangements for disposal sites shall be made by the Contractor.

The disposal site shall be kept stable and materials shall be dumped in a manner not to cause nuisance, injury or inconvenience until the property owner assumes responsibility under the terms of the agreement referred to in Section 416.04.

416.09 MEASUREMENT FOR PAYMENT

416.09.01 Actual Measurement

416.09.01.01 Jacking and Boring

Measurement will be in metres along the centre line of the pipe from centre to centre of manholes or chambers or from the end of the pipe where no manhole or chamber is installed.

416.09.02 Plan Quantity Measurement

416.09.02.01 Jacking and Boring

Measurement is by Plan Quantity, as may be revised by Adjusted Plan Quantity, of the length in metres along the centre line of the pipe from centre to centre of manholes or chambers or from the end of the pipe where no manhole or chamber is installed.

416.10 BASIS OF PAYMENT

416.10.01 Jacking and Boring - Item

Payment at the contract price for the above item shall be full compensation for all labour, equipment and material required to do the work.

The removal of boulders having a volume in excess of 0.5 cubic metres will be paid for as extra work.