AMENDMENTS TO OPSS 408 (OCT 89) – CONSTRUCTION SPECIFICATION FOR ADJUSTING OR REBUILDING MANHOLES, CATCH BASINS, DITCH INLETS AND VALVE CHAMBERS

OPSS 408.07.08 is superseded by:

Where structures are to be extended using bricks, the total height of bricks shall not exceed 300 mm.

All existing mortar and brickwork shall be removed from the top of the existing structures prior to adjusting with precast concrete adjustment units.

Where structures are to be extended using precast concrete adjustment units the total height of adjustment units shall not exceed 300 mm.

CONSTRUCTION SPECIFICATION FOR ADJUSTING OR REBUILDING MANHOLES, CATCH BASINS, DITCH INLETS AND VALVE CHAMBERS

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Adjusting Ditch Inlets - Item
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408.01 SCOPE

This specification covers the requirements for adjusting or rebuilding manholes, catch basins, ditch inlets and valve chambers and the installation of safety gratings.

408.02 REFERENCES

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

Ontario Provincial Standard Specifications, Construction:

OPSS 353 Concrete Curb and Gutter Systems
OPSS 407 Construction of Manholes, Catchbasins, Ditch Inlets and Valve Chambers
OPSS 503 Site Preparation for Pipelines
OPSS 504 Preservation, Protection and Reconstruction of Existing Facilities
OPSS 507 Site Restoration for Underground Utilities
OPSS 516 Excavating, Backfilling and Compacting for Manholes, Catchbasins, Ditch Inlets and Valve Chambers
OPSS 538 Shoring and Bracing
OPSS 904 Concrete Structures

Ontario Provincial Standard Specifications, Material:

OPSS 1004 Aggregates - Miscellaneous
OPSS 1350 Concrete (Materials and Production)
OPSS 1351 Components for Precast Reinforced Concrete Manholes, Catchbasins, Ditch Inlets

and Valve Chambers
OPSS 1440 Steel Reinforcement for Concrete
OPSS 1801 Corrugated Steel Pipe Products
OPSS 1850 Frames, Grates, Manhole Covers and Welded and Rivetted Steel Gratings
OPSS 1851 Miscellaneous Metals

Canadian General Standards Board

CGSB-1-GP-181M-1978 - Coating Zinc - Rich, Organic, Ready Mixed

Canadian Standards Association Standards

CAN/CSA A5-M88 - Portland Cements
CSA A165-M1985 - Concrete Brick Masonry Units
CSA W59-M1989 - Welded Steel Construction

American Society For Testing And Materials Standards

C478-88a - Precast Reinforced Concrete Manhole Sections

408.03 DEFINITIONS

Adjustment of manholes, catchbasins, ditch inlets and valve chambers means any change upward or downward in the top elevation of an existing structure regardless of type or size, that can be achieved through the addition or removal of grade rings, adjustment units or bricks.

Rebuilding of manholes, catchbasins, ditch inlets and valve chambers means any change upward or downward in the top elevation of an existing structure, regardless of type or size, that requires the removal or addition of cast-in-place concrete or precast concrete sections.

408.05 MATERIALS

408.05.01 Concrete

Concrete for cast-in-place structures shall conform to OPSS 1350 and have a minimum 28 day compression strength of 30 MPa.

408.05.02 Reinforcing Steel

Steel bar reinforcement, bar mats and wire fabric shall conform to OPSS 1440.

408.05.03 Precast Concrete Components for Manholes, Catchbasins, Ditch Inlets and Valve Chambers

Precast Units shall conform to OPSS 1351.

408.05.04 Steps and Ladders

Steps and ladders shall conform to OPSS 1851.

408.05.05 Frames and Covers, Frames and Grates

Frames and covers or grates shall conform to OPSS 1850.

408.05.06 Open or Safety Gratings and Frames

Open or safety gratings and frames shall conform to OPSS 1851.

408.05.07 Adjustment Units

408.05.07.01 Adjustment Units for Circular Structures

Concrete coning brick shall conform to CSA A165.

Precast concrete coning rings and grade rings shall conform to ASTM C478.

Interlocking precast concrete adjustment unit shall conform to ASTM C478. Minimum allowable circular reinforcement shall consist of a continuous welded ring of 6.3 mm diameter cold drawn steel wire.

408.05.07.02 Adjustment Units for Rectangular Structures

Concrete brick shall conform to CSA A165M with smooth surface, square corners and have the following dimensions.

210 ± 8 mm in length
150 ± 4 mm in width
60 ± 4 mm in height

Interlocking precast concrete adjustment units shall conform to ASTM C478. Minimum allowable reinforcement shall consist of a continuously welded 6.3 mm diameter cold drawn steel wire.

408.05.08 Mortar

Mortar shall consist of a mixture of one part Portland cement conforming to CSA 3-A5-M and three parts mortar sand conforming to OPSS 1004, wetted with only sufficient water to make the mixture plastic.

408.05.09 Safety Chains and Fasteners

Safety chain and fasteners shall conform to OPSS 1851.

408.05.10 Corrugated Steel Pipe, Manhole and Catch Basin Units

Corrugated steel pipe units shall conform to OPSS 1801.

408.05.11 Polyethylene Foam Gaskets

Polyethylene foam gaskets shall be 50 mm wide and shall have an uncompressed thickness of 40 mm.

408.05.12 Zinc Rich Paint

Zinc rich paint shall conform to CGSB-1-GP181M.

408.07 CONSTRUCTION

408.07.01 General

All structures shall be adjusted or rebuilt plumb and true to alignment and grade.

During the progress of the work and until the completion and final acceptance, all structures shall be kept clean and free of all foreign material.

Prior to adjusting or rebuilding a structure the existing frame and grate or cover shall be carefully removed and salvaged. Once a structure has been adjusted or rebuilt the salvaged or new frame and grate or cover shall be set to the correct elevation on the adjusted or rebuilt structure to conform to OPSS 407.

Frames and grates or covers which lie within the flow lines of a curb and gutter system shall be installed to conform to OPSS 353.

The installation of brick, precast concrete adjustment units, grade rings and precast concrete components shall conform to OPSS 407.

Additional steps or ladder extensions shall b required when the distance from the adjusted elevation of the structure to the first step would be in excess of 450 mm.

Additional steps or ladder extensions shall b installed to conform to OPSS 407.

Alterations to extension stems and sleeves on valves to suit the new valve chamber elevation shall conform to OPSS 407.

Any structure that, after having been raised, has a total height of 5.0 m or more shall have a safety grate installed in it. The safety gratings and frame shall be installed to conform to OPSS 407.

After adjusting or rebuilding a valve chamber insulation shall be installed in accordance with the manufacturer's recommendation on the roof, wall or access way of the chamber where specified.

408.07.02 Site Preparation

Site preparation shall conform to OPSS 503.

408.07.03 Preservation and Protection of Existing Facilities

Existing facilities shall be preserved and protected to conform to OPSS 504.

408.07.04 Cold Weather Work

All work shall be protected from freezing.

408.07.05 Transporting, Unloading and Storing

Delivery and unloading of materials shall cause the least possible delay to traffic.

Mechanical equipment shall be used to unload precast concrete components.

Materials shall be placed in safe storage.

Manufacturer's handling and storage recommendations shall be followed.

Materials that are unsound or damaged shall be removed from the site and replaced.

408.07.06 Excavating, Backfilling and Compacting

Excavating, backfilling and compacting for the adjustment or rebuilding of structures shall conform to OPSS 516.

408.07.07 Shoring and Bracing

Shoring and bracing shall conform to OPSS 538.

408.07.08 Adjusting

Where structures are to be extended using bricks, the total height of bricks shall not exceed 600 mm.

All existing mortar and brickwork shall be removed from the top of the existing structures prior to adjusting with precast concrete adjustment units.

Where structures are to be extended using precast concrete adjustment units the total height of adjustment units shall not exceed 1.0 m.

408.07.09 Rebuilding

408.07.09.01 Cast-In-Place Structures

Where the top is to be lowered the concrete shall be carefully removed to the required elevation and exposed steel reinforcement shall be cut off as required.

The upper section of the structure shall then be rebuilt to its original configuration using cast-in-place concrete and steel reinforcement as required.

To raise the top of structures with a tapered upper section the concrete in the structure shall be removed for the entire depth of the taper. The upper section, including straight walls and taper shall then be rebuilt to the original configuration using cast-in- place concrete and steel reinforcement as required. To raise the top of straight walled structures, the existing roof section, if any shall be removed. The existing walls shall then be extended upward and the roof section, if any, rebuilt to the original configuration using cast-in-place concrete and steel reinforcement as required.

Where cast-in-place units are to be raised with cast- in-place concrete, the top surface of all existing walls shall be roughened before the walls are extended upwards.

Concrete shall be placed in accordance with OPSS 904.

All inside wall protuberances shall be remove once the forms are stripped.

408.07.09.02 Precast Concrete Structures

Where structures having either a tapered or flat slab top section are to be raised or lowered, the top section shall be carefully removed and salvaged and riser sections of suitable height shall be carefully removed, substituted for, or added, to the existing riser sections. The top section shall then be replaced. All of the above work shall be performed in accordance with OPSS 407.

To lower the top of structures other than described above, the concrete shall be removed, exposed steel reinforcement cut off as required and the concrete refinished.

408.07.09.03 Corrugated Steel Pipe Units

For structures having a flat cap section, the flat cap and polyethylene foam gasket shall be removed and the flat cap salvaged for re-use. If the structure is to be raised, an additional riser section, as required, shall be welded to the existing riser section. If the structure is to be lowered, the required amount of the riser section shall be cut off. In either case, the salvaged flat cap shall be repositioned and a new polyethylene gasket placed.

All welds shall conform to CSA W59 and be painted with two coats of zinc rich paint.

408.07.10 Restoration

When the work is beyond the limits of general grading operations, restoration shall conform to OPSS 507.

408.09 MEASUREMENT FOR PAYMENT

408.09.01 Actual Measurement

408.09.01.01 Adjusting or Rebuilding, Manholes, Catch Basins, Ditch Inlets and Valve Chambers

The adjusting or rebuilding of structures will be measured in metres. Measurement for payment will be made by taking the difference in elevation of the top of grate or cover at the centre prior to and after the adjustment with the following exceptions:

a. When rebuilding tapered structures the actual measured adjustment will be increased by the height of the tapered portion.

b. Where the measured adjustment is less than 300 mm, the measurement for payment will be 300 mm.

408.09.01.02 Installation of Safety Gratings

Measurement of the number of Safety Gratings is by units installed (each).

408.09.02 Plan Quantity Measurement

408.09.02.01 Adjusting or Rebuilding, Manholes, Catch Basins, Ditch Inlets and Valve Chambers

Measurement is by Plan Quantity, as may be revised by adjusted Plan Quantity, for the number of manholes, catch basins, ditch inlet and valve chambers adjusted or rebuilt. The unit of measurement is each.

408.09.02.02 Installation of Safety Grating

Measurement is by Plan Quantity, as may be revised by adjusted Plan Quantity for the number of safety gratings installed. The unit of measurement is each.

408.10 BASIS OF PAYMENT

408.10.01 Adjusting Manholes - Item
Rebuilding Manholes - Item
Adjusting Catch Basins - Item
Rebuilding Catch Basins - Item
Adjusting Ditch Inlets - Item
Rebuilding Ditch Inlets - Item
Adjusting Valve Chambers - Item
Rebuilding Valve Chambers - Item
Installation of Safety Gratings - Item

Payment at the contact price for the above tender item(s) shall be full compensation for all labour, equipment and material to do the work.