



**CONSTRUCTION SPECIFICATION FOR EXCAVATING, BACKFILLING,  
AND COMPACTING FOR MAINTENANCE HOLES, CATCH BASINS,  
DITCH INLETS AND VALVE CHAMBERS**

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<b>402.01</b>	<b>SCOPE</b>
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This specification covers the requirements for excavating, backfilling, and compacting for the installation of storm and sanitary pipe sewer maintenance holes, storm sewer catch basins and ditch inlets, and valve chambers for watermain and forcemains.

**402.01.01 Specification Significance and Use**

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

Use of this specification or any other specification shall be as specified in the Contract Documents.

## **402.01.02                      Appendices Significance and Use**

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

## **402.02                              REFERENCES**

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

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

### **Ontario Provincial Standard Specifications, Construction**

OPSS 206	Grading
OPSS 403	Rock Excavation for Pipelines, Utilities, and Associated Structures in Open Cut
OPSS 404	Support Systems
OPSS 490	Site Preparation for Pipelines, Utilities, and Associated Structures
OPSS 491	Preservation, Protection, and Reconstruction of Existing Facilities
OPSS 492	Site Restoration Following Installation of Pipelines, Utilities, and Associated Structures
OPSS 501	Compacting
OPSS 510	Removal
OPSS 517	Dewatering
OPSS 578	Unshrinkable Backfill

### **Ontario Provincial Standard Specifications, Material**

OPSS 1010	Aggregates - Base, Subbase, Select Subgrade, and Backfill Material
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## **402.03                              DEFINITIONS**

For the purpose of this specification, the following definitions apply:

**Additional Excavation** means all excavation ordered in writing by the Contract Administrator beyond excavation specified in the Contract Documents.

**Backfilling** means the operation of filling the excavation with bedding and backfill material.

**Backfill Material** means approved fill material used above the bedding and below the lower of the subgrade or finished grade or original ground.

**Bedding Material** means the material used to support the maintenance hole, catch basin, ditch inlet, or valve chamber.

**Excavation** means the excavation of earth and rock as defined in OPSS 206.

**Imported Material** means material obtained from a source other than the Work Area.

**Native Material** means the material removed to form an excavation within the Work Area for return to the same or other excavation.

**Over-Excavation** means all excavation beyond that specified in the Contract Documents, performed without the written order of the Contract Administrator.

**Rock** means as defined in OPSS 206.

**Structure** means maintenance hole, catch basin, ditch inlet, or valve chamber.

**Unshrinkable Fill** means a controlled density cement treated aggregate material.

## **402.05 MATERIALS**

### **402.05.01 Granular Material**

Granular material shall be according to OPSS 1010.

### **402.05.02 Backfill Material**

#### **402.05.02.01 General**

Backfill material shall be as specified in the Contract Documents.

#### **402.05.02.02 Native and Imported Material**

Native and imported material shall be material approved by the Contract Administrator. All material shall be free from frozen lumps, cinders, ashes, refuse, vegetable or organic matter, rocks, and boulders over 25 mm in any dimension, and other deleterious material.

### **402.05.03 Unshrinkable Fill**

Unshrinkable fill shall be according to OPSS 578.

## **402.07 CONSTRUCTION**

### **402.07.01 General**

Excavations shall be stable and dry, unless designated as subaqueous work.

### **402.07.02 Site Preparation**

Site preparation shall be according to OPSS 490.

**402.07.03                      Preservation and Protection of Existing Facilities**

Preservation and protection of existing facilities shall be according to OPSS 491.

**402.07.04                      Removals**

Removals shall be according to OPSS 510.

**402.07.05                      Dewatering**

Dewatering shall be according to OPSS 517.

**402.07.06                      Support Systems**

Support systems shall be according to OPSS 404.

**402.07.07                      Removal of Frozen Ground**

Written permission shall be obtained from the Contract Administrator prior to starting an excavation in frozen ground. The method used for removal of frozen ground shall not cause damage to adjacent structures, roadways, or Utilities.

**402.07.08                      Excavation**

**402.07.08.01                  General**

Excavation shall be performed to the lines, elevations, and dimensions specified in the Contract Documents plus an allowance for support systems, where required.

Rock excavation for maintenance holes, catch basins, ditch inlets, or valve chambers shall be according to OPSS 403.

**402.07.08.02                  Additional Excavation**

Structures shall not be placed or constructed on an unsuitable foundation as may be determined by the Contract Administrator.

Unsuitable material shall be excavated and the resulting excavation shall be backfilled and compacted to obtain a suitable foundation.

**402.07.08.03                  Over-Excavation**

Corrective measures ordered by the Contract Administrator to rectify deficiencies caused by over-excavation shall be performed. Soil that has become disturbed by construction methods or procedures shall be removed and replaced with granular material compacted to 95% maximum dry density where the excavated surface is below or beside the proposed structure.

**402.07.09                      Backfilling and Compacting**

**402.07.09.01                  Bedding**

A 150 mm layer of granular bedding material shall be placed on the bottom of the excavation and compacted according to OPSS 501, prior to the placing of a structure.

#### **402.07.09.02                      Backfill**

Backfill material shall be placed simultaneously on all sides of the structure in layers not exceeding 300 mm in thickness, loose measurement, and compacted according to OPSS 501, prior to the placement of a subsequent layer.

Backfill material shall not commence around cast-in-place concrete structures until approval has been obtained from the Contract Administrator.

#### **402.07.10                      Additional Excavating, Backfilling, and Compacting**

Additional excavating, backfilling, and compacting shall be as described in the Excavation and Backfilling and Compacting.

The volume of the excavation that is in addition to the limits specified in the Contract Documents shall be determined.

#### **402.07.11                      Site Restoration**

Site restoration shall be according to OPSS 492.

#### **402.07.12                      Management of Excess Material**

Management of excess material shall be according to the Contract Documents.

### **402.09                      MEASUREMENT FOR PAYMENT**

#### **402.09.01                      Actual Measurement**

#### **402.09.01.01                      Additional Excavating, Backfilling, and Compacting**

Additional excavating, backfilling, and compacting shall be based on the volume of the additional excavation measured by volume in cubic metres prior to installation of a structure.

The volume of the additional excavation shall be determined beyond the limits specified in the Contract Documents.

#### **402.09.01.02                      Rock Excavation for Maintenance Holes, Catch Basins, Ditch Inlets, and Valve Chambers**

Rock excavations for maintenance holes, catch basins, ditch inlets, and valve chambers shall be paid according to OPSS 403.

### **402.10                      BASIS OF PAYMENT**

#### **402.10.01                      Excavating, Backfilling, and Compacting for Maintenance Holes, Catch Basins, Ditch Inlets, and Valve Chambers**

Payment at the Contract price for the above tender items for the installation of maintenance holes, catch basins, ditch inlets, and valve chambers shall be full compensation for all labour, Equipment, and Material to do the work.

When the Contract contains separate items for work required by this specification, payment shall be at the Contract prices and according to the specifications for such work.

Any expenses for remedial work resulting from over-excavation shall be at no additional cost to the Owner.

**402.10.02                      Additional Excavating, Backfilling, and Compacting - Item**

Payment at the Contract price for the above tender item shall be full compensation for all labour, Equipment, and Material to do the work.

**402.10.03                      Rock Excavation for Maintenance Holes, Catch Basins, Ditch Inlets, and Valve Chambers**

Payment for rock excavation for maintenance holes, catch basins, ditch inlets, and valve chambers shall be according to OPSS 403.

## **Appendix 402-A, November 2024 FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

**Note:** This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

### **Designer Action/Considerations**

The designer may consider including soil boring data, a geotechnical report, a subsurface report, or a soils report in the tender documents.

The designer should specify the following in the Contract Documents:

- Type of backfill material. (402.05.02)
- Lines, elevations, and dimensions of structure excavation. (402.07.08.01)
- Investigate and resolve any overlapping work. (402.07.10.01)
- Refer to OPSS 180. (402.07.12)

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

### **Related Ontario Provincial Standard Drawings**

OPSD 701.010 to 701.015	Precast Concrete Maintenance Holes, 1,200 mm to 3,600 mm in Diameter
OPSD 701.030 to 701.081	Precast Concrete Maintenance Hole Components, 1,200 mm to 3,600 mm in Diameter
OPSD 702.040 to 702.050	Precast Concrete Ditch Inlet Maintenance Hole, 1,200 mm x 1,200 mm
OPSD 703.011 to 703.015	Precast Concrete Single Inlet Flat Cap, 1,500 mm to 3,600 mm in Diameter
OPSD 703.021 to 703.024	Precast Concrete Twin Inlet Flat Cap, 1,500 mm to 3,000 mm in Diameter
OPSD 705.010 to 705.020	Precast Concrete Catch Basins
OPSD 705.030 to 705.040	Precast Concrete Ditch Inlets
OPSD 706.010 to 706.041	Precast Concrete Ditch Inlets with 1,500 mm to 3,000 mm Diameter Flat Cap
OPSD 1100.010	Cast-In-Place Chamber for Valves up to 350 mm Diameter
OPSD 1101.010	Precast Valve Chamber, 1,200 mm, and 1,500 mm Diameter
OPSD 1101.012 to 1101.015	Precast Concrete Valve Chamber with Poured-In-Place Thrust Blocks, 1,800 mm x 2,400 mm
OPSD 1101.016 to 1101.019	Precast Concrete Valve Chamber with Poured-In-Place Thrust Blocks, 2,400 mm x 3,000 mm