

**THE REGIONAL MUNICIPALITY  
OF PEEL**

**BASIS OF PAYMENT**

**FOR**

**WATERMAINS**

The Regional Municipality of Peel  
Basis of Payment  
Watermains

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Payment for each item shall be made at the unit price indicated in the Schedule of Unit Prices in the Form of Tender for the supply of all necessary materials, equipment, tools, labour and supervision to complete the item as specified and shown on drawings. The tendered unit price shall include the following:

## **PW.1. EXCAVATION**

### **1.1. Trench Excavation**

- Field location and protection of existing utilities in advance of the excavation including existing water services.
- Careful removal, storage and replacement of obstructions including culverts, headwalls, catch basins, fences, curbs, interlocking stones, and shrubbery
- Excavation, removal and disposal of surplus excavated material off site
- Shoring, dewatering
- Placing and compacting approved native backfill material
- Temporary restoration of surfaces to carry traffic and pedestrians
- Protection of existing road surface
- Meet all requirements of the Region of Peel, local municipality and M.T.O. pertaining to Road Cut Permits conditions
- Co-ordination of works with local residents to minimize disruption to access and water supply.

The payment for this work will be made under applicable items in the subsequent sections.

## **1.2. Asphalt/Concrete Removal**

- Excavation, removal and disposal of asphalt or concrete pavement off-site.
- Temporary restoration of surfaces to carry traffic and pedestrians.

The measurement for payment shall be in square metres over the area excavated at a depth as shown on boreholes in enclosed soil report.

## **PW.2. CONSTRUCTION OF WATERMAIN**

- Excavation and asphalt removal as per Section PW.1
- Supply and installation of watermain material including bends, tees and other fittings, concrete blocking and tie rods or retainer gland where required
- Supply and installation of protecto-caps for cathodic protection of direct buried bolts
- Supply and installation of 12 gauge TWU stranded copper plastic coated tracer wire with PVC and concrete pipe or polywrap for ductile iron pipe
- Placing, cutting and jointing of pipe and fittings
- Constructing restrainers and concrete thrust blocks at fittings
- Installation of all required temporary plugs, and 25mm or 50mm blow-offs for pressure testing
- Backfilling with excavated native material
- Testing and flushing

Unless otherwise specified pay quantity shall be based on the horizontal laying length measured over the centre line of pipe, through all main line valves, fittings and shall include the length of installation through chambers.

### **PW.3. BEDDING AND BACKFILL**

#### **3.1. Granular Bedding and Backfill**

- Supplying, placing and compacting granular bedding and backfill material
- Supplying, placing and compacting granular "D" bedding as per Regional Standard Drawings
- Supplying, placing and compacting imported granular 'B' backfill material meeting requirements of OPSS 314 to one metre behind curb or sidewalk and under all driveways.

#### **3.2. Concrete Bedding**

- Supporting pipe with concrete blocking
- Supply, placing and compacting 15 MPa concrete bedding
- Concrete to attain 75% of final cured strength prior to backfilling

#### **3.3. Unshrinkable Backfill**

- Supply, placing, and compacting and vibrating 0.4 MPa unshrinkable backfill
- Covering backfilled excavation with steel plates in paved areas, driveways and areas used by vehicles and wood planks or other approved material in areas used by pedestrians
- Maintenance of cover until temporarily restored
- Temporary restoration of surfaces to carry traffic and pedestrians

Pay quantity shall be based on the horizontal measurement made in metres from limit to limit of bedding or backfill installed.

**PW.4. CREEK CROSSING**

- Excavation as per Section PW.1
- Constructing sedimentation works as per detail(s) on contract drawings
- Flow control works
- Follow all conditions as specified in the Contract Documents.

This work is over and above the watermain installation and the measurement for this item shall be the horizontal length of the creek measured from top of bank to top of bank.

**PW.5. BORING/TUNNELLING WITH STEEL LINER**

- Excavation as per PW.1
- Constructing boring/tunnelling shaft and exit shaft
- Boring/tunnelling and installation of steel liner
- Grouting of pipe
- Backfilling of shafts with granular material in travelled portion of roadway

This work is over and above the watermain installation and the pay quantity for the completed tunnel/bore section shall be based on the measured length along the centre line of tunnel/bore from inside face to inside face of shafts.

**PW.6. MAIN LINE VALVES**

- Excavation as per Section PW.1
- All fittings and pipe necessary for connection to the watermain
- Installation of valves and accessories and any other equipment specified:

- a) Gate Valves and Valve Boxes
- Installation of gate valve and valve box. Valve stem extension where required as per Region of Peel Standard Drawings.
  - Restraints for PVC pipe as per Region of Peel Standard Drawings
- b) Butterfly Valves and Chambers
- Construction and installation of chambers according to Region of Peel Standard Drawings
  - Supply and installation of valves, fittings and any other equipment specified in chambers as per Region of Peel Standard Drawings
  - Supply, placing and compacting granular bedding and backfill
- c) Air Valve and Chamber
- Construction or installation of chambers and concrete supports as per Region of Peel Standard Drawings
  - Supply and installation of air valve, accessories and all necessary fittings
  - Supply, placing and compacting granular bedding and backfill
- d) Drain Valve and Chamber
- Supply and installation of drain valve and accessories
  - Construction of chamber as per Region of Peel Standard Drawings
  - Supply, placing and compacting granular bedding and backfill

Pay quantity for all valves shall be for the number of complete units installed



**PW.7. SAFETY PLATFORM**

- Installation of Safety Platform as per Standard Drawings

Pay quantity shall be for the number of units installed.

**PW.8. HYDRANTS**

**8.1. New Hydrant Installation**

- Excavation as per Section PW.1
- Granular bedding
- Placing, cutting and joining of pipe riser
- Installation of anchor tee or flanged outlet, gate valve, valve box, hydrant, restraints and thrust blocking as per Std. Dwgs. 1-6-1 or 1-6-2.
- Supply, placing and compacting granular bedding and backfill

Pay quantity shall be for the number of units installed.

**8.2. Remove and Relocate Existing Hydrant**

This item covers all work necessary to remove and re-install the existing hydrant at the location shown on contract drawings as per Region of Peel standards, as well as Standard Drawing 1-6-1 or 1-6-2.

The Vendor will be required to disconnect, remove and relocate the existing hydrant indicated on the contract drawing. The voids resulting from the hydrant removed shall be back-filled and compacted in 150 mm layers to 100% Standard Proctor Density. Hydrant flanges to be set above proposed grades as per Region of Peel Standards, and shall include extensions as required to complete the work.

### **8.3. Hydrant Branch Pipe**

- Installation of 150 mm diameter hydrant branch pipe from the main to the hydrant

Measurement of pipe installed for pay quantity shall be in metres from the centre line of the main to the centre line of the hydrant

### **8.4. Hydrant Extension**

- Excavation as per Section PW.1
- Removal of the hydrant body above the "break away flange," installation of stem extension and body extension piece of length required, and reassembling of hydrant
- Supply, placing and compacting granular backfill

Pay quantity shall be for the number of extensions installed for each length.

### **PW.9. BY-PASS CONNECTIONS**

- Excavation as per Section PW.1
- Supply and place granular bedding
- Supply and installation of tees or outlets and jointing of pipe
- Supply and installation of valve and box or chamber, fittings and pipe as specified
- Construction of thrust blocking, installation of restrainers
- Supplying, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways

Pay quantity shall be based on the lump sum for each connection.

**PW.10. PERMANENT BLOW-OFF**

- Excavation as per Section PW.1
- Installation of blow-off as per Standard Drawings
- Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways

Pay quantity shall be for the number of units installed

**PW.11. WATER SERVICE CONNECTIONS (19mm to 50mm)**

**11.1. Connections by Open Cut**

- Excavation as per Section PW.1
- Installation of main stop, curb stop and construction of service connection as per Standard Drawings
- Coupling of new pipe with the existing service at property limit
- Supply, placing and compacting granular 'B' backfill for entire service connection to one metre behind curb or sidewalk and under all driveways

**11.2. Connection by Boring**

- Excavating of shafts as per Section PW.1
- Installation of water service by boring
- Installing main stop and curb stop as per Standard Drawing
- Coupling of new pipe with the existing service at property limit
- Supply, backfilling and compacting shafts with granular backfill in travelled portion of the roadway

### **11.3. Extend and Transfer Existing Water Service to New Watermain**

- Excavation as per Section PW.1
- Installing and connecting new pipe to main stop and to the existing pipe
- Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways

### **11.4. Cut and Transfer of Water Service**

- Excavation as per Section PW.1
- Cutting and connecting existing pipe to main stop
- Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways

Pay quantity for all water service connections shall be for the number of units installed for each respective size, unless otherwise specified.

### **11.5. Large Water Service Connections (greater than 75mm)**

- Excavation as per Section PW.1
- Installation of the required pipe, anchor tee or flanged tee, the valve off the watermain, streetline valve and necessary bends
- Coupling of the new pipe with the existing service at the property limit
- Supply, place and compact granular "B" backfill
- Any additional pipe length required due to unforeseen field conditions will be paid by the equal diameter, or smallest pay item in PW. 2.

The tendered unit price shall include all excavation, supply, place and compact granular "B" backfill, the supply and installation of all materials to complete the connection, including the required pipe, anchor tee or flanged tee, the valve off the watermain, streetline valve and the necessary bends. The Vendor shall note that it may be necessary to install these connections during off-peak hours.

**11.6. Search for Services**

- The unit price bid shall be the full payment for all labour and equipment costs involved in accurately locating water services, where the Agency was unable to stake out the water services.

Pay quantity shall be based on the number of hours spent looking for each unlocatable service and shall not include the normal locating/uncovering of water services for excavation, removals and installations.

**11.7. Repair of Broken Water Service Improperly Staked-Out**

- The unit price bid shall be the full payment for all materials, labour and equipment costs (including delays) required to repair improperly staked-out 50mm or smaller water services.

Pay quantity shall be based on the number of services repaired.

**PW.12. SWABBING**

- A minimum of two (2) swabs to be launched and passed through each new pipe and hydrant to render all parts of the new main clean (as per W5.2 of Vol 2.2)

Pay quantity shall be lump sum for the entire project.

**PW.13. CONNECTION OF NEW MAIN TO EXISTING MAIN**

- a) Tapping the Existing Watermain
- Excavation as per Section PW.1
  - Locating existing watermain
  - Supply and installation of tapping sleeve and valve. The Contractor shall arrange for Regional forces to perform the tap and the cost of the tap shall be included in the Contractor's tender price (refer to W.4.16)
  - Connection of new main to the new tapping sleeve and valve
  - Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways
  - Any additional pipe length required due to unforeseen field conditions will be paid by the equal diameter, or smallest pay item in PW. 2.
- b) Perpendicular Connection
- Excavation as per Section PW.1
  - Locating existing watermain
  - Cutting of the existing main, installation of tee, pipe to suit and coupling(s) as required
  - Construction of restrainers and thrust blocking
  - Installation of connecting pipe and fittings
  - Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways
  - Any additional pipe length required due to unforeseen field conditions will be paid by the equal diameter, or smallest pay item in PW. 2.

c) End-to-End Connection

- Excavation as per Section PW.1
- Locating and exposure of the existing main end
- Removal and disposal off site of thrust blocking, plug or cap
- Cutting and fitting of pipe
- Installation of connecting pipe, fittings, clamps
- Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways
- Any additional pipe length required due to unforeseen field conditions will be paid by the equal diameter, or smallest pay item in PW. 2.

d) Closure Connection

- Excavation as per Section PW.1
- Locating and exposure of the existing main end
- Removal and disposal of thrust blocking off site
- Removal of plug or cap
- Installation of closure
- Supply, placing and compacting granular backfill to one metre behind curb or sidewalk and under all driveways

Pay quantity for all connection types shall be based on the lump sum for each connection.

**PW.14. REMOVAL OF HYDRANTS**

- Excavation as per Section PW.1. Disconnection and removal of hydrant together with the "boot"
- Fill stub remaining in ground with grout for partial removal above the boot, where authorized by Project Manager.
- Backfilling with native excavated material
- Restoration of site to match or better than existing condition
- Delivery of hydrant to the Region's yards

Project Location within the Boundary of :

Mississauga - 3515 Wolfedale Road, Mississauga  
Brampton - 2 Copper Road, Brampton  
Caledon - 2941 King Street, Victoria

Pay quantity shall be for the actual number of units removed and returned

**PW.15. REMOVAL OF VALVE BOXES**

- Removal and disposal off site of valve boxes over valves of abandoned watermain and removed hydrants and fill bottom portion of valve box with unshrinkable fill
- Supply, placing and compacting granular backfill in travelled portion of the roadway

Pay quantity shall be for the actual number of units removed including supply and place unshrinkable backfill.



**PW.16. ABANDON EXISTING VALVE CHAMBERS**

- Cutting and removal of existing pavement
- Removal of frame and cover
- Filling chamber with 0.4 MPa unshrinkable fill

Pay quantity will be for the actual number of units abandoned.

**PW.17. PLUGGING OF EXISTING WATERMAIN**

- Excavation as per Section PW.1
- Cutting and removal of existing pipe
- Installation of plug or blind flange
- Construction of thrust blocking
- Supply, placing and compacting granular backfill in the travelled portion of the roadway

Pay quantity shall be for the number of units installed.

**PW.18. DRAIN AND PLUG ABANDONED WATERMAIN**

- Cutting and removal of existing pavement
- Draining of existing watermain at all low points
- Installation of plug at all open ends of abandoned watermain
- Supply, placing and compacting granular backfill in the travelled portion of the roadway.

Pay quantity shall be the actual number of low points where the watermain is drained.

**PW.19. BOULDER REMOVAL**

- For the purpose of this contract, a boulder shall be considered as any singular, monolithic, hard object with a volume greater than 0.5m<sup>3</sup>. All objects smaller than 0.5m<sup>3</sup> shall be considered as normal excavation under Volume 2 item PW1 and no extra payment will be considered.

The unit price bid shall be full payment for all material, labour and equipment to cover the cost of excavation and disposal off site as well as any delays caused by boulders. This item is to be used for localized conditions only. General soils conditions are illustrated in the soils report and the contractor's equipment must be of suitable size, power and ability to work effectively in these types of soils.

**PW.20. TEST HOLES**

- The unit price bid shall be payment in full for all costs involved in accurately locating underground utilities, when instructed to do so by the Project Manager, for the purposes of design or re-design of services. This item does not include the normal locating/uncovering of utilities for excavations, removals and installations.

Payment shall be based on the number of approved test holes dug or vactored by the Vendor.