

# S-35 REPLACEMENT OF PRIVATE DRAIN CONNECTIONS

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### 35.01 SCOPE OF WORK

The work shall include the supply of all necessary labour, equipment, and materials to investigate and replace the existing sanitary private drain connections or constructing a new sanitary private drain connection from the exit of any dwelling to the main sewer, or designated place of disposal. The work shall also include all necessary equipment and fittings to complete the work to the satisfaction of the City Engineer.

A private drain connection replacement shall include the following:

The use of the existing tee at the municipal sewer or the installation of a new tap, tee, or similar approved apparatus as described elsewhere in this document. The private drain connection shall consist of a 150mm diameter pipe, having positive grade from the municipal sewer to the cleanout. A 150mm cleanout with terminal cleanout cap and tee fitting on the new connection shall be provided at or near the property line on the street side, where ever

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possible. The cap shall be plastic when located within a boulevard or landscaped area, or cast iron when located within a paved area such as sidewalk, driveway, lead walk, etc. The private drain connection, from the 150mm cleanout at property line, to the dwelling may be either a 150mm diameter pipe or 100mm diameter pipe with positive grade from the cleanout to the interior of the dwelling, extending a maximum of 0.91m into the dwelling. The connection on the interior of the dwelling shall include a 100mm terminal cleanout for access purposes to grade and a finished floor, as the case may be, in accordance with Ontario Building Code or applicable regulations.

When connecting to a combined municipal sewer, a backwater valve shall be included, to be situated on the sanitary connection, within the dwelling interior.

A sump pit and pump may also be included at the owner's discretion as optional work.

## 35.02 REFERENCES

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

- AS-207A
- AS-207B
- AS-207C
- AS-221
- AS-222
- AS-313
- AS-325
- AS-401
- AS-504
- AS-527
- AS-536
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### **35.03 BUILDING PERMIT REGULATIONS**

The contractor shall, at all times, comply with the regulations imposed by the City Engineer. To this end, the contractor shall pay for and obtain any required Permits from The Corporation of the City of Windsor's Building Department who will inspect that portion of the work on private property. The contractor shall acquaint himself with these requirements.

### **35.04 WORK ON STREET OR HIGHWAY**

The contractor shall obtain a Street Opening Permit from The Corporation of the City of Windsor's Engineering Department prior to work commencing. Fees shall include indemnities as determined appropriate by the City Engineer. All work carried out on the public right-of-way shall be subject to the regulations as amended from time to time which may be imposed by the City Engineer relative to excavation, backfill method and materials, compaction, provision for tunnelling under pavement, restoration, etc.

### **35.05 OTHER AGENCIES**

All work shall be subject to all requirements of any municipal, provincial or federal regulations that may from time to time apply.

### **35.06 MATERIALS**

All pipe supplied shall be PVC plastic pipe CSA Standard B182.1-11 - Polyvinylchloride (PVC) and chlorinated polyvinylchloride (CPVC) drain, waste, and vent pipe and pipe fittings, with the exceptions that (i) the Dimensional Ratio (DR) shall be no greater than 28 and the pipe stiffness, F/Y, shall not be less than 100 psi (ASTM D2412-73), and (ii) the impact of the pipe at -18°C (0°F.) shall be 45 ft. lb. minimum when tested as described in B182.1-11.

The pipe shall have a locked-in gasket integral bell joint.

High Density Polyethylene (HDPE) for trenchless applications must meet requirements of Ontario Building Code Part 7.

A Structural Liner is considered as an acceptable alternative for approval by the City Engineer. All Structural Liner installations must be pre approved by the City Engineer and follow City of Windsor Standard Specification S-8.

#### **35.06.01 SPECIAL FITTINGS AND OTHER REQUIREMENTS**

All sewer connections shall be provided with a 150mm x 150mm x 150mm tee, together with a terminal cleanout located on the public right-of-way side at the property line and extended to grade level as described in Section 35.07(k). The contractor shall supply and install all necessary wyes, tees, elbow, pipe sections, reducers and adaptors, and any other fitting that is required to complete the work. Cleanout situated in paved areas shall be provided with a

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cast-iron sewer cap. Any connection to an existing plastic or PVC main or any new tap to a 300mm diameter pipe or smaller shall be by a tee section inserted into the main line unless approved by the City Engineer. The lump sum bid shall compensate for this cost and there will not be any claim for additional costs related to this item.

The connection to the public sewers shall be 150mm diameter and made with a connection approved by the City Engineer for the sewer in question.

**35.06.01(a) ASBESTOS/CEMENT PIPE**

All taps into asbestos/cement pipe shall require the use of a saddle with stainless steel straps or a manufactured tee. This tee shall be cut into the existing line and secured with mechanical couplings conforming to CSA Standard B602 to ensure a sound and watertight joint. If the saddle is used, the opening must be machine cut to exact dimensions. In all cases, a sound and watertight connection must be assured.

**35.06.01(b) PVC PIPE**

All connections to PVC sewers shall be made using a manufactured tee cut into the line and secured with PVC repair sleeve couplings.

**35.06.01(c) VITRIFIED CLAY PIPE**

When vitrified clay pipe is encountered, a section of this pipe must be removed and replaced with either a vitrified clay manufactured fitting or a PVC fitting. Mechanical couplings conforming to CSA Standard B602 shall be used to ensure a sound and watertight joint.

**35.06.01(d) CONCRETE PIPE**

Concrete pipe 375mm diameter and larger may be field tapped in place. Care shall be taken to ensure the connecting tee or A.C. coupling/adaptor does not protrude into the main sewer. A non-shrinking, fast setting grout shall be used and a curing period of 12 hours minimum is required before backfilling.

The use of alternative connection methods such as saddles that require the use of a compression gasket may be used if the contractor demonstrates to the satisfaction of the City Engineer that a watertight joint can be achieved.

When connecting to concrete pipe smaller than 375mm diameter, a section of pipe must be removed and a manufactured fitting of either concrete or PVC shall be installed. Mechanical couplings conforming to CSA Standard B602 shall be used to ensure a sound and watertight joint.

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**35.06.01(e) BRICK SEWERS**

When brick sewers are encountered, a field tap shall generally be allowed. A non-shrinking, fast setting grout must be used and a minimum of 12 hours setting time is required before backfilling. A concrete, vitrified clay or asbestos cement fitting is required. A plastic fitting is not acceptable. The City Engineer reserves the right to consider other methods but in all cases a sound and watertight joint must be achieved and the City Engineer will be the sole judge in determining the acceptability of the alternate method(s).

**35.06.01(f) MECHANICAL COUPLINGS**

Mechanical couplings conforming to CSA Standard B602 are available to join PVC pipe to vitrified pipe, PVC pipe to concrete pipe, vitrified pipe to concrete pipe, and concrete pipe to concrete pipe. Contractors shall take note that in many cases the bells of pipes will have to be removed. This must be done in a manner that leaves a smooth and straight pipe. Where the inside diameters of the connecting pipes are slightly different, care shall be taken to minimize the lip at the connecting joint. A mechanical coupler cannot be used to transition between pipes of two different diameters.

The contractor shall, by an approved method, ensure that all joints between pipes and connections are sound and watertight. When a grout or mortar is used, it must be a fast setting non-shrinking variety. If a field tap requires grout, the joint or tap must be left undisturbed for a minimum of 12 hours. Care must be taken to ensure that the stem of the bell does not protrude into the main line. When pipes of different outside diameters are connected, care must be taken to ensure that the inverts of pipes are relatively flush.

All costs for the tapping of main sewers shall be included in the lump sum bid submitted.

The requirements of the Ontario Building Code Part 7 shall be used for cleanout spacing and size.

**35.06.02 ASBESTOS CEMENT OR ASBESTOS CONTAINING MATERIAL**

Any person(s) performing works on municipal sewers suspected of containing Asbestos Cement (AC) or Asbestos Containing Material (ACM) must follow methods and procedures established under the O.H.S.A. - Ont. Reg. 278/05, and the Environment Protection Act - Reg. 347.

**35.07 CONSTRUCTION PROCEDURE**

Notwithstanding drawings and sketches provided by the City Engineer, the contractor shall be responsible for locating the existing sewer connection to be replaced and the mainline sewer to which it is to be connected. No additional remuneration will be made to the contractor to carry out this investigation.

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Existing taps to the municipal sewers are to be used where ever possible. If the existing tap is not reused, it must be capped at the main sewer with the new tap conforming to City of Windsor Standards.

At the end of any workday, the existing sanitary private drain connection shall be temporarily connected to the new sanitary private drain connection or arrangements made to keep the existing connection in service as approved by the City Engineer.

The following requirements/procedures are to be considered when completing all replacements.

**(a) Open Cut:**

Permitted whenever the sewer is to be constructed under lawns or any other unimproved surface or area.

**(b) Sodding:**

The contractor is required to take up, store, preserve, relay and supply additional sod and/or topsoil and watering unless otherwise defined in the Contract. Unit cost shall be provided with tendered cost in the event the owner is responsible for restoration.

**(c) Pavement Excavation:**

Is an opening over the main municipal sewer or private drain connection in the road surface or other paved surface (i.e. Driveways, lead walks, etc.) to access the municipal sewer or drain connection for the purpose of connecting to an existing tee, constructing a new tee or abandoning an existing tee, or constructing a new private drain connection, cleanout, or any part thereof.

The pavement opening and restoration shall be in accordance with City of Windsor Specification S-29 and Standard Drawing AS 207A, B, C.

All backfill under pavement (roads, sidewalks, and driveways) within the right-of-way shall be placed in accordance with City of Windsor Specifications S-24.

**(d) Remove and Replace Sidewalk:**

Sidewalk shall be constructed as per City of Windsor Specification S-6 and Drawing AS-401 with this note "Note: the width of the sidewalk replaced must match the width of the walk removed at the location. See AS-401."

**(e) Connection to Existing Approved Sanitary Private Drain Connection:**

This shall include all costs for materials necessary to make the connection to a known sanitary private drain connection in the public right-of-way. Including the cleanout and required permits (Building Permit and Engineering Permit).

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**(f) Abandonment of a Connection/Tap:**

For all sewers it shall mean making the main whole to the satisfaction of the City Engineer. Excavation and restoration to the main shall be in accordance with City Standards.

**(g) Opening in Basement:**

An Opening in a basement shall include opening the floor in the basement and making the connection to the internal plumbing pipe, at a maximum of 0.91m within interior building wall as approved by the Building Department. It shall include all necessary fittings to make the connection, acceptable fill material to support the work and the floor and also include the restoration of the concrete floor. This item shall include any permits required by the Building Department.

**(h) Opening in Crawlspace:**

Opening in Crawlspace shall include excavating to the internal plumbing pipe and making the connection to the internal plumbing pipe, at the main plumbing stack as approved by the Building Department. It shall include all necessary fittings to make the connection and shall include backfilling and satisfactory restoration of the crawlspace. This item shall include any permits required by the Building Department.

**(i) Backwater Valve:**

Backwater Valve shall include the supply and installation of a "Mainline Fullport Backwater Valve" or an approved equal, in accordance with the Ontario Building Code Part 7. It shall include opening the floor; making the connection to the internal plumbing pipe, within 0.91m of dwelling interior building wall; all necessary fittings to make the connection; including 100mm riser, acceptable backfill material to support the work and floor and satisfactory restoration of the concrete floor. This item shall include any permits required by the Building Department. Unit cost shall be provided with tendered cost.

**(j) Sump Pump:**

Sump Pump shall include; supply of a CSA approved sump pump; breaking the floor and excavating for a minimum 95 Litres Sump liner; All necessary piping, and fittings to hook the sump pit to the weepers; as well as an exterior discharge pipe and fittings in accordance with the Ontario Building Code Part 7; restoring all damaged concrete floors and walls. This item shall include any permits required by the Building Department. Unit cost shall be provided with tendered cost.

**(k) Supply/Install 150mm Riser and Plastic/Cast Iron Cap at Property Line:**

Shall include all materials, labour, and equipment necessary to install a 150mm cleanout which shall include a 150mm x 150mm tee, 150mm riser section, and a 150mm plastic cap on a complete sanitary private drain connection replacement. A cast iron cap shall be provided where the same is located in a paved area (i.e. driveway, sidewalk, etc.). (Standard Drawing AS-325)

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(l) **Concrete Residential Driveway:**

Openings in driveways required to make the tap or connection to the existing sewer, shall be reinstated in accordance with Standard Drawing AS-222.

(m) **Asphalt Residential Driveway:**

Openings in driveways required to make the tap or connection to the existing sewer, shall be reinstated in accordance with Standard Drawing AS-221.

(n) **Supply/Install 100mm Riser and Plastic/Cast Iron Cap on private property:**

Shall include all materials, labour and equipment necessary to install a 100mm cleanout as per the Ontario Building Code and approved by the Building Department on a new complete sanitary private drain connection replacement. A cast iron cap shall be provided where the same is located in a paved area (i.e. driveway, lead walk, etc.). (Standard Drawing AS-325)

### **35.08 EXCAVATION BACKFILL AND PAVEMENT REINSTATEMENT**

When required to do so by the City Engineer, the contractor shall take up, store, preserve, and relay all sod, topsoil, and shrubbery such that the completed work is in a condition equal to or better than the original. The contractor shall supply and place new sod, topsoil and shrubbery at no additional cost, when, in the opinion of the City Engineer, the contractor has failed to satisfactorily preserve same.

All excavation and protection shall be carried out in strict accordance with Occupational Health and Safety Acts; the regulation for construction projects, Ontario Regulation 213/91 as amended by Ontario Regulation 631/94 and other prescribed legislation and regulations as they may pertain to the work.

All backfill under pavement shall be in accordance with City of Windsor Specification S-24. The Contractor shall provide a receipt for the Unshrinkable fill used on the job site to the City of Windsor Engineering Department Inspector for confirmation of materials used.

All backfill under boulevards shall be in accordance with City of Windsor Specification S-4.

The contractor shall reinstate all pavement removed. The pavement opening and restoration shall be in accordance with City of Windsor Specification S-29 and Standard Drawing AS 207A, B, C. Equivalent material having received approval from the City Engineer may be used.

### **35.09 PROTECTION OF SERVICE AND OTHER WORKS**

The contractor shall familiarize himself with the Occupational Health and Safety Act, current edition. All work carried out under the tender shall comply with the Act at all times.

The contractor, at all times, shall protect and maintain all utility services such as water mains, gas mains, hydro and communication conduit encountered during construction. Any damage to these services shall be repaired at the expense of the contractor.



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The contractor shall tunnel, bore, punch under or take up and replace all driveways, sidewalks or other structures. All replacement work shall be according to the current specifications for these works.. Throughout construction, the contractor shall keep all house services in operation and provide a minimum inconvenience to the residents.

### **35.10 BORING UNDER PAVEMENTS**

Whenever the sewer connection is to be constructed under road pavements or driveways or other paved areas, the contractor shall bore under the pavements by means of a mechanical boring machine. The diameter of the borehole shall not be more than 50mm larger than the outside diameter of the pipe being installed.

The contractor shall open the pavement or driveway over the mainline municipal sewer as required to make the tap or connection to the existing sewer, and restoration shall be in accordance with City of Windsor Specification S-29 and Standard Drawing AS-207A, B and C for road openings or as directed by the City Engineer for driveways. All work to be done to the satisfaction of the City Engineer.

### **35.11 CCTV INSPECTION OF PRIVATE SEWER**

The contractor must have equipment available to CCTV inspect and record to CD or DVD media the inside condition of the private drain connections as well as the underground plumbing of the home by means of a TV monitor.

This equipment must be capable of accessing 100mm, 125mm and 150mm sewers as well as providing a DVD of the inside condition of the private drain connection and the underground plumbing as directed by the City Engineer.

Eeling of the sanitary private drain connection to permit video inspection may be required, and shall be provided by contractor and included in lump sum bid.

CCTV inspection of the completed private drain connection by City Staff will be required as a condition of final inspection and approval by the Chief Building Official, City Engineer, at no additional cost to The Corporation of the City of Windsor.

### **35.12 METHOD OF PAYMENT**

Payment, on the basis of the lump sum bids submitted, shall be considered full compensation to the contractor for all work herein specified. No additional remuneration shall be made to the contractor for soil conditions, for winter conditions, or for size or depth of main sewer except as herein provided. The contractor shall take all of these factors into consideration when tendering on the work. The contractor shall submit to the City Engineer after the completion of the project, a statement showing the value of the work executed. Payment shall be as follows:

- a) For Completed Projects:

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- 90% of the lump sum bid.
- 10% to be held until forty-five (45) days after the project is completed.
- b) For Projects that are not Completed due to Weather Conditions or Time of Year:
  - 80% of the lump sum bid.
  - 20% to be held until forty-five (45) days after the project has been completed.

### **35.13 DEFINITIONS:**

#### **Project:**

The work described in each Purchase Order.

#### **Completed Projects:**

Shall be defined as a sanitary private drain connection in the ground and connected to the dwelling and the municipal main sewer, CCTV inspection record for the replaced PDC has been reviewed and accepted by the City Engineer, having passed the Building Department inspection, backfill to grade and final road patch completed and accepted by the City Engineer. The contractor shall be responsible for lawn restoration, unless the owner signs a form assuming responsibility for lawn rehabilitation.

#### **For Work commenced in the Summer Months:**

Work commenced in the summer months, defined as being from May 1<sup>st</sup> until September 30<sup>th</sup>, shall be completed within a thirty (30) calendar day period. The thirty (30) day period should be from the day the purchase order was issued until the day of the approved final inspection.

#### **For Work commenced in Winter Months:**

Work commenced in the winter months, defined as being from October 1<sup>st</sup> until April 30<sup>th</sup>, shall only be charged one (1) day and then the remainder of the days shall commence being charged on May 1<sup>st</sup> and must have approved final inspection within twenty-nine (29) calendar days from May 1<sup>st</sup>.

#### **NOTE:**

Any replacement (project) having progressed to the billing stage as stated in Section 35.12 prior to the time periods as mentioned above, must be totally complete to the satisfaction of the City Engineer within the time periods as mentioned above or the City Engineer may cause such necessary repairs to be completed and the cost of these repairs will be deducted as follows.

The Corporation may deduct any amount due under this section from any monies that may be due or payable to the contractor on any account whatsoever. The liquidated damages

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payable under this paragraph are in addition to, and without prejudice to any other remedy, action or other alternative that may be available to the Corporation.

### **35.14 TIME LIMIT**

The contractor shall have sufficient equipment and labour available to undertake and complete with reasonable dispatch, the work as noted in these Specifications. Within three (3) working days after having been instructed thereto by the City Engineer, the contractor shall relieve the blockage and maintain the connection in a running condition until the work is finalized.

If The Corporation of the City of Windsor is required to maintain any sanitary private drain connection having been given to the contractor as specified above, the contractor will be assessed any and all costs incurred.

#### **35.14.01 REASONABLE DISPATCH:**

Commencement means the contractor must start the project within fourteen (14) days after having been instructed thereto by the City Engineer unless the Chief Building Official, City Engineer provide an extension, as deemed appropriate.

### **35.15 WARRANTY OF WORK**

The Contractor shall ensure all restoration (including seeding/sodding, settlement, paving) is free from defects from workmanship for a period of one (1) year from final inspection.

The contractor shall ensure the new sanitary private drain connection is free from defects from workmanship (dips, out of round pipe, poor joints) for a period of 30 days from discovery for a period of a maximum five (5) years.