

New Watermain Installation Procedure

(This procedure is for internal staff and engineering consultants only)

- 1 Toronto Water, Water Infrastructure Management, Watermain Asset Planning unit will determine the best source of water for the watermain replacement project and inform the designer of the point of connection(s) at the 30 per cent design phase.
- 2 Once the source of water supply is determined, the designer will show a tapping sleeve and valve (TS&V) at the existing watermain on the contract drawings. This is the point of connection(s) where the contractor will install the TS&V and access the source potable water. There may be more than one connection point for the potable water, depending on the size of the project.
- 3 Contractor to install a reduced pressure backflow preventer after the TS&V according to drawing T-1104.03-4 *RP Connection Detail for Above Ground Installation During Disinfection*. For a 150 or 200 mm diameter watermain, indicate a 50 mm physical separation by-pass and for a 300 mm diameter or larger watermain indicate a 100 mm physical separation by-pass by way of a note on the contract drawings. The note can be a general note or a separate note on the specific drawing. Designer does not need to show location of backflow preventor as contractor will choose the most appropriate location as close as possible to the TS&V.
- 4 On the proposed work side of the backflow preventor, the designer will show a new valve at street line. On wider streets such as those with four lanes, the overall length from the TS&V to the street line valve can be greater than 6.1 m. If a long length of pipe is going to be dewatered when the backflow preventor is removed, the designer can position a valve closer to the backflow preventor and indicate on the contract drawings.
- 5 Designer shall position an anchor tee and valve and indicate on the contract drawings where the new side street watermain connects to the new main line watermain. New valves and watermain shall be restrained, extending from the main line watermain all the way to the projected street line. Valves shall be in the closed position with a temporary mechanical cap and blow off at the open end.

For more information on anchor tees for side street connections, see *Guidelines on the use of anchor tees for new watermain replacement construction projects*.

- 6 Designer shall position an anchor tee and isolation valve on the contract drawings at the main line watermain for water services greater than 100 mm in diameter and greater. Designer shall show each new water service and position a secondary valve as close as possible to the street line within the public road allowance. The location of the secondary valve shall take into account space requirements for connecting to the private water service at property line.

For situations where an entirely new water service connection is installed and a private water service still has not been installed, the secondary valve shall be installed at the property line.

For more information on anchor tees for water services, see *Guidelines on the use of anchor tees for new watermain replacement construction projects*.

- 7 Designer shall position an anchor tee and isolation valve on the contract drawings at the main line watermain for all fire hydrant leads.

For more information on anchor tees for fire hydrant leads, see *Guidelines on the use of anchor tees for new watermain replacement construction projects*.

- 8 Contractor shall pressure test, flush, swab and chlorinate the new watermain, side street branch connections, and water services 100 mm and larger in diameter according to TS 7.30 *Procedure for Disinfecting Watermains*. Pressure testing and chlorination of the mainline watermain, the side branch street connections up to side street valves, large diameter water services up to its secondary valve, and fire hydrant leads up to the fire hydrant isolation valve will be in isolation from the existing water distribution system. Chlorine concentration and contact times for new watermains shall be according to Table 1 in TS 7.30.
- 9 Contractor shall take two water samples at blow-offs/sampling points, taken 16 hours apart. The water samples shall pass the required field chlorine residual and turbidity and laboratory bacteriological testing requirements according to Table 2 in TS 7.30.

10 All Water Samples Pass At All Sampling Points

Contractor removes the physical separation backflow preventor. Then install a filler piece or completion piece—must be less than 6.1m—to connect the segment of watermain between the TS&V and first downstream valve located on the newly constructed watermain. Contractor will then install 25 mm copper sampling pipe. Disinfection of the filler piece shall be according TS 7.30.09.07 *Installation of Final Connections and Appurtenances*. A Toronto Water Certified Operator shall obtain one sample from the filler piece for bacteriological testing with the inspector present on site. Inspector to notify Contract Administrator. If the sample passes, proceed to Step 11.

Not All Water Samples Pass At All Sampling Points

Contractor to re-flush or re-disinfect the new watermain, side street connections, and water services 100 mm and larger in diameter according to TS 7.30.09.03 *Re-disinfection*.

Upon completion of re-disinfection, proceed back to Step 9.

- 11 The Contract Administrator can send a request to the manager of Toronto Water Laboratory to be placed on the e-mail distribution list. Toronto Water lab shall notify the Contract Administrator with an e-mail message of the sample results and advise of the test results. If the results are a pass, the Contract Administrator will then notify Contractor and Toronto Water, District Operations by e-mail message of the same results so the new watermain can be connected to the existing system. Contract Administrator will request Toronto Water, District Operations to begin opening valves after giving 48 hours notice.
- 12 After a minimum of two branch connections to side streets are connected, the Contractor can begin reconnecting all existing water services from the existing live watermain to the newly installed watermain.
- 13 Upon consultation with the Contract Administrator, the Contractor may commence reconnecting existing water services from the existing live watermain to the newly constructed watermain.

- 14 Upon consultation with the Contract Administrator, the Contractor can then begin disconnecting and abandoning the existing water main in accordance with the contract specifications.