

**WATERMAIN COMMISSIONING PLAN**

**Ross Street Reconstruction – Permanent Watermain**

**PM: Rusty Reconstructor**

**XYZ Construction**

**123 Anystreet, Anytown, ON**

**(519) 672-1234**

**Site Contact: Johnny Whitehat**

**Site Contact Number: (226) 432-1234**

1. **PROJECT DESCRIPTION:**

**Project Area: Ross Street (From Sta 0+000 to 0+840)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Section ID** | **Main Size (mm)** | **Material** | **Length (m)** |
| 1 | 300 | PVC | 930  |
| 2 | 200  | PVC | 12  |
| 3 | 50 | PVC | 200 |

**\*Submit drawing of new watermain distribution system, including all sample locations, with this plan.**

1. **SOURCE WATER & BACKFLOW PREVENTION:**

Water will be sourced from the existing hydrant at ABC Street and 12th Avenue intersection. The new watermain will be supplied water through the riser at STA 0+001. The new watermain will be isolated from the existing distribution system by way of a Reduced Pressure Principle (RP) backflow prevention device, provided, installed and certified on-site by the City of St. Thomas.

1. **SWABBING:**

Swabbing will be conducted as follows:

- Four (4) 200 mm diameter swabs inserted at STA 0+370 will be used to swab the new 150 mm watermain passing from East to West, retrieved at swab launcher located at STA 0+840.

- Four (4) 200 mm diameter swabs will be used to wet swab the new 150 mm watermain stubs at STA 0+730. Swabs will be retrieved at the swab launcher.

- Continue as required.

The initial swab for each run of watermain will be used to establish the target swabbing flow rate of **1 m/s**.

Swabbing and flushing will continue until two (2) consecutive swabs exhibit no discolouration and the discharge water is running clear, to the satisfaction of a City of St. Thomas Water Operator.

 **HYDROSTATIC TESTING:**

**NOTE: HYDROSTATIC TESTING SHALL NOT BE COMPLETED AGAINST A VALVE CONNECTED TO THE EXISTING DISTRIBUTION SYSTEM.**

**PLEASE REQUEST ALTERNATIVE HYDROSTATIC TESTING PROTOCOL FROM THE CITY IF WATERMAIN INCLUDES POLYETHYLENE SECTIONS OF PIPING.**

Following the filling of the watermain, a period of 24 hours will be provided to allow for adsorption to take place prior to the initiation of hydrostatic testing.

The hydrostatic test will be conducted under the supervision of a City of St. Thomas Water Operator.

A pressure pump equipped with a pressure gauge will be connected to the riser at STA 0+000.

The pressure pump will then be started and operated until the pressure in the watermain reaches 1035 kPa (150 psi). When the desired test start pressure is obtained, the City of St. Thomas Water Operator will record the test start time and pressure (150 psi).

The pressurized watermain will be left untouched for a period of 1 hour. When the 1 hour test period is complete, the Water Operator will record the test end time and test end pressure on the gauge. The pressure pump will be used to return the watermain to the 150 psi test pressure. The Water Operator will then bleed off and measure the volume of water removed in order to return the pressure to the test end pressure.

The volume bled off will be compared to the allowable leakage, as calculated below. If the measured leakage DOES NOT exceed the allowable leakage, the test result is deemed satisfactory. If the measured leakage exceeds the allowable leakage, all leaks will be located and repaired and the test section will be retested until a satisfactory result is obtained.

**Calculation of Allowable Leakage:**

The allowable leakage is 0.041 litres per millimetre of pipe diameter per kilometre of pipe for the 1-hour test period.

|  |  |  |  |
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**Section 1:** Allowable Leakage1 = 0.041 L/mm diam/km/hour

 = 0.041 \* 300 mm \* 0.93 km

 = 11.44 L

**Section 2:** Allowable Leakage2= 0.041 L/mm diam/km/test period

 = 0.041 \* 200mm \* 0.012km

 = 0.0984 L

**Section 3:** Allowable Leakage3 = 0.041 L/mm diam/km/test period

 = 0.041 \* 50mm \* 0.2 km

 = 0.41 L

**Total Allowable Leakage** = Allowable Leakage1 + Allowable Leakage2 + Allowable Leakage3

 = 11.44L + 0.0984L + 0.41L

 = 11.95 L

1. **DISINFECTION:**

**Type of chlorine:** 12% Sodium Hypochlorite (NSF 60/61 certified)

**Rate of water flow:** 1.0 L/sec

**Rate of chlorine injection:** 0.05 L/min

**Time to chlorinate test section:** 10.8 minutes

In the presence of a City of St. Thomas Water Operator, chlorine will be injected into the watermain system at the source end, at a rate that will result in a free chlorine residual of greater than 50 mg/L throughout the isolated section. A City of St. Thomas Water Operator will verify all sections of the watermain have been charged with the super-chlorinated solution.

Following a minimum 24-hour rest period, a City of St. Thomas Water Operator will check free residuals at the same locations as above and compare the residuals found to the initial residuals, to confirm residuals are within the allowable decrease (Allowable decrease = 40% of initial free chlorine residual, to a maximum of 50 mg/L).

The disinfection process will be repeated, should free chlorine levels decrease more than 40% of the initial readings over the 24-hour test period.

Upon successful disinfection of the new watermain, the system will be flushed of all super-chlorinated water, as outlined in the section below, until such time as free chlorine residuals within the overland system are consistent with the St. Thomas Distribution Water System residuals in the area.

1. **DISPOSAL OF CHLORINATED/SUPER-CHLORINATED WATER:**

**Neutralizing Agent:** Hydrogen Peroxide

**Application Method:** Injection

**Discharge Location:** Storm Sewer Catchbasin on SW corner of Ross and Wellington

When disposing of chlorinated water and/or super-chlorinated water, all precautions will be taken to ensure water has been neutralized prior to reaching the natural environment. During flushing activities to dispose of super-chlorinated water, monitoring will be undertaken continuously using a low-level chlorine test strip, until such time as an adequate dosage of dechlorinating agent has been established and every 20 minutes thereafter, until such time as the discharge has been terminated.

1. **BACTERIOLOGICAL TESTING:**

**NOTE: sampling plan must comply with requirement to test every 350m of watermain, plus one sample from the end of each line and at least one sample from each branch.**

Following flushing of super-chlorinated water and recharging of the new watermain with water normal to the operation of the St. Thomas Water Distribution System, the new watermain will be allowed to rest for a minimum of 16 hours.

Following the 16-hour rest period, a City of St. Thomas Water Operator will collect bacteriological samples from the sample locations indicated on the drawing provided and listed below. The Operator will leave the sample tap running and return after a minimum of 15 minutes to collect a second sample from each sample location.

**Sample Locations**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Location #** | **Street** | **Station** | **Distance (m)** | **Sample Port** |
| 1 | Anystreet | 0+320 | 0 | Backflow Preventer |
| 2 |  |  | 220 | Service Stub |
| 3 |  |  |  | Service Stub |
| 4 |  |  |  |  |

The City of St. Thomas will submit the samples to an accredited laboratory for *E. Coli*, Total Coliform and Heterotrophic Plate Count analysis.

1. **FINAL CONNECTIONS:**

**NOTE: WHERE FINAL CONNECTIONS ARE GREATER THAN ONE PIPE LENGTH, THE CONNECTION SHALL BE MADE IN ACCORDANCE WITH THE 2020 ONTARIO WATERMAIN DISINFECTION PROCEDURE.**

Following receipt of satisfactory bacteriological results and approval from the City of St. Thomas Project Manager, arrangements for final connections will be made.

One (1) Connection with a length of \_\_\_\_\_\_\_\_\_\_m will be made at Sixth Street STA +XXX

One (1) Connection with a length of \_\_\_\_\_\_\_\_\_\_m will be made at John Street STA +XXX

One (1) Connection with a length of \_\_\_\_\_\_\_\_\_\_m will be made at Balaclava Street STA +XXX

Connections will require isolation of the existing watermain by City of St. Thomas Water Operator.

Final connections will be made in dry weather in the presence of a City of St. Thomas representative. Connection pieces will be equal to or less than one pipe length. Trench water will be controlled in order to avoid contamination of the new or existing watermain.

The final pipe length will be swabbed with a minimum 1% sodium hypochlorite solution immediately prior to its installation. All hoses and fittings used will be sprayed/swabbed with a minimum 1% sodium hypochlorite solution immediately prior to its installation.

**Submitted by:**

Name:

Company:

Date:

Signature

**City of St. Thomas Plan Approval:**

Name:

Date:

Signature: