



Kitchener Utilities DWQMS WORK INSTRUCTION

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| Title: Subdivision/Reconstruction and Vacant Lots/Final Asphalt Inspections | Control Number: 69 |
| Revision: 4.0 | Effective Date: January 13, 2015 |

1 Purpose

The purpose of this work instruction (WI) is to document the procedures required to address subdivision and reconstruction inspection as well as vacant lot/cuts in driveways/no asphalt in driveways during a final inspection of the water system in the City of Kitchener Water Distribution System. This WI also details procedures required when completing a final asphalt inspection.

The operating procedure for water system inspection includes an initial inspection (for the works to be placed on maintenance) and a final inspection (for City of Kitchener to take over responsibility of the works).

2 Work Instruction

A. Subdivision/Reconstruction

General

- Sign out a laptop for every inspection so you have access to ArcReader
- All valves, services and hydrant valves should be “Open Left”

Initial Watermain Inspection and Acceptance– Blue Form

Prior to the City placing new subdivisions and reconstruction projects on maintenance, an initial inspection shall be made of the water system components to ensure they are operational. Any problems/defects are to be noted and repairs are to be completed by the installer prior to acceptance. During the inspection of the water components, the gas valves, posts etc. can also be inspected. Generally, the consultant will request an inspection either through Engineering.

1. Obtain several copies of the Blue Forms: Initial Acceptance – Water System Inspection Report. A separate form is to be used for each street to be inspected.

2. Supervisor will review project file for red-line as-built drawings or proposed drawings and provide them to staff, if available. Otherwise, the consultant will provide the drawings on-site.
3. The initial coat of asphalt must be in place prior to initial inspection.
4. Record date of inspection, staff completing the inspection, the consultant signature and information.
5. Record name of subdivision, street name, subdivision stage, consultant and owner (all information available from consultant).
6. Record page number and total number of pages for entire project
7. Inspection of Watermain Centre Valves:

These documents are legal records and are provided to the consultant; take care in recording observations.

 - i. Complete a visual check:
 - Valve box is straight
 - Valve box is not broken or chipped
 - Valve operating nut is in centre of valve box and accessible with key
 - Check the depth of valve. Should be able to operate with a normal key. If not, the valve nut should have an extension on it to enable normal operation with a standard valve key.
 - No road levellers are to be used, including threaded style
 - Confirm no tracing wire on valve boxes
 - ii. Complete an operating check:
 - Close and open valve fully
 - Confirm that all valves are fully open (unless a pressure zone or special circumstance)
 - Listen for leaks before and after operation
 - Check any water services 4” and over, townhouses or apartments in the same way and record (these services are usually found in industrial subdivisions or multi-residential).
 - Check any blow-offs found
8. Inspect all Hydrants:
 - i. Complete a visual check:

- Hydrants are painted City of Kitchener colours: barrel is yellow, bonnet and 2 ½” caps are red, storz nozzle is black (if present). The main size should be printed on the hydrant (we can lend them the template if they need it)
 - #8 tracing wire is connected to the hydrant barrel and looped with clamp. The last hydrant at the end of the street is not looped
 - Break away flange is visible 6” above the final grade. Make sure the proper break away flange is being used.
 - Hydrant is square to the curb and straight
 - Operating nut and nozzle caps have been greased
 - Nozzle caps have gaskets
- ii. Complete an operating check of hydrant:
- Listen for leaks in the closed position
 - Install static gauge to check pressure and also to get air out
 - Listen for leaks when the hydrant is fully open. Also visually check for any water leaks
 - Operate hydrant valve to make sure that it shuts water off.
 - Check to make sure that hydrant drains properly
9. For Reconstruction Only - Inspect Services Boxes: 1” service box should have threaded lids and couplings. **No adjustable set screws**. For reconstruction projects inspect all boxes and curb stops. For new construction, anything larger than 1” should be inspected. No stop and drain type curb stops are to be used.
10. All defects found after inspection has been completed should be recorded on the deficiency sheet (blue sheet).
11. If you are seeing multiple deficiencies you must check the box : “Inspection stopped due to too many deficiencies” and stop the inspection. Tell the Consultant and your Supervisor
12. Supervisor’s signature is required for Initial Acceptance. Record date of acceptance. The form is not to be signed until deficiencies have been corrected.
13. Upon acceptance, Supervisor will inform Engineering.

Follow-up For Deficiencies

1. If you are returning to follow-up on deficiencies – make sure you fill out the inspection dates, staff completing the inspection, consultant information. This is important since we will charge the consultant if we have been to the site more than twice for an initial acceptance
2. Place your initials, date and the words OK next to any that have been fixed. This is important so we can clearly see what is still deficient and what has been corrected.
3. If there are still deficiencies, tell the Supervisor.

Gas Inspection and Acceptance– Yellow Form

The gas system should be checked at initial and final and recorded in the Gas Inspection Report form.

1. Record date of inspection, staff completing the inspection, the consultant signature and information.
2. Make notes of any valves that you cannot find – use ArcReader to check for dimensions
3. Ensure that all valves are operational
4. For the valves, check for dirt and plumb of box, check grades
5. Record number of turns on the yellow Gas Inspection Report Form for services and valves
6. For test posts, check for dirt and plumb of box, check wires, check grade
7. For marker sign posts, check for damage, alignment and plumb
8. Note any deficiencies on the form
9. When checking deficiencies - place your initials, date and the words OK next to any that have been fixed. This is important so we can clearly see what is still deficient and call bill
10. If there are still deficiencies, tell the Supervisor.

Final Watermain Inspection and Acceptance– Green Form

Prior to the City taking responsibility for new subdivisions and reconstruction projects, inspections are made of the water system components to ensure they are operational. Any problems are noted and repairs by the installer are completed prior to acceptance. During the inspection of the water components, the gas valves, posts etc. can also be inspected. Generally the consultant will request an inspection either through Utilities Engineering or by contacting a Supervisor.

The final inspection can be completed before asphalt and with vacant/gravel lots. Although, the watermain is signed off as part of Final Acceptance, there is a holdback to complete repairs on curb stops, etc., when Final Asphalt Inspection occurs (or Developer will repair).

1. Obtain several copies of the Green Forms: Final Acceptance – Water System Inspection Report. A separate form is to be used for each street to be inspected.
2. Supervisor will review project file for as-built drawings and provide them to inspector.
3. Especially for Reconstructions – review the initial acceptance sheets for relevant notes regarding the initial inspection should also be provided including defects noted on the Initial Acceptance sheets (blue sheets).
4. Record date of inspection, staff completing the inspection, the consultant signature and information.
5. Record name of subdivision, street name, subdivision stage, consultant and owner (all information available from consultant).
6. The final grade of asphalt may not be down prior to the inspection. If the final asphalt is not down – Make a Note that Final Asphalt is not Complete. The Developer is not allowed to place final asphalt until 95% of the lots have been built so it may be a number of years before the final is placed. We will make sure that the valves are inspected at the time of final asphalt.
7. Record page number and total number of pages for entire project

8. Inspection of Watermain Centre Valves:

The same procedure is followed as for the Initial Acceptance inspection for centre valves and hydrants plus all residential services to property lines have to be inspected:

i. Complete a visual check:

- Valve box is straight
- Valve box is not broken or chipped
- Valve operating nut is in centre of valve box and accessible with key
- Check the depth of valve. Should be able to operate with a normal key. If not, the valve nut should have an extension on it to enable normal operation with a standard valve key (close clockwise/opens left).
- Check that the service box is straight, not broken or missing any parts, is at final grade, and not located in the sidewalk
- No road levellers, including threaded style
- Confirm no tracing wire on valve boxes

ii. Complete an operating check:

- Close and open valve fully and count turns. Record this on the Water Valve Information Form. The number of turns is to be recorded for ArcReader. The number of turns should be the normal amount required for the main size
- Confirm that all valves are fully open (unless a pressure zone or special circumstance)
- Listen for leaks before and after operation.
- Check any water services 4" and over in the same way (these services are usually found in industrial subdivisions and multi-residential)
- Check any blow-offs found and confirm that they have a means of draining other than stop and drain (if they are permanent blow-offs). If they are temporary blow-offs, we can pump
- Service key fits on with ease
- Listen for any leaks on the service
- Operate service either by opening or closing it with a key
- Make sure service can be operated with a standard height service key

9. Inspect all Hydrants:

i. Complete a visual check:

- Hydrants are painted City of Kitchener colours: barrel is yellow, bonnet and 2 ½” caps are red, storz nozzle is black (if present)The main size should be printed on the hydrant (we can lend them the template if they need it)
 - #8 tracing wire is connected to the hydrant barrel and looped with clamp. The last hydrant at the end of the street is not looped
 - Break away flange is visible 6” above the final grade. Make sure the proper break away flange is being used.
 - Hydrant is square to the curb and is straight
 - Operating nut and nozzle caps have been greased
 - Nozzle caps have gaskets
- ii. Complete an operating check of hydrant:
- Listen for leaks in the closed position
 - Install static gauge to check pressure and also to get air out
 - Listen for leaks when the hydrant is fully open. Also visually check for any water leaks
 - Operate hydrant valve to make sure that it shuts water off. Count turns on the valve and record the number of turns on the Water Valve Information Form
 - Check to make sure that hydrant drains properly
10. Inspect Services Boxes: 1” service box should have threaded lids and couplings. **No adjustable set screws**. Should be to finished grade, 5 sided standard nut or lid, 4” and larger at main and property same criteria as main hydrant valves. Listen for leaks. For large services record the number of turns on the Water Valve Information Form. No stop and drain type curb stops are to be used.
11. All defects found after inspection has been completed should be recorded on the deficiency sheet (green sheet). A separate sheet is to be used for each street.
12. If you are seeing multiple deficiencies and it’s clear that they have not been addressed you must check the box: “Inspection stopped due to too many deficiencies” and stop the inspection. Tell the Consultant and your Supervisor
13. *Note all lots that have not been built*. This is important so that we can have the Developer pay for any curb stops that have been damaged during construction

14. Record staff member who witnessed the inspection.
15. Supervisor's signature is required for Final Acceptance. Record date of acceptance. The form is not to be signed until deficiencies have been corrected.
16. Upon acceptance, Supervisor will inform Engineering.

Note: Acceptance of the inspection does not mean that the subdivision/reconstruction is accepted. Engineering has additional criteria which must be met before placing a subdivision/reconstruction on maintenance or before accepting responsibility of the water system. Watermains on Maintenance can be checked in ArcReader/CityWorks.

Follow-up For Deficiencies

1. If you are returning to follow-up on deficiencies – make sure you fill out the inspection dates, staff completing the inspection, consultant information. This is important since we will charge the consultant if we have been to the site more than twice for a final acceptance
2. Place your initials, date and the words OK next to any that have been fixed. This is important so we can clearly see what is outstanding
3. If there are still deficiencies, tell the supervisor.

Water Valve Information Main Valves, Large Services and Hydrants Form

1. Record date of inspection, staff completing the inspection and the project
2. For every main valve fill out the valve number, the address, the number of turns and any other notes. For hydrants use the hydrant number. For large services, use the address and note the size of the service. Use ArcReader since this information will be most up to date.
3. Make any other notes that you feel is appropriate

Gas Inspection and Acceptance– Yellow Form

The gas system should be checked at initial and final and recorded in the Gas Inspection Report form.

1. Record date of inspection, staff completing the inspection, the consultant signature and information.
2. Make notes of any valves that you cannot find – use ArcReader to check for dimensions
3. Ensure that all valves are operational
4. For the valves, check for dirt and plumb of box, check grades
5. Record number of turns on the yellow Gas Inspection Report Form for services and valves
6. For test posts, check for dirt and plumb of box, check wires, check grade
7. For marker sign posts, check for damage, alignment and plumb
8. Note any deficiencies on the form
9. When checking deficiencies - place your initials, date and the words OK next to any that have been fixed. This is important so we can clearly see what is still deficient and call bill
10. If there are still deficiencies, tell the Supervisor.

B. Vacant Lots and Final Asphalt Inspection

General

Final asphalt cannot be installed in new subdivisions until 95% build-out. There are instances where there are vacant lots and the curb stops get damaged when the driveways are paved. There are also incidents when the valves get damaged when final asphalt is installed.

Although the watermain is signed off as part of Final Acceptance, there is a holdback to complete repairs on service boxes (curb stops), hydrant and water valves (if required) when Final Asphalt occurs. The current process is to hold back a Letter of Credit (L.C) for vacant lots as part of the Final Asphalt as well as for valve repairs.

Vacant Lots, Driveway Cuts or No Asphalt

- Vacant lots, driveway cuts or no asphalt are marked down as part of the Final Inspection (referred to as vacant lots for the remainder of this document)
- When there are vacant lots, the Utilities Water Engineer Files the Final Inspection electronically under s:\general\Vacant Lots under file number and subdivision name
- The Utilities Water Engineer provides the letter of Acceptance to the Engineering Construction Manager, but makes a note that vacant lots are not accepted and to hold an L.C.
- The Engineering Construction Inspector makes note of the vacant lot and holds L.C. for the lots
- The Subdivision Streets Under Warranty layer in OnPoint and ArcReader will NOT have acceptance under WATERC_FINAL_DATE (C stands for curb stops)
- In the event of needed repairs to a water service/water valve or hydrant valve and final asphalt is not complete, review the Subdivision Streets Under Warranty, WATERC_FINAL_DATE layer in ArcReader/OnPoint. If there isn't a date, contact Engineering Construction Inspector to see if address has an L.C. If there is an L.C, Engineering Construction Inspector will contact the Consultant for an opportunity to repair. If they do not repair, L.C will not be released and will be transferred to Utilities to complete repairs.

Final Asphalt Inspection

- At the time of Final Asphalt, the Engineering Construction Manager emails the C&M Supervisor the vacant lots list as well as sets up an inspection (Utilities also has a copy of the reports under s:\general\Vacant Lots)
- C&M complete the inspection and staff fill out the Final Asphalt Inspection Report
- Service boxes for the vacant lots, all water valves, all hydrant valves and all gas valves are inspected
- C&M Supervisor contact Utilities Gas Engineer if there are gas deficiencies
- C&M Supervisor sends Final Asphalt Inspection Report to the Engineering Construction Inspector to contact consultant for repairs, draw from L.Cs or to provide final sign-off on final asphalt.
- Engineering Construction Inspector updates Subdivision Streets Under Warranty layer with sign-offs

3 Associated Documents

Initial Acceptance – Water System Inspection Report
Final Acceptance – Water System Inspection Report
Water Valve Information – Main Valves, Large Services and Hydrants
Construction Folder Sign Off
Gas System Inspection Report
ArcReader/OnPoint

4 History of Changes

| Revision | Date | Description | By |
|----------|-------------------|---|-------------|
| 0 | August 18, 2010 | Initial | Angela Mick |
| 1.0 | December 22, 2010 | Minor changes | Angela Mick |
| 2.0 | November 24, 2011 | Revision to update form requirements | Angela Mick |
| 3.0 | December 12, 2011 | Minor revisions – removal of as-built verification | Angela Mick |
| 4.0 | December 17, 2014 | Added Vacant Lots and Final Asphalt Inspection WI to this one and added holdback info | Parmi Takk |