



# 2026 – Engineering Drafting Standards

Engineering and Corporate Assets

Kawartha Lakes  
Jump In



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## Design revisions after approval (Red Line Revision)

To make any changes to the design drawings after they have been approved, submit two prints of each of the original drawings affected with the proposed changes shown as a strikethrough of the design with a leader and box surrounding the changes in red. A letter outlining the reasons for the required changes must also be submitted. The Engineering Department will inform the Developer/Designer if the proposed changes meet with the approval of the Municipality. One copy of the requested change will be signed and returned, accompanied by a letter authorizing the changes to be made on the original approved detailed design drawings. No changes are to be made to any original approved drawings without following this procedure.

### “Red-Line” DRAWINGS

#### General

Prior to Acceptance for Maintenance by the City, the Engineer shall produce a complete set of “Red-Lined” as constructed drawings in accordance with City’s “Red-Lined” drawing requirements.

The revision block is to be updated as Red-Lined Submission and dated accordingly.

Red-lined As-Builts are not required to be sealed by the Professional Engineer, as per Professional Engineers Ontario.

Upon completion of construction and prior to Acceptance for Maintenance by the City, “Red-Lined” drawings shall be submitted to the Director of Engineering for review. These drawings shall also be submitted in digital format, as described at the end of this Section.

“Red-Lined” storm and sanitary sewer design sheets shall be provided in digital spreadsheet format and also included in the drawing sets.

Information required for the “Red-Lined” engineering drawings include:

- Verification of location and survey of invert elevations of all sewers, manholes, catchbasins and rear yard catchbasins. In the case of manholes on easements, ditch inlet catchbasins and rear yard catchbasins, the rim elevation is also required.

- Distance between sewer manholes, including pipe sizes and calculated sewer grades. Sewer lengths shall be shown to the nearest 0.1 m and sewer grades calculated to two decimal places.

Where there is a major difference between the design and “Red-Lined” data, the Engineer is required, in writing, to explain the discrepancy and verify that the “Red-Lined” discrepancy does not adversely affect the intent of the services.

## Storm Sewers

All sewer invert elevations, if different from the proposed, shall be indicated on the “Red-Lined” drawings. If the difference is greater than 150 mm, affected portions of sewer (in profile) shall be redrawn. Hydraulic calculations shall be provided, reflecting these changes, for review and acceptance.

Any manhole locations that differ by more than 2.0 m from the proposed location shall be redrawn in both plan and profile.

The following shall be indicated on the “Red-Lined” drawings, if different from the proposed:

- Type of manhole
- Pipe size
- Grade of sewer
- Type of pipe material
- Class of pipe
- Type of bedding

## Stormwater Management Facilities

All SWM facility invert elevations and storage volumes, if different from the proposed, shall be indicated on the “Red-Lined” drawings.

The design versus ‘as-constructed’ storage volumes and discharge rates shall be shown on “Red-Lined” drawings.

“Red-Lined” SWM drawings shall confirm that the proposed SWM facility design (storage and discharge) is not compromised, otherwise the SWM facility shall be retrofitted accordingly prior to Acceptance for Maintenance.

The SWM facility ‘Red-Lined’ drawings shall be used as the baseline to indicate accumulated sediment levels, later at the time of Assumption.

## Sanitary Sewers

All sewer invert elevations, if different from the proposed, shall be indicated on the "As-Constructed" drawings. If the difference is greater than 150 mm, affected portions of sewer (in profile) shall be redrawn.

Any manhole location that differs by more than 2.0 m from the proposed location shall be redrawn both in plan and profile.

The following shall be indicated on the "Red-Lined" drawings, if different from the proposed:

- Type of manhole
- Pipe size
- Grade of pipe
- Tee chainage from downstream manhole
- Type of pipe material
- Class of pipe
- Type of pipe bedding
- Original ground at centre profile to remain on all plans

## Watermains

All watermain elevations, if different from the proposed shall be indicated on the "Red-Lined" drawings. If the difference is greater than 150 mm, the affected portions of watermain (in profile) shall be redrawn.

All alignment changes greater than 150 mm to have offsets revised in plan. If the alignment changes exceed 0.5 m, watermain shall be redrawn in plan as well as indicate revised offsets.

All watermain valves shall be tied to permanent features such as buildings, manholes, catchbasins, etc.

"Red-Lined" information to include ties and elevations to all stubs.

The following shall be indicated on the "Red-Lined" drawings, if different from the proposed:

- Pipe size
- Type and class of pipe
- Type of bedding
- All fitting changes (bends, reducers, blocking, restrained joints, etc.)
- Type of valves and hydrants

- Original ground profile over watermain (if applicable) to remain
- Remove all references to proposed works or planned construction activities
- Add actual street name, etc.

## Record Submissions (As-Constructed)

The Developer/Designer shall submit through the Engineering Department "As-Constructed" Record Drawings signed and sealed by the engineer of record and other related information giving detailed measurements of the actual municipal services constructed. The submission of this data for record purposes is a condition of the issuance of Substantial Completion Certificates/Acceptance by the Municipality. Record Drawings may be required in two stages.

Record Drawings and documents are to be prepared based on information that was observed by the Engineer (practitioner) or by someone under the practitioner's supervision and after a practitioner has reviewed the record documents and is satisfied that they are accurate, the practitioner must seal the documents.

### General Requirements:

Drawings shall include all information as specified elsewhere for the construction drawings, but shall be corrected upon completion of construction to note all works removed during construction. As an alternative, this information shall be retained in the digital file on layer (X-REMV) but not displayed on the final print. Note abandoned services and reflect as-constructed conditions for permanent records.

All dimensions shown shall reflect the as-constructed conditions of the construction and all references to "Proposed" shall be removed. Record Drawings shall be to scale in accordance with the as-constructed dimensions shown. The Revision Table shall be completed indicating the drawings are Record Drawings.

All as-constructed features shall be surveyed and survey points imported into the digital drawing on the appropriate layers (X-SURV-SPOT). The "As-Constructed" Record Drawings shall reflect the true elevation and location of all constructed features, in both the plan and profile views. Record Drawings indicating as-constructed elevations will be to 2 decimals.

Geospatial data files are required, as a geodatabase, as part of the final "As-Constructed" Record Drawings. All Survey data and drawings submitted to the City must be georeferenced using the NAD 83 / UTM Zone 17N projection and include complete attribute tables for all new infrastructure according to the metadata requirements in Appendix B. These files must be clean, accurate, and free of mapping errors. Final

Assumption will be granted only after these digital files have been reviewed and approved.

The "As- Constructed" Record Drawings shall be submitted as follows:

- Municipal Standard AutoCAD format
- A PDF version.
- A CSV file of any survey information
- Geospatial data files

Please submit digital submissions submission via cloud sharing and submission platform.

Line work for all constructed works shown on the drawings shall retain the thicker line density for ease of determining the extent of works covered by the drawings.

Proposed construction for future phases of the project shall not be shown on the Record Drawings.

All "As- Constructed" Record Drawings shall also include the following as-constructed information:

- The location and elevation of all existing utilities and services encountered in the construction operation
- The location and invert elevation at property line of all individual service connections, and the tee chainage, at the main for all constructed and existing works,
- A note on each drawing describing the type of trench material (sand, gravel, clay, etc.) encountered during construction and the location and profile of all rock.

All service connections shall be shown with dimensions to property lines. Private services will also be shown on the drawings with labels indicated "private".

See Appendix A for Assumption Submission Compliance Checklist.

## Completed Stage

Within thirty (30) days of satisfactory completion of surface improvements and as a condition of the issuance of Construction Completion Certificate for surface improvements the Developer/Designer shall submit to the Engineering Department the following information:

- Certification by the Engineer that all work has been completed in accordance with the plans and specifications, the City's Infrastructure Guidelines and that all work and deficiencies have been completed.

- One set of digital copies (PDF & DWG) of Record Drawings sealed by a professional engineer registered in the Province of Ontario and complete with a "Certificate of Compliance". At this stage, the drawing shall be stamped "Record Drawings".
- All previously unsubmitted certificates concerning materials inspection and testing, mix designs, deflection test, concrete strength tests, compaction tests, infiltration, exfiltration, light, video-inspection tests, as required by this document and by the Municipality.
- Completed tender document as tendered by the successful contractor and a copy of the Form 6 Certificate of Substantial Performance of The Contract, Certificate of Publication and Final Progress Payment Certificate.
- Record Lot Grading Plan (Subdivision Only). Once the final lot grading certification is received by the Engineering Department, the Developer is to prepare an overall Record Lot Grading and Drainage Plan identifying as-constructed elevations. This is the developer's responsibility prior to assumption of the subdivision.

Upon acceptance of this data, the Developer/Designer may request a construction completion inspection and within thirty (30) days of such request, the Municipality will carry out an inspection for issuance of the Substantial Completion Certificate/Acceptance. Should seasonal conditions not permit the inspection, execution of the Construction Completion Certificate, by the Municipality, will be delayed until appropriate conditions exist and/or conditional acceptance may be granted based on the Engineer's Certification.

### **Additional Information**

"As- Constructed" Record Drawings will be of the same format as the original construction drawings with all changes noted and the following information added:

- Design data is erased on original and replaced with record data.
- All hydrants, valves, curb stops, manholes and catch basins are to be dimensioned in two directions or labelled with a Northing and Easting coordinate.

## Appendix A

### Assumption Submission Compliance Checklist

Document Type	Additional Details
"As- Constructed" Record Drawings	An updated set of as built record grading plans and plan and profile drawings reflecting the final elevations for rim/grate/surface work elevations following the placement of surface asphalt. The revisions following the placement of surface asphalt should be noted in the revisions table and contain a current signed and dated Professional Engineer seal.
Storm and Sanitary Sewer Design Sheets	The approved storm and sanitary design sheets shall be updated to reflect any changes in slope and length following construction.
Current Video Inspection of Sanitary and Storm Sewers	To confirm systems are flushed cleaned and free of deficiencies.
Stormwater Management Engineering Confirmation Certificate	<p>A certificate is required stating that all stormwater management facilities as required in the stormwater management report and as shown on the engineering drawings and as per the approved design are constructed, are landscaped, are operational, and are functioning.</p> <p>Certificate to be accompanied by Quality Assurance Program Inspection Report and/or records of inspection and maintenance by a qualified third party confirming for all Manufactured Treatment Devices confirming no service is required at this time.</p>
Municipal Servicing Engineering Confirmation Certificate	A certificate is required stating that all water and sanitary servicing has been constructed in conformance with the approved engineering design and further that all water and sanitary servicing are operational and are functional.

<p>Roads Engineering Confirmation Certificate</p>	<p>A certificate is required stating that all roads are constructed in conformance with the approved engineering design and geotechnical report and further the Engineer will provide the anticipated maintenance schedule for the roads to be assumed.</p>
<p>Lot Grading Engineering Confirmation Certificate</p>	<p>A Confirmation Certificate, in conjunction with a final grade plan verifying all lot and block elevations for the subdivision, certifying that all lots and blocks within the subdivision have been graded in accordance with the overall grading plan and that there are no drainage problems for which the Owner is responsible.</p>
<p>Ontario Land Surveyor Confirmation Certificate</p>	<p>A certificate signed by an Ontario Land Surveyor is required stating that they confirmed the areas and frontage of all lots and blocks in the subdivision and has located or replaced all standard iron bars as shown on the registered plan, and has located or properly re-established all block corners, the beginnings and ends of all curves including all corner roundings and all points of change in direction of streets.</p>
<p>Landscape Certification</p>	<p>This certification is required confirming the health and placement of all street trees, plantings within the stormwater management facility and any other plantings as per the approved landscape plans.</p>
<p>Updated Stormwater Management Operations, Monitoring and Maintenance Manual</p>	<p>This updated SWM OMM Manual should include record of all clean outs and inspections and confirming compliance with Ministry of the Environment, Conservation and Parks Consolidated Linear Infrastructure Environmental Compliance Approval. Additionally, this document shall include an updated bathymetric survey/as built drawings of the stormwater management facility.</p>
<p>Property Identification Numbers (PIN)</p>	<p>This list of Property Identification Numbers shall include all segments of road and parcels of land to be assumed by the City.</p>

<p>An Asset Quantity List</p>	<p>The asset quantity list shall be broken down into each individual street, the following list provides an overview of items to be included;</p> <ul style="list-style-type: none"> <li>• lengths and diameters of all underground infrastructure,</li> <li>• Size and quantity of all structures and associated fixtures (OGS, Hydrant, etc.) in relation to the underground infrastructure,</li> <li>• total length of road surface, sidewalk and curbs,</li> <li>• Street lights, line painting and signage.</li> </ul>
<p>Statutory Declaration</p>	<p>A statutory declaration confirming all payments have been made, as per the City’s template.</p>

## **Appendix B**

### **Metadata Requirements**

**Under Review.**