

SUBDIVISION AND OFF-SITE SERVICING **CERTIFICATION REQUIREMENTS**

Rev 5 – May 25, 2017

I. CONSTRUCTION PREREQUISITES

1.0 Pre-construction Survey

A pre-construction survey of all existing infrastructure within the right of way (ROW) affected by the work must be submitted to the City prior to construction activity within the ROW. The survey must include photos and clearly identify and locate all pre-existing conditions.

The developer should also confirm that all existing topographic and as-built information presented on the approved design drawings accurately reflects the existing field condition.

2.0 Construction Schedule

A construction schedule must be provided to the City prior to construction within the existing ROW or future ROW. The construction schedule must identify the estimated start dates and duration of work for the following key construction activities:

- sewer and/or watermain installation,
- connection to existing sewer or watermain (Development Engineering to be contacted 24hrs prior to connecting to the existing sewer or watermain),
- sub-grade proof rolling,
- granular A and B placement,
- curb layout,
- base asphalt placement.

The City must be notified of any changes to the above start dates.

II. INITIAL ACCEPTANCE OF THE WORKS

1.0 Certification Packages Issued for Initial Acceptance

The following support documentation will constitute the minimum requirements for initial acceptance:

1.1. Watermain Certification

1.1.1. Certification

Provide a certification letter signed and sealed by a Professional Engineer to verify general conformance with the approved project drawings and specifications.

1.1.2. Bedding Gradation Analysis

A bedding gradation analysis must be provided from a certified lab to verify the bedding conforms to the minimum gradation requirements defined in Table 2A of GSSS 1010.

1.1.3. Bedding Compaction

Bedding compaction results are not required to form part of the certification package.

1.1.4. CGS – Watermain Test Report / Procedures

A City of Greater Sudbury Watermain Test Report / Procedures form must be completed in full and submitted to both the Manager of Construction Services and the Chief Field Inspector prior to connection to the existing main.

1.1.5. Water Quality Test Results

The certification package must include results of the water quality tests performed in conjunction with the CGS – Watermain Test Report/Procedures. These tests must indicate that the minimum requirements of the Ministry of the Environment – Ontario Drinking Water Objectives have been met. These results are to be forwarded to the Manager of Construction Services and the Chief Field Inspector.

1.1.6. Tracer Wire Field Inspection Report

Submit the City's "Tracer Wire Field Inspection Report" which shall be completed by a third party.

1.2. Sanitary/Storm Sewer and Subdrain Certification

1.2.1. Certification

Provide a certification letter signed and sealed by a Professional Engineer to verify general conformance with the approved project drawings and specifications.

1.2.2. Bedding Gradation Analysis

A bedding gradation analysis must be provided from a certified lab to verify the bedding conforms to the minimum gradation requirements defined in Table 2A of GSSS 1010.

1.2.3. CCTV Camera Inspection

Results of the CCTV camera inspection must indicate that the sanitary sewer, sanitary laterals, storm sewer and subdrain was placed on the proper alignment without damage, sags or debris.

Close circuit television (CCTV) camera inspections requirements (of sewer mains and lateral) are as follows:

- All digital data are to be coded following the WRc Manual of Sewer Condition Classification, WRc 4th edition, American Society of Civil Engineers or a comparable manual.
- All videos are to be coded utilizing WRc codes, and provided in .wmv format along with the database.mdb (or other approved .mxd) files.
- All photos are to be provided in .jpg and reports in .pdf.

All digital image recordings shall be of quality that all minor defects (hairline cracks, etc.) be clearly visible, and in the main sewers, the colour of the pipe inspected be true to the actual conditions.

Video files shall commence with a minimum 10 second data information screen including: data and time of inspection, location description, contractor and operator name.

Technicians assigned to data gathering shall have a minimum of three (3) years related experience in sewer inspection, using Closed Circuit Television Equipment and Data Collection and shall be capable of report all conditions using WRc defect codes.

The Engineer shall confirm they have reviewed the CCTV reports and will provide their comments. Comments will verify the pipes are satisfactory and/or identify areas of damage, sags, debris etc. that should be discussed with City representatives prior to City acceptance.

1.2.4. Pressure Leakage Tests

Infiltration or exfiltration testing shall be completed and meet the requirements of OPSS 410. Where exfiltration testing is required, sanitary sewer test results shall be submitted. Where infiltration testing is required, storm and sanitary test results shall be submitted.

1.3. Roads / Curbs Certification

1.3.1. Certification

Provide a certification letter signed and sealed by a Professional Engineer to verify general conformance with the approved project drawings and specifications.

1.3.2. Backfill Material

A letter must be provided from the engineer stating that the backfill material conforms to City requirements and the site specific geotechnical report. This letter must also state that sufficient compaction was obtained on this material.

1.3.3. Base Material – Granular “B” (Greater than 9m2)

a. Gradation Analysis

A gradation analysis must be provided from a certified lab to verify the Granular “B” conforms to the minimum gradation requirements defined in Table 2A of GSSS 1010.

b. Compaction Tests

Provide a certification letter signed and sealed by a Professional Engineer to verify that compaction conforms to OPSS 501 and GSSS 501.

The letter must also confirm that the Granular B, Type II has been compacted using single drum, vibratory, smooth steel drum rollers, with a minimum static drum weight of 8 tonnes (8000 kilograms) and minimum operating dynamic force of 150 kilonewtons. One hundred percent roller pass coverage with a minimum number of four passes shall be provided. Each roller pass shall overlap the coverage of the preceding pass by a minimum of 0.5 m.

Note that the material specified on the City approved construction drawings must be used. If an alternate type of Granular ‘B’ material is to be contemplated, this must be done as part of the construction drawing review process.

1.3.4. Base Material – Granular “A” (Greater than 9m2)

a. Gradation Analysis

A gradation analysis must be provided from a certified lab to verify the Granular “A” conforms to the minimum gradation requirements defined in Table 2A of GSSS 1010.

b. Compaction Tests

Results of the compaction testing must indicate that the Granular “A” material has been compacted according to the requirements set out in GSSS 501 and Method A of OPSS 501.

Compaction testing must be performed at 15 metre intervals along the roadway in a 3-point cross-section and all test results must be supplied to the City.

1.3.5. Asphalt Works (Greater than 9m2)

a. Materials Analysis

The analysis of the asphalt material in accordance with GSSS 310 and OPSS 310 must be provided from a certified lab to show that this material conforms to the minimum requirements defined in OPSS 1150 and the job mix formula approved by the City and Developers Engineer at the Pre-construction meeting.

If a field adjustment of the Job mix formula is required, after placement, this must be provided to the Developers Engineer 24hrs after QA test results have been completed. The Developers Engineer is responsible for approving the Job Mix Formula changes. Field adjustments to the JMF shall be limited as per GSSD 310 and OPSS 1150. Any borderline results in the field adjusted Job Mix Formula will be considered rejectable.

b. Compaction Tests

Results of the compaction testing must indicate that the asphalt material has been compacted according to the requirements set out in GSSS 310 and OPSS 310.

Compaction testing must be performed at 15 meter intervals along the roadway in a 3-point cross-section for each lift of material and all test results must be supplied to the City.

1.3.6. Concrete works (Greater than 3 cu.m)

a. Concrete Mix Design

Provide a copy of the concrete mix design and the applicable performance requirements as required to verify compliance with OPSS.MUNI 1350.

b. Slump, Air and Compressive Strength of Concrete

- i. For concrete curb and gutter systems, concrete testing must indicate that the concrete used meets the requirements set out in OPSS 353 and GSSS 353.
- ii. For sidewalk installations, concrete testing must indicate that the concrete used meets the requirements set out in OPSS 351 and GSSS 351.
- iii. For any other concrete works, materials, construction, and testing must comply with the relevant GSSS, OPSS, GSSD, OPSD, and any additional requirements set forth on the City approved construction drawings.

The submitted compressive strength test results from a certified lab must meet the requirements set out within the relevant GSSS and OPSS (for example, if 28 day test results are the standard, the submitted results must meet this requirement).

1.3.7. Surface Features

All surface features that form part of the City approved construction drawings must be constructed prior to initial acceptance. This includes all fencing, noise berms, and drainage ditching (excluding rear yard swales), etc.

1.4. Stormwater Management Facilities

The certification package for stormwater management facilities (where applicable) must be in the form of a letter from the Developer's Engineer stating that these facilities have

been constructed in compliance with the City approved construction drawings and the City approved Stormwater Management Report. This letter must be accompanied by all relevant materials testing data.

1.5. Additional Requirements

In addition to the above noted requirements, the following will form part of the initial acceptance package:

1.5.1. Inspection Photographs

Digital photographs of the installation of each major appurtenance installed (maintenance holes, catchbasins, valves, hydrants) must be provided. These photographs must be clearly labeled and provide sufficient as-constructed information (number of grade adjustment rings, height of hydrant above grade, etc.).

1.5.2. As-built Drawings

A red-line drawing showing as-constructed data must be provided to the City as part of the initial acceptance package. As-built drawings to City drafting standards (see links below) must be submitted to the City within 3 months of the initial acceptance date for the works.

As-built drawing requirements are as follows:

- Where City as-built files in CAD or TIFF are available these must be updated with the current as-constructed information to the City's as-built standards (see links below), including but not limited to all new or modified pipe sizes, lengths, material, inverts, structures, municipal and private fire hydrants, curbs, driveway entrances, sidewalks, property lines, easements, building footprints, etc.
- Where City as-built files in CAD or TIFF are not available, CAD versions of the approved construction drawings must be provided showing as-constructed information for the newly constructed work to the City's as-built drawing standards (see links below).
- Where as-built drawings are provided as part of a Subdivision or Consent or where new property lines or easements are created as part of the proposed work, the Property Fabric must be labeled as per CGS standards including but not limited to Pin Blocks & PINs, property plans including M-Plans, S-Plans, 53R-Plans, easements, including easement number and dimensions and type of easement.
- All drafting for as-constructed information must conform to CGS standards. See Drafting Standards Manual / Drafting procedures (links below) for naming

conventions, text styles & fonts, hatching, scales, blocks, colour & pen codes, linetypes and layering conventions.

Links to City Standards for As-constructed Drawings:

- (<https://www.greatersudbury.ca/business/engineering-standards/example-drawings/>)
- (<https://www.greatersudbury.ca/business/engineering-standards/drafting-procedures/>)
- (<https://www.greatersudbury.ca/business/engineering-standards/surveying-for-contractors/>)

1.5.3. Certification Letter for rock faces

A certification letter for all new rock faces shall be provided and must be sealed by a Professional Engineer, with a minimum of 5 years experience related to blasting. The letter must also certify that all pedestrian and vehicle guards/fencing required for the new rock face have been installed.

1.5.4. CCTV camera inspection of existing sewer mains and services

Where rock blasting has occurred for the installation of sewer mains or services, or where the main has been crossed below, a CCTV inspection of the existing adjacent mains and services must be completed as per Item 1.3.2 above. It is advisable that these mains and services be CCTV camera inspected as part of the pre-construction survey.

2.0 Construction Review for Initial Acceptance

Refer to the Site Plan Control Guide Section 2.4.7, “Off-site Servicing Initial Acceptance Certification, Compliance Review, and Deposit Reduction” for further details.

The City will provide one field review at no charge during initial acceptance. A fee will be assessed, in accordance with City Council’s Policy, for any subsequent field reviews required to determine if the deficiencies have been rectified.

III. FINAL ACCEPTANCE OF THE WORKS

1.0 Certification Packages Issued For Final Acceptance

1.1.1. Certification

- a. Once the maintenance period has expired, the Consultant’s Engineer must attend the site and perform a final inspection of the works. This includes, but is not limited to; CCTV camera inspections completed in accordance with the Initial Acceptance requirements for sanitary mains, sanitary laterals, storm sewers, and subdrains, adjustment of appurtenances as required (valves, hydrants, curb stops), review of grading, sodding, and other surface features (swales, boulevards, fencing, walkways, easements, etc.), and a review of all concrete works.

- b. A sealed letter must be provided from the Consultant's Engineer stating that they have reviewed the site and verify the works are in general conformance with the City approved construction drawings and standards and that there are no deficiencies.

2.0 Construction Review for Final Acceptance

Refer to the Site Plan Control Guide Section 2.4.8, "Off-site Servicing Final Acceptance Certification, Compliance Review, and Deposit Reduction" for further details.

The City will provide one field review at no charge during initial acceptance. A fee will be assessed, in accordance with City Council's Policy, for any subsequent field reviews required to determine if the deficiencies have been rectified.

Rev 1 - 2013.03.08

- certification letter added for clarification
- tracer wire report added
- sanitary laterals added for clarification
- consulting engineer to review cctv added for clarification
- submission of concrete mix design added

Rev 2 – 2014.02.28

- clarification of cctv requirements at final acceptance

Rev 3 – 2015.01.30

- construction prerequisites added
- construction approval and inspection policies for initial and final acceptance of the works added

Rev 3b – 2015.11.19

- Revise timelines and definition in Section II, item 2.0.

Rev 4 – 2016.05.31

- Clarify as-built drawing requirements
- Revise Granular B compaction requirements
- Incorporate into the Site Plan Control/Off-Site Servicing Guide

Rev 5 – 2017.05.25

- Update as-built requirements
- Update CCTV requirements
- Update asphalt material analysis