Appendix E6
Manuals, Standards, and Specifications
Appendix E6 – Manuals, Standards, and Specifications

Appendix E6 includes design manuals, standards, and specifications which are to be followed during design and construction.

Included in this Appendix:

- E6-1: Design Standards and Specifications
- E6-2: BFPP4 Site Specific Special Provisions
- E6-3: Field Services Manual
- E6-4: Capital Works Procedures Manual
Appendix E6-1
Design Standards and Specifications
BASEMENT FLOODING PROTECTION PROGRAM PHASE 4

Overview

The purpose of this section is to provide a single place to find references to all the necessary survey, design and drawing standards. It is an important function of Program Assurance that all team members are fully aware of and are in compliance of the standards and specifications applicable to various aspects of investigations, surveys, design and drawings developed for the BFPP4 program.

Roles and Responsibilities

The Program Technical Lead (PgTL) will maintain the design standards and specifications for the Program.

All design work must adhere to the City standards and specifications referenced in this section. If for any reason preliminary or detailed design is not in compliance with these standards, the designer shall identify this and state the reasons for the deviation from the standards.

Where no standard is available for the design work, the designer shall notify the City Project Manager (PM) and PgTL prior to undertaking the work. In this instant the designer can propose a standard which must be approved by the PgTL.

Design Level of Service

The basis of the basement flooding design criteria is the City Council decision of September 2008 noted below:

“Identify emerging basement flooding prone areas and undertake Class Environmental Assessment Studies, as may be necessary, incorporating the level of protection, consistent with that applied for the current 31 Basement Flooding Study Areas, to help mitigate the impacts of basement flooding, in support of the City's Climate Change Adaptation Strategy, representing:

a. A storm event equivalent to the May 12, 2000 storm (i.e. equivalent to a storm event with a return frequency of between one in 25 to one in 50 years) for the sanitary sewer design; and

b. The 100 year storm event for the storm drainage system, where feasible and where a proper major (overland flow) drainage system does not exist.”

The design criteria developed on the basis of the above Council decisions is as follows:
Sanitary Sewer System Criteria: The maximum HGL of sanitary sewers shall be maintained below basement flood elevation (i.e. 1.8 m below centre line of road ground elevation) during a storm event equivalent to the May 12, 2000 storm, as gauged at the City’s Oriole Yard location.

Storm Surface Flow Criteria: Overland flow shall be maintained within the road allowance and the flow depth shall not exceed the depth recommended in the Wet Weather Flow Management Guidelines, November 2006. The maximum permissible depth for the 100 year storm (peak intensity of 242.8 mm/hr and a 6 hour duration Chicago distribution) for various types of road cross sections will be as follows:

- Local roads = 150 mm;
- Collector and industrial roads = 100 mm;
- Arterial roads = the crown of the road.

(Note: All of the above are measured from the crown of the road. This criterion is not the same for all types of roads. For example, an 8 m wide pavement designed to the City’s cross section standards, would yield a maximum gutter depth of 265mm rather than 300 mm before ponding would extend beyond the right of way width.)

Storm Sewer (and combined sewer) System Criteria: The maximum HGL shall be maintained below the basement elevation (i.e. 1.8 m below centre line of road elevation) during the 100 year design storm, as defined by the modelling guidelines and City sewer design standards.

Shallow sewer systems do not require infrastructure upgrades where the existing sewer HGL is below the obvert of the existing sewer system. Where the HGL is above the obvert elevation, recommendations must be included to deepen the sewers to achieve the 1.8 m HGL clearance requirement.

Combined Sewer Systems: Design of all combined sewer systems must meet MOECC F-5-5 criteria.

2-year level of service: In addition to the BFPP criteria described above, the City has a minimum level of service criterion for storm sewers which requires that existing storm sewers are able to convey a 2 year storm. Where storm sewers are not able to meet this criterion they are considered for replacement as "improvements" outside the normal BFPP requirements.

For a complete list of all Design Standards and Specifications to be used in BFPP4, please see table below.
# Basement Flooding Protection Program Phase 4

## Design Standards and Specifications

<table>
<thead>
<tr>
<th>Standard</th>
<th>Link</th>
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<tbody>
<tr>
<td>Basement Flooding Modelling Guidelines (1)</td>
<td>(To be placed on ProjectWise. Currently only a soft copy is available)</td>
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## Construction Standards

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<td>Sewer and Water-main Standards (8,9)</td>
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<td>Sewer and Water-main Design Criteria (10)</td>
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<td>CADD Graphic Specifications (11)</td>
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<td>Landscape Design Guidelines (13)</td>
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<td>Pavement Design Guidelines (14,15)</td>
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### BASEMENT FLOODING PROTECTION PROGRAM PHASE 4

#### DESIGN STANDARDS AND SPECIFICATIONS

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<tr>
<th>Category</th>
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<td>Road Engineering Design Guidelines (16,17)</td>
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<td>Water Servicing and Metering Manual (18)</td>
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<td>Development Infrastructure Policy and Standards</td>
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<tr>
<td>Ontario Provincial Standards for Roads &amp; Public Works (18)</td>
<td><a href="http://www.ops.on.ca">http://www.ops.on.ca</a></td>
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<td>OPS</td>
<td><a href="http://www.ops.on.ca">www.ops.on.ca</a></td>
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<td>Toronto Green Standard (TGS) (19,20,21,22)</td>
<td><a href="http://www1.toronto.ca/wps/portal/contentonly?vgn-toid=885552cc66061410VgnVCM10000071d60f89RCRD">http://www1.toronto.ca/wps/portal/contentonly?vgn-toid=885552cc66061410VgnVCM10000071d60f89RCRD</a></td>
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<td>PMMD By-Laws</td>
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### DESIGN STANDARDS AND SPECIFICATIONS

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<td>1. CADD Specifications For Linear and Facilities (11)</td>
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<td>3. CI ASCE 38-02 Standard guideline for the collection and depiction of existing subsurface utility data (31)</td>
<td><a href="http://www.dot.ga.gov/PartnerSmart/utilities/Documents/ASCE%2038-02.pdf">http://www.dot.ga.gov/PartnerSmart/utilities/Documents/ASCE%2038-02.pdf</a></td>
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<td>5. TSSA B149.6-11 Digester Gas Code (33)</td>
<td><a href="https://www.tssa.org/corplibrary/ArticleFile.asp?Instance=136&amp;ID=22EE74513D611E2A5B055495F0FF5F7">https://www.tssa.org/corplibrary/ArticleFile.asp?Instance=136&amp;ID=22EE74513D611E2A5B055495F0FF5F7</a></td>
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<td>6. Environmental Protection Act (34)</td>
<td><a href="http://www.ontario.ca/laws/statute/90e19">http://www.ontario.ca/laws/statute/90e19</a></td>
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### Process Details

| NA |

### Deliverables

| NA |

### Contacts

For support or questions regarding CH2M HILL’s Basement Flooding Phase 4 program Design Standards and Specifications please contact:
Paramjit S. Dhillon – Program Technical Lead
[Email]
[Phone]
## BASEMENT FLOODING PROTECTION PROGRAM PHASE 4

<table>
<thead>
<tr>
<th>Level 0:</th>
<th>PROGRAM MANAGEMENT SERVICES</th>
<th>1.2 Program Assurance</th>
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<td>Level 2:</td>
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<td>Level 3:</td>
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**DESIGN STANDARDS AND SPECIFICATIONS**

**MS/Word Version**

**PDF Print Version**

Always refer to the online version for the latest updates.

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<th>Rev. No.</th>
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<th>Owner Approval</th>
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<tbody>
<tr>
<td>0</td>
<td>May 26, 2016</td>
<td>Paramjit Dhillon</td>
<td>Rayna Volden</td>
</tr>
</tbody>
</table>
Appendix E6-2
BFPP4 Site Specific Special Provisions
NOTE TO BFPP Phase 4 DESIGNERS:

The following document included site specific special provisions that are to be included within the ECS Tender Template Revision 5.15d. Designers are to review and ensure compliance of their design to the special provisions below. Where DDCA consultants require deviations from the below stated specifications, they must request a change via RFI to the PgMC for permission prior to implementing that change. Designers are to note that this is a template and that revisions for each specific contract will be necessary, including adding special provisions to cover contract specific items that are not already included within this template.

Below are the BFPP standard Site specific special provisions. Copy and paste in the relevant sections required for your contract. Items that may not exist in every contract have been identified below in the notes to the designer. If no note exists with a SP, it is expected that that SP will be included in every tender. Once all items have been copied into your specific contract, renumber the SPs as applicable.

Where specifiers should modify specifications depending on their conditions, those items have been listed in { brackets }. All specifiers should review all provided specifications and ensure compliance with their Contract, Pricing Form, and Contract Drawings.

Note “NTD” = Notice to Designer. All NTD Notes are to assist the designers in completing their contract specifications and should be reviewed and acted on as applicable. Once reviewed and acted on the NTD should be deleted. Specifications submitted for review at the 95% stage should not have any NTD text.

In order to maintain consistancy with all BFPP contract, the basis of these specifications require modifications to the Special Provisions within the Tender Template 5.15d. Where modifications are required as part of the SP but no comment is provided here, that decisions is left to the discretion of the specifier.

THE FOLLOWING CHANGES ARE TO AMMEND SOME SPECIAL PROVISIONS AND TO PROVIDE GUIDANCE TO DESIGNERS ON SELECTING CONSISTANT PREFERENCES THAT ARE ALLOWED UNDER THE EXISTING STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

1. GN101SP - Make modifications per the notes to designer based on project standards. Sign side 1200 by 1200 should be selected.

2. GN129SP - Make modifications selecting the below listed banners and assigning them a quantity that matches the level of work required. Quantity selections should match the level of work anticipated and number of crews that will be onsite. The goal will be to have a handfull of banners per crew that is on site.

   The list of approved banners for BFPP4 is FM-1, FM-8, FM-10, FM-12, FM-14

3. GN102SP - Make modifications as required. Ensure at minimum that the noise bylaw permit limits are listed. Include any site specific traffic items regarding schools, places of worship, or businesses that apply to your Contract here.
4. GN122SP – Make modifications as required.

5. WM201SP - For Note 7, choose the defaults placed in that item. For Note 10, delete the entire dewatering section as is covered under other parts of the specification.

6. WM203SP – For note 3, include any specific water service connections that apply to your Contract.

7. RD403SP – Delete the “Measurement and Payment” and “Basis of Payment” sections and replace them with the following:

   “Measurement and Payment

   All costs associated with following the requirements for asbestos containing asphalt, including but not limited to the saw cutting, milling, removal and disposal of the asphalt, shall be included in all appropriate unit cost items requiring such work.

   No separate payment shall be made for complying with these requirements nor will any delay claims or additional costs relating to asbestos asphalt be considered.”

8. Include into GN102SP – Construction and Traffic Constraints

   {NTD: List here if any particular streets are to be restricted from truck traffic based off of discussions with the workzone coordinator}

   Truck routing shall be planned as to minimize the disturbances to residences, businesses, and institutions. The Contractor shall submit a proposed truck routing plan a minimum of two week prior to the start of the Work for review and approval.

   {NTD: Review and confirm the Contract Drawings and include in here any Contract specific requirements or constraints that may be required}

   The Contractor is responsible for the provision of the Control of Traffic during construction as outlined in Specification TS 1.00.

   The Contractor shall provide flag persons, and provide and maintain signs and pedestrian control barricades to temporarily divert and/or protect the general public when work is being carried out on, over, or adjacent to any roadway or public facility.

   All signs, the placement of signs, flashers and channelling methods for the guidance and protection of pedestrian and vehicular traffic shall be in accordance with Ontario Traffic Manual Book 7, the latest edition of the “Manual of Uniform Traffic Control Devices”, the “Traffic Control Manual for Roadway Work Operation” and “Pedestrians in the Workplace insert” as approved by the Ministry of Labour and the Ministry of Transportation. All signs shall be high intensity. All sign bases are to be sandbagged.

   The minimum standard required for retro-reflective sheeting on construction signs, markers and barriers are those described in Part ‘A’ of the "Manual of Uniform Traffic Control Devices”. These standards shall be adhered to in all signage provided under this Contract.
The Contractor shall submit a detailed Construction Staging and Traffic Control Plan for all local residential and collector roads within the limits of construction to the City for review and approval within 7 days of the award of the contract. Where provided, the Contractor shall submit a detailed Construction Staging and Traffic Control Plan in conformance with the Traffic Management Plans included in the Contract Drawings, for the City for review and approval within 7 days of the award of the contract.

Construction shall not commence without an approved Staging and Traffic Control Plan. Delays in the approval of the Construction Staging and Traffic Control Plan shall not be justification for a time extension for the contract. The Construction Staging and Traffic Control Plan shall include but not be limited to identification of lane closures sequence, duration and length for each section of work area.

Actual traffic requirements will be determined during construction by the Traffic Operations Section of the Transportation Services Division. The effectiveness of the plan will be reviewed during construction and may require adjustments as deemed necessary. The Contractor should be prepared to modify their operations if needed at no extra cost to the City.

The Contractor shall be responsible for the installation and maintenance of signage, silt fences, and barricades around and adjacent to the work to alert and protect the general public from construction hazards and to advise of changed conditions.

The Contractor shall also conform to the following requirements:

1. The Contractor shall have a copy of the location-specific traffic control plan for the protection of workers and the public on site at all times as per the Ministry of Labour regulations;
2. “Construction Ahead” signs with tab signs, “Road Closed” and “Local Traffic Only,” appended shall be placed at all points of ingress and egress of the working area;
3. The Contractor shall backfill or steel plate all excavations at the end of the day and make the roads accessible to traffic. Two-way traffic shall be maintained at all times with one full lane open in each direction, unless the Section has been approved for roadway closure in which case local property Owner access shall be maintained;
4. On non-arterial roads, the Contractor may restrict traffic to one lane if a minimum of two (2) qualified flag persons are provided to ensure safe vehicular travel through the sites or as deemed necessary by the Contract Administrator;
5. Access to all properties, residential and commercial, must be maintained at all times. Any work across driveways shall be done in a manner that will ensure continuous and unimpeded flow of vehicular traffic;
6. Materials and equipment must be confined to one side of street only and stored so as not to interfere with visibility and/or corner movements;
7. All sidewalk cuts shall be back-filled or plywood covered with sufficient strength for pedestrian traffic during non-working hours;
8. Any questions on the traffic control details or additional requirements should be directed to the Transportation Services Department;

9. All open cuts, when not under construction, are to be covered with countersunk steel plating with non-skid surface. Appropriate signs shall be posted advising of the presence of the plates. The plates must be secured to the pavement and be of sufficient thickness and strength to support the traffic. The plates are to be placed on a layer of burlap to avoid any excessive noise. The plates shall overlap the sides of the trench by 0.3m. The plates shall be recessed into a 300mm x 40mm deep step joint and filled with a compacted layer of 40mm SP12.5 asphalt.

10. For a traffic sign removal or relocation, the Contractor must notify City of Toronto Transportation Services at least two (2) working days in advance of the required removal. Under no circumstance is the Contractor to remove or relocate any traffic signs;

11. Additional traffic control or signage may be required as directed by City of Toronto Transportation Services;

12. All flexible drums (barrels to TC-54) shall be equipped with blinkers/flashers on top.

13. Sidewalks must not be totally obstructed at any time;

14. Satisfactory facilities for pedestrians crossing at corners must be provided;

15. Maintain access to all streets at all times;

16. The Contractor shall notify the Transportation Division (416) 395-7454 at least two weeks before commencement of construction.

17. Where applicable, all street crossings to be done one lane at a time, cut and covered method;

18. Street Occupation Permits must be obtained to store materials and/or equipment on City streets;

19. Provide qualified traffic control person(s) to guide pedestrian traffic, when required;

20. The Contractor shall provide a mechanical sweeper during all closures to clean the road surface prior to the application of pavement markings and to remove dirt and debris from lanes that shall be open to traffic following various closures;

21. The Contractor shall provide written notification to homeowners at least 48 hours in advance of blocking and/or closing their driveways or elimination of on-street parking for any construction purposes;

22. The use of water filled barriers in lieu of concrete barriers shall not be permitted;

23. Pedestrian traffic is to be controlled by the use of interlocking metal barriers unless otherwise directed by the Owner. Pedestrians shall be fully restricted from all work areas and vehicular traffic, except at designated crossings;
24. The Contractor is required to retain a paid duty officer if more than one lane of traffic is closed at the same time.

25. The Contractor shall not close two consecutive intersections concurrently as this may result in blocking access to properties in between.

The Contractor shall provide all labour, materials and equipment required to safely provide traffic control as per City of Toronto Standard TS 1.00. Payment for the maintenance of traffic shall be made through the appropriate unit price item including, but not limited to, the production of a Traffic Control Plan, Traffic Protection plan, utilization of Paid Duty Police Officers, the supply, placing, maintenance and removal of all signs, barricades, and other traffic control devices that are not covered in other pay items of the pricing form.

**THIS HAS BEEN INCLUDED TO SUPPLEMENT TS1.00 BASED ON PREVIOUS BFPP CONTRACT EXPERIENCE. THESE ADDITIONAL REQUIREMENTS ARE REQUIRED TO MINIMIZE PUBLIC DISRUPTION AND ALSO CONTROL THE TRAFFIC ON STREETS WHERE CONTRACTORS ARE INSTALLING, AT TIMES, ALL THREE MAJOR UTILITIES AND COMPLETING MAJOR ROAD WORKS. THERE ARE ALSO ADDITIONAL REQUIREMENTS FOR THE SUBMISSION AND APPROVAL OF THEIR PLANS PRIOR TO THE START OF THE WORK TO ENSURE PROPER SUPERVISION OF THE WORK.**

**BFPP Site Specific Special Provisions:**

1. **Identification of Local MOECC Office – SPXX**

   Site Specific Special Provision

   Ministry of the Environment and Climate Change (MOECC) office location is 5775 Yonge Street, North York, Ontario M2N 4J1, Tel: (416) 326-6700.

2. **Contractor’s Representative On-Site – SPXX**

   Site Specific Special Provision

   **The Contractor shall have a representative on-site at all times** when work is being undertaken by their own work force and/or by their Sub-contractor. This representative shall have the authority to direct the work of any Sub-contractor, to accept and implement changes to the construction as directed by the Contract Administrator and the authority to sign daily work records and extra work records on behalf of the Contractor.
The Contractor shall submit to the Contract Administrator, in accordance with the approved submittal schedule, and in orderly sequence, as to not delay the work, submittals including, but not limited to, shop drawings, samples, plans, and schedules. **The Contractor shall not proceed with the work affected by the submittal until the submittal has been reviewed or approved by the Contract Administrator.**

The Contractor shall review the submittals prior to submission to the Contract Administrator to ensure that all necessary requirements of that submittal are met and that no errors or omissions have been made. The Contractor shall check and initial all submittals before submission to the Contract Administrator. The review by the Contract Administrator does not relieve the Contractor of this responsibility. Should there be deviations in the submittal, the Contractor shall note this on the submittal.

Unless noted otherwise in a specific Special Specification or Special Provision section, the Contractor shall only submit electronic copies of submittals for review. Following the review, a digital copy of the response will be returned to the Contractor. Paper copies of specific submittals may be required and the Contract Administrator will advise when and where that is applicable. The Contractor shall allow for 10 working days for the Contract Administrator’s review of each submission.

This review does not release the Contractor of responsibility for the proper installation and performance of any material or equipment nor from the liability to replace should some of it prove defective or deficient. Submittals marked “Exceptions Noted Re-submit” must be amended and re-submitted within 5 Working Days for review prior to proceeding or ordering to proceed. No order will be given for such work and such work will not proceed unless drawings have been returned marked either “No Exceptions Taken” or “Exceptions Noted”. Submittals marked as “Exceptions Noted” shall only proceed with the changes as noted. Should the review period be extended for any reason, no delay claim will be entertained.

All submittals shall have all units in metric. Where metric units are not produced, the Contractor shall write-in the converted metric values. Each submittal shall have a cover page providing the following information: Contractor name, Contractor’s contact title, date submitted, specifications or drawing referenced, location where equipment is to be installed, name of subcontractor or supplier. Upon approval, the Contractor shall not deviate from the approved submittal without written authorization from the Contract Administrator.

The Contractor shall plan Work accordingly to ensure that the review does not hinder the Schedule. Failure to submit required submittals shall result in the Contract Administrator stopping the work until the required submittals have been reviewed. The Contractor may not claim for any delay or cost that is the result of this stoppage of Work. The Cost for complying with these requirements shall be included in all appropriate Items. **No separate payment shall be made for complying with these requirements or as a result of any delay that results by not complying with these requirements.**
4. **Submittal Schedule – SPXX**

Submittals shall be submitted to the Contract Administrator as per the following schedule in accordance with the Submittal Requirements. The Contractor shall note that the schedule below may not include all required submittals and shall review the specifications to ensure that all required submittals are completed.

The Contractor shall confirm with the Contract Administrator prior to the start of the Work, what submittals are required. The Contractor shall submit at the pre-construction meeting the following items:

- A schedule listing out all submittals to be submitted and when they will be submitted.
- The list of Contractor’s equipment with all necessary details and schedule rates in accordance to OPSS 127 (make, model type, specification references, capacity, horse power, etc.);
- The list of current labour rates for each category of workmanship (labourer, asst. pipe layer, pipe layer, driver, operator, etc.);

As per the Specific Conditions of Contract, the percentage of payroll burden for the current year is 40%. Alternatively, the Contractor can submit their actual Payroll burden (please see the Information for Tenderers for more details).

The above noted items shall be submitted and approved in order for the first progress payment to be processed.

The following submittals shall also be submitted for the listed items prior to the start of the Work:

*(NTD: Review this list in full and confirm all required submittals are listed)*

- Construction Staging Plan
- Traffic Control Plan
- Traffic Protection Plan
- Preliminary Construction Schedule
- Baseline Construction Schedule
- 24 Hour Emergency Contact List
- Work Plan
- Concrete, Asphalt and Granular Material
- Contractor’s Health and Safety Plan\Procedures
- Material Safety Data Sheets
- Stakeout Sheets of Existing Utilities
- Site Verification Survey
- Ministry of Labour Project Notice
- Maintenance of Flows Plan
- Dewatering Plan
- Excavation Support Plan
- List of Proposed Disposal Facilities
- Disposal Facility Waivers
- Grade Sheets
- List of Deficient Catch basins and Maintenance Holes
- Tunnelling Plan and Qualifications
- Proof of Site Office Insurance
- Site Trailer Keys
- Shoring and Excavation Plan

The following submittal packages shall be prepared for the listed items and their associated materials and appurtenances for approval:

**{NTD: Review this list in full and confirm all required submittals are listed}**

- High Capacity Catch Basin Inlets
- Maintenance Holes
- Catch Basins
- Sewer Materials and Appurtenances
- Watermain Materials and Appurtenances
- Concrete Curb and Gutter Concrete Mix
- Asphalt Mix
- Trees/Plants
- Seeding and Sodding
- Subdrain

The following submittals shall be provided for the listed items upon their completion for review:

**{NTD: Review this list in full and confirm all required submittals are listed}**

- Biweekly Schedule Updates
- Pre-Construction CCTV Inspection Report
- Post-Construction CCTV Inspection Report
- Pre-Construction Condition Survey Reports
- Post-Construction Condition Survey Reports
- Pre-Construction Road/Sidewalk Survey
- Post-Construction Road/Sidewalk Survey
- Vibration Monitoring Test Reports
- Pre-Construction Site Photos and Comments
- Post-Construction Site Photos
- Paid Duty Police Officer logs
- As-built grades and elevations for MHs, watermains, and all services
- Sewer Leakage/Deflection Testing Report
- Maintenance Hole Leakage Testing Report
5. **Co-ordination and Progress Meetings – SPXX**

The Contractor shall attend regular meetings with the City of Toronto, Utility Companies such as Toronto Hydro, Toronto Transit Commission, and others as may be required by the Contract Administrator to coordinate services affected by the Contract and to monitor on-going administration and progress of the contract. The Contractor shall bring a copy of the Contract specifications and prepare updated red-line drawings and biweekly look-ahead schedules for discussion during each biweekly meeting.

6. **Project Schedule – SPXX**

The Contractor shall, within twenty-one (21) calendar days of the Order to Commence, submit for the approval of the Contract Administrator, a detailed baseline construction schedule that must comply with the following: Field Services Manual (FSM) and Capital Works Procedures requirements.

1. The Schedule must adhere to the Contract time of substantial performance and completion dates;
2. The Schedule must show the logic and timing of major activities, proposed start dates, from the order to commence, and estimated duration for activities;
3. The Contractor must identify the critical path, the float, early start and late start in their schedule;
   a. Float is defined as the amount of time an activity can be delayed or expanded before it impacts the specified completion date(s).
   b. Float shall not be for the exclusive use of either the Contractor or the City\Contract Administrator.
   c. In the event that the Contractor’s baseline or progress schedule(s) indicates completion prior to the stipulated overall completion (or other milestone) date(s), such float shall not be for the exclusive use of either the Contractor or City\Contract Administrator.
   d. Negative float is not permitted in the baseline schedule.
4. The schedule shall be completed in Microsoft Project. The Schedule shall be presented in graphic (Gantt Chart) form, displaying activities or other Project elements down the left side of the chart, with dates across the top, and activity durations as horizontal bars located in time.

The Baseline Schedule shall include an appropriate level of detail as determined by the Contract Administrator. Failure to develop or update the Baseline Schedule or provide data to the Contract Administrator at the appropriate level of detail, as required by the Contract Administrator, shall result in the rejection of the schedule. The number of activities shall be
sufficient to plan and control the work, and is subject to the Contract Administrator’s acceptance. The Contract Administrator reserves the right to limit or increase the number of activities in the schedule.

The Baseline Schedule shall show the sequence and interdependencies of construction and commissioning activities, as well as project-related activities reasonably required to complete the Work, and shall address the following at a minimum:

1. The Notice of Award;
2. The Order to Commence;
3. The Contractor’s commencement date;
4. Obtaining any applicable permits, design drawings, specifications and shop drawings submittals for early product procurement, and long lead time items;
5. Mobilization and other preliminary activities;
6. Site Access;
7. Any Preliminary Site Work as applicable;
8. Specified Work sequences, constraints, and Milestones, including Substantial and Total Performance dates as well as any interim Contract milestones;
9. Type of Work to be performed by the Sub-Contractor(s) involved;
10. Major components of the Work and other relevant details, including at a minimum:
   a. Activities related to each and all of the bid items, and all divisions of the work.
   b. Time for review of working drawings and mix design submissions.
   c. Submittals such as shop drawings having critical or near-critical schedule importance.
   d. City and other activities that could impact progress.
   e. Utilities.
   f. Site Work.
   g. Excavation of shafts and tunnels.
   h. Pipe installation.
   i. Major structural, equipment, and architectural work.
   j. Construction of Maintenance Holes.
   k. Installation of Equipment.
   l. Stage Construction along route by chainage/station.
   m. Instrumentation and Control work.
   n. Testing, flushing and cleaning.
   o. Restoration.
   p. Project closeout and cleanup.
   q. Mobilization and Demobilization.
   r. Warranty Period

In addition to any Contract-specified milestones, an appropriate number of milestones and Level-of-Effort activities, as accepted or required by the Contract Administrator, shall be included to facilitate tracking of progress.

The activities defined in the Baseline Schedule shall represent the planned durations in anticipation of normal manpower and equipment utilization in durations of whole Working Days. Except for non-construction activities, such as procurement, delivery or submittals, no activity durations shall exceed 20 Working Days unless approved by the Contract Administrator.

Activity durations shall be determined based upon resource planning under contractually-defined On-Site Work conditions. In order to substantiate activity durations, the Contractor shall
provide daily production and productivity assumptions such as, but not limited to: total units of work; labour and equipment hours per unit; crew sizes; limiting factors and equipment type.

In calculating activity durations, the effect of normal inclement weather on the various elements of the work shall be considered. For this Contract the Contractor shall build in a minimum of 10 inclement weather dates per year. This rate is to be prorated for duration of the works where the Contract does not extend the entire year. The Contractor shall schedule the Work to minimize the effect of adverse weather, and to allow for protection of the Site from such effects.

The Baseline Schedule is to be a fully resource-loaded schedule, with dollars or as required by the City or Contract Administrator.

The Contractor will comply with the Contract Administrator’s instructions with respect to the method of resource loading for uploading into P6 scheduling software. Unless otherwise approved or instructed by the Contract Administrator, the required method will be to match the structure as defined with the Baseline Schedule.

The Contractor will be required to submit a monthly progress schedule to the Contract Administrator, matching actual work completed. The City will not process that or subsequent Payment Certificates until the progress schedule has been submitted, reviewed, and approved. Each Progress Schedule shall record and report data and report actual completion and/or start dates for each completed or in-progress activity, activity per cent complete for in-progress activities and forecast completion dates for all activities that are not yet complete. Logic connecting completed activities should reflect the actual sequence of the work as performed. Activity logic for completed activities will be adjusted as necessary to reflect actual as-built logic.

The Progress Schedule shall show the projected completion date of the Work based on the progress information inserted into it. The Contractor shall use the retained logic option when executing schedule calculation. The Baseline Schedule (or an approved revision thereto) shall be shown as a target schedule to indicate whether the current progress schedule remains on target, has slipped or is ahead of schedule. The progress schedule shall include a chart showing projected vs actual and earned quantities input at an activity level to enable Earned Value variance reporting.

If it appears that the progress schedule submitted by the Contractor no longer represents the actual sequencing and progress of the Work, the Contract Administrator may instruct the Contractor to revise the Progress Schedule and or Baseline Schedule.

Upon the completion, the Contractor shall submit a full as-built schedule with the application for Substantial Performance.

The Contractor shall be required to provide the Contract Administrator with a biweekly look-ahead schedule that updates/revises schedules at intervals of two weeks for the duration of the Contract. Updated/revised schedules shall include, in addition to requirements listed above, the following:

a. The schedule shall show the starting and completion dates of each section of the work;
b. The schedule must include all activities of the City, the Contract Administrator, or any other Contractor that are necessary for the Contractor to maintain orderly progress of the work in accordance with the Contract;

c. The schedule shall indicate all known impacts on the construction and what actions are being taken by the Contractor in order to ensure that the work will be brought back on schedule;

In the preparation of the schedule, the Contractor shall focus on the necessity of completing work in the specified time with the least impact on the community.

The express or implied acceptance by the City or Contract Administrator of the Baseline and any Progress Schedules shall not constitute an approval or acceptance of the Contractor’s construction means, methods, or sequencing or its ability to complete the Work in a timely manner, and shall not place any obligation or responsibility on the City toward the Contractor, nor shall it, in any way, limit or restrict the Contractor’s obligations and responsibilities under the Contract.

**Basis of Payment**

All costs associated with this Work are considered to be incidental to all related items of Work. No separate payment shall be made. A separate provisional item in the Contract has been placed for the Contractor’s additional costs with creating and maintaining the schedule as specified in Primavera P6 in lieu of Microsoft Office. The provisional item shall include all additional labour and equipment required.

7. **Site Office for The Engineer - SPXX**

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In addition to TS 1.10, the Contractor must supply and erect a site office at a location approved by the Contract Administrator. The area must be maintained in a neat and tidy manner, and restored to the original condition at the end of the Contract, to the satisfaction of the Contract Administrator.

If the designated location impacts on the construction methods to be used, then the Contractor must notify the Contract Administrator immediately so that an alternate location can be selected. Should the site office require relocation once construction has started, all costs of the relocation shall be borne by the Contractor.

The site office must provide a minimum interior floor area of 30.0 m².

The Contractor shall provide separate high-speed DSL internet service or portable internet hotspot device in the site office.

**FURNISHINGS**

In addition to the requirements of TS 1.10, the site office shall be furnished with the following:

- One (1) 750mm x 1350mm office desk;
• Two (2) wheeled office chairs;
• Two (2) 900mm by 2400 mm foldable tables,
• One (1) drawing table;
• Ten (10) foldable chairs;
• Two (2) garbage receptacles.

EQUIPMENT

The field office shall be constructed and equipped as per current Occupational Health and Safety requirements, in addition to the requirements as listed in TS 1.10 with the following:

• A microwave;
• A mini-fridge;
• A supply of garbage bags;
• A supply of paper towels;
• A hard copy of all City of Toronto and Ontario Standard Specifications and Drawings and applicable ASTM and CSA standards.
• Item i) of TS 1.10.06 shall be replaced with: a printer, copier, scanner, equipped with adequate supply of consumables such as 8½ inch x 11 inch and 8½ inch x 17 inch paper, ink cartridges and toner cartridges;
• Construction Site Health and Safety Procedures;
• Copies of all Permits and Approvals;
• Road Disruption Activity Reporting System (RoDARS); 
• Traffic Management Plan,
• Copies of the Insurance and Bonds

8. Portable Washroom Facilities – SPXX

The Contractor shall also provide separate temporary washroom facilities to the public during service interruption lasting more than two hours to the same requirements for such facilities as specified under TS 1.10.

The facilities shall be kept in a clean condition, emptied regularly, and stocked with toilet paper, soap, and water daily.

Payment for all costs associated with providing public washroom including maintenance and cleaning shall be included in the associated unit price item provided in the Pricing Form. No separate measurement or payment will be made for any additional expense to the Contractor as a result of complying with the requirements and carrying out the work described above.
9. **Materials from Designated Sources – SPXX**

The following materials shall be provided by the Contractor only from manufacturers and suppliers on the current Ministry of Transportation, Ontario “Manual of Designated Sources for Materials”. Other materials may be approved by the Contract Administrator.

- epoxy resin
- grout, non shrink
- admixtures for concrete
- expansion joints
- reinforcing steel
- waterproofing
- all electrical cable and ducts
- pole anchorages

10. **Work in Hazardous Areas – SPXX**

Before commencing the day's work, and while working in sewers areas which may contain an explosive, toxic, high Hydrogen Sulphide concentration, or oxygen-deficient atmosphere, the Contractor is to test for explosive or toxic gases or oxygen deficiency. If a hazardous condition is found, the Contractor is to make the work area safe before commencing or continuing work. Monitoring for explosive or toxic gases or oxygen deficiency shall be performed continuously throughout work in hazardous locations. The Contractor shall follow the City's Confined space policy and entry and permit procedures.

Use non-sparking tools in areas where an explosive atmosphere may exist.

Provide, mount, and maintain signs warning all of the hazards and of the proper procedures required for working in the hazardous areas.

Provide safety equipment such as ropes, safety belts, combustible/hazardous gas and oxygen depletion meter for the use of the resident inspection staff. Provide casual labour to resident inspection staff when entry is required to manholes or other areas which may be hazardous. Resident services staff is not allowed to enter such areas alone.

The Contractor, at no additional cost to the City, shall be responsible for meeting all requirements of this section.
11. **Noise and Vibration Protocol – SPXX**

Noise and vibration shall be minimized in the work area as follows:

1. The Contractor shall abide by all applicable noise control bylaws and regulations. All costs associated with working within and outside of normal working hours, including obtaining noise by-law exemption permit, shall be included in the appropriate unit cost item; no separate payment will be made.
2. The Contractor shall endeavour to schedule all excessively noisy and vibratory construction operations to times when least disruptive to the particular location.
3. No trucks or equipment shall start or arrive onsite prior to the start of the working hours.
4. All engines and pneumatic devices shall be fitted with effective muffling devices, and be kept in good order.
5. Idling of equipment for period of time exceeding three minutes is prohibited; equipment shall be shut down.
6. The Contractor shall limit any queues of trucks to a maximum of three (3) trucks.
7. Audible warning devices and horns shall be limited to matters of safety, and should not be used as a means of communication.
8. Tailgate slamming of dump trucks shall be prohibited on this project. The Contractor shall inform all drivers of this requirement.
9. Generators shall comply with the City of Toronto’s noise by-law at all times. Work conducted outside of normal working hours must be authorized with written consent by the Contract Administrator. All costs associated with working outside of normal working hours shall be included in the appropriate unit cost item; no separate payment will be made.

The Contractor shall report any complaints regarding construction noise to the Contract Administrator immediately upon receiving the complaint.

The City reserves the right to order the Contractor to terminate the use of equipment and/or personnel who do not observe the above-noted noise and vibration protocol.

12. **Public Convenience and Safety – SPXX**

*(NTD: Confirm with Workzone Coordinator if any additional requirement should be included here. Also include notes for any non-traffic related special requirements due to local schools, or places of worship that may exist within the Contract Limits)*

In carrying out the work, or any portion thereof, the convenience of the public must always be specially considered and provided for by the Contractor who must not obstruct any street, thoroughfare or pedestrian walkway longer or to any greater extent than is absolutely necessary in the opinion of the Contract Administrator and shall in no case tear up or open more of any street, roadway or place than is ordered or sanctioned by the Contract Administrator in writing.
The Contractor is to provide perfectly safe, ample and convenient means of approach and entrance to adjoining lanes, driveways, buildings and property, both for vehicles and pedestrians, wherever necessary, and for passing along all roadways and foot-walks, and for crossing the same where it is practicable to do so, both during the prosecution of the works as well as at other times, and for this purpose must construct and maintain, in good and serviceable condition, suitable and convenient platforms, approaches, structures, bridges, crossings or other works as necessary to maintain access.

The Contractor is to ensure that all residents have access to their properties at all times. If access will be blocked for a period of time, the Contractor must make arrangements with the homeowner at least 48 hours in advance of any disruption. If access is blocked, it shall be for no longer than a 48 hour period. If access must be blocked for a period longer than 48 hours, then the Contractor shall make arrangements, and compensation where necessary, with the resident that are satisfactory to the resident. All arrangements made in this regard shall be communicated to the Contract Administrator and Field Ambassador. Particular attention will be required at night to ensure that safe access is maintained for all property owners.

The Contractor shall be attentive to the needs of pedestrians that are visually or physically impaired, and the Contractor must be prepared at all times to assist in the safe and comfortable passage of these pedestrians.

The Contractor shall minimize the open excavation left at the end of each working day. When excavation is required to be left open overnight, the area shall be completely blocked off by means of a solid locking barrier.

The Contractor shall direct pedestrians, by the use of signs and barricades, to use the sidewalk on the opposite side of the ongoing construction. During the reconstruction or resurfacing of the pavement, the Contractor shall ensure that all sidewalks are clear of debris and fully open to pedestrian traffic.

The Contractor shall control the pedestrian traffic by use of interlocking metal barriers and TC-54 Barrels with rail and/or tape.

The Contractor shall provide openings in the metal barrier at designated crossings only, or as directed by the Contract Administrator.

13. Snow Removal and Disposal – SPXX

The Contractor shall be responsible for providing snow removal and disposal services to publicly accessible sidewalks and roads so as to maintain them in a safe condition clear of ice and snow, within the entire limits of the construction zone. De-icing salts shall be applied to sidewalks and roads accessible to the public, immediately upon visible accumulation. Sidewalks and roads shall be cleared of snow, to the satisfaction of the Contract Administrator, but not later than 8 hours after the end of a snowfall which results in a 50mm accumulation or greater. In cases of extended snowfall, the Contractor shall provide snow removal, disposal, and salting as often as necessary to maintain safe access for vehicles and pedestrians, the frequency and degree of snow removal, disposal, and salting required shall be at the sole discretion of the Contract Administrator.

Payment for this item shall be on a time and material basis through the Contingency Allowance.
The City will not entertain any costs associated with delay associated with any snow removal or disposal work.


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The Contractor shall note the staging requirements stated in the Special Specifications and shall plan the Work accordingly. The Contractor shall ensure that the project site and works are properly maintained and protected during the winter months. This shall include, but not be limited to:

COLD WEATHER MAINTENANCE

The Contractor shall ensure proper maintenance of the works, i.e. ramping catch basins, maintenance holes and joints, protection of curbs throughout the winter months while work is halted during this time.

COLD WEATHER PRECAUTIONS

When work is allowed or ordered by the Contract Administrator to be performed in cold weather, the Contractor shall provide suitable means for heating and protection of materials. The Contractor shall take all measures that are necessary for the performance and protection of such work. Cast in place concrete shall be protected from conditions such as wind which produces accelerated setting and development of excessive cracking. This shall be cause for rejection of finished work. From November 1st to March 31st, or as otherwise directed by the Contract Administrator, a membrane curing compound shall not be applied. Concrete shall be placed against thoroughly clean, properly treated surfaces free from snow, ice, shavings, dirt or other foreign materials. It shall not be laid on frozen ground. While concrete is being placed it shall be thoroughly and uniformly compacted by means of tamping, hand tools, vibrators, or finishing machines to secure a dense homogeneous structure close bonded with reinforcement and with a smooth formed surface.

When instructed by the Contract Administrator special equipment shall be in readiness to maintain the temperature of the concrete between 10 and 15 degrees Celsius for five (5) days after placing. When the air temperature is at or below 5 degrees Celsius or when there is a probability of it falling to this limit during placing, and from November 1st to March 31st in any case, the temperature of concrete when deposited shall be between 15 and 30 degrees Celsius. When pre-heating of concrete materials is required to satisfy the above condition, the temperature of the combined materials before cement is added shall be below 40 degrees Celsius. Aggregates shall not be heated above 80 degrees Celsius for any reason. When concrete is placed and the air temperature is below 0 degrees Celsius, concrete shall be suitably protected in heated enclosures, and kept from freezing temperatures for a period of seven (7) days and from alternate freezing and thawing for at least fourteen (14) days.

In the event that the Contractor suspends work onsite during the holidays, access to all driveways and private entrances must be unimpeded until work resumes.

All costs associated with Winter Work shall be included in the appropriate unit cost items requiring such work. No separate payment shall be made.
For the removal and disposal of existing transite pipe for sewer laterals and sewer pipe, the Contractor shall comply with Ontario Regulation 278/05 "Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations". As a minimum requirement, the Contractor shall comply with the "Measures and procedures for roadwork with asbestos containing asphalt", developed in consultation with MOL.

**Measurement and Payment**

All known existing pipe types have been indicated on the Contract Drawings. The Contractor shall include the removal and disposal of all indicated asbestos containing pipe in accordance with all applicable regulations, into the appropriate unit prices for sewer works in the pricing form. No separate payment shall be made.

Should additional transite pipe be found other than that already indicated on the drawings, this shall be paid out on a time and material basis through the Contingency Allowance.

15. **Excavation, Soil Types, and Support Systems – SPXX**

Appropriate support systems shall be provided for all excavations and shall protect and support the sides of the excavation to prevent undue disturbance or weakening of the supporting material adjacent to the works in accordance with the Occupational Health and Safety Act. The Contractor shall submit details for shoring, bracing, sloping or other provisions for worker protection from hazards. The submittal shall show design assumptions and calculations, methods and sequencing of installing excavation support, minimum lateral distance from the crest of slopes for vehicles, and anticipated difficulties and proposed solutions.

Open excavations located in the roadway shall be backfilled or made secure at the end of the day. Excavations remaining open, by prior written authorization of the Contract Administrator, shall be barricaded and structured so that should anyone fall into the excavation, there is a route of egress.

The Contractor shall review the Geotechnical Data Reports listed within Section 4 and shall follow the proposed methods associated with support systems.

Support systems shall be installed so that they can be removed during backfilling to prevent damage to the works and settlement of, or damage to, adjacent pavements, property, structures or other works.

The Contractor shall provide adequate support to the walls of the excavation and will not be
entitled to any remuneration for the additional excavation, disposal of collapsed material, or additional backfill for over breaks or collapse of the walls.

All soils types are in accordance with the *Occupational Health and Safety Act*.

**Measurement and Payment**

No separate payment shall be made for complying with these requirements or as a result of any delay or costs that results by not complying with these requirements.

16. **Positive Excavation Support - SPXX**

This section contains the requirements to be met by the Contractor and its positive excavation support system design. The Contractor shall design, furnish and install the positive excavation support where called out on the Contract Drawings or where Type 4 soils are identified within the Geotechnical report. The system shall be watertight in order to reduce potential settlement of nearby structures.

For the purposes of this contract, a positive excavation support system is defined as an overburden excavation support system that is installed ahead of any excavation to provide positive ground support as the excavation proceeds. The intent of utilizing this type of support is to nullify any movement of the supported soils during the excavation process so as to ensure and guarantee no settlement of nearby structures.

Provide the following submittals:

- Positive excavation support plan.
- Positive excavation support movement monitoring plan.
- Positive excavation support movement measurement, data and reduced results indicating movement trends on weekly basis.
- Positive support abandonment plans, including backfilling and removal of support elements.
- Method of providing a watertight positive excavation support system.

All required submittals must be received and approved by the Contract Administrator at least 20 working days prior to beginning any associated installation or excavation.

The Contractor shall submit the name of its positive excavation support system designer. In accordance with the Ontario Professional Engineers Act (R.S.O 1990, C. P.28), this individual must be a Professional Engineer licensed in the Province of Ontario. The Contractor shall also submit the name of the subcontractor responsible for positive excavation support installation.

The Contractor shall submit a narrative along with shop and working drawings, signed and bearing the Professional Engineers Ontario seal of the positive excavation support system designer that shall describe all materials the Contractor proposes to use and the method of construction and excavation intended in performing the work in this Section. The Contract Administrator will not review the submittal for adequacy of the design of the positive excavation support system. The Contract Administrator’s review will be to determine conformance to
requirements of the Contract Documents.

Contractor to monitor movements of existing structures during construction in accordance to the Monitoring Movements of Existing Structures section of the specifications, regardless of dewatering activity.

Design, provide, and maintain a water tight positive excavation support system as necessary to support the sides of excavations and to prevent settlement and lateral movement of existing facilities, adjacent property, and completed Work.

Prepare positive excavation support plan addressing following topics:

- Details of shoring, bracing, sloping, or other provisions for worker protection from hazards of caving ground.
- Design assumptions and calculations.
- Methods and sequencing of installing excavation support.
- Minimum lateral distance from the crest of slopes for vehicles.
- Anticipated difficulties and proposed resolutions.
- All shop drawings and Contractor's design shall be endorsed by a professional engineer.

Prepare movement monitoring plan addressing following topics:

- Survey control.
- Location of monitoring points.
- Plots of data trends.
- Interval between surveys.

Refer to geotechnical reports listed in Section 4 for additional information.

Positive excavation support systems shall be removed or left-in-place upon completion of the works. Positive excavation support systems shall be removed in a manner that will maintain support as excavation is backfilled that does not leave voids in the backfill and prevent damage to the works and settlement of, or damage to, adjacent pavements, property, structures or other works. Positive excavation support systems to be left-in place shall be terminated 2 meters below finished grade and restored to existing or better conditions.

Where voids behind positive excavation supports exist, fill with u-fill. Progressively fill with u-fill as required as supports are removed.

Provide ALL trench excavations with adequate safety systems meeting the requirements of the latest edition of OHSA, applicable local construction safety orders, and federal requirements.

Payment for the design, installation, and removal of the positive excavation support system shall be made at the lump sum price bid and shall include the supply of all labour, materials, and equipment for saw cutting, removal and disposal of existing asphalt and concrete road base, removal and disposal of existing pipe, laterals, and maintenance holes as indicated on the Contract Drawings, excavation, and disposal of material.

It is the responsibility of the Contractor and its positive excavation support system designer to review the Drawings, Specifications, and existing site conditions prior to bidding to ascertain the extent of the work requiring positive excavation support systems.
Site Specific Special Provision

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The Contractor shall be responsible for the preparation, handling, and transport of all material removed from the site to a suitable disposal site, including any necessary dewatering of the material. The Contractor is responsible for the separation of any material required for acceptance by the receiving disposal site.

All excess material not required for the successful execution of the Work shall be removed from the site at the expense of the Contractor and disposed at an approved receiver site in accordance with the Ministry of Environment and Climate Change (MOECC).

The City of Toronto will not make any arrangements for the disposal of excavated and/or surplus materials or supply bills of lading. The Contractor shall ensure that the preparation, handling, and transport of the material complies with all Federal, Provincial, and Municipal Laws, Acts, Ordinances, Regulations, Orders by Council, and Bylaws which may apply to the execution of the Work.

Stockpiling of excavated soil nor fill materials within the City street allowance or in parks, is not permitted. No areas shall be utilized for stockpiling of excavated soil nor fill material. The Contractor shall dispose of all excavated soil within the City street allowance, off site immediately upon removal in accordance with the MOECC.

The Contractor shall indemnify the City and the Contract Administrator from and against all claims, losses, expense, costs, damages, actions, suits, or proceedings by third parties directly or indirectly arising, or alleged to arise out of the disposal activities.

The Contractor shall note the Geotechnical Reports as listed in Section 4 and factor in all costs associated with the disposal.

Any excavated soil which is not deemed to be suitable for disposal at a site that accepts fill meeting industrial/commercial/community property standards in accordance with Table 2 of the Ministry of Environment and Climate Control’s (MOECC) Soil, Ground Water and Sediment Standards for Use Under Part XV.1, and which cannot be disposed at a property meeting the requirements of Section 48(3) of Regulation 153/04 under the Environmental Protection Act, shall be disposed of as non-hazardous solid waste at a facility that is licensed by the MOECC to accept such waste in accordance with the regulatory requirements.

The Contractor shall be required to find and secure appropriate off-site disposal sites in advance of any excavation. The Contractor shall be required to remit a list of proposed disposal sites to the Contract Administrator for review. The Contractor shall be required to secure written waivers from the owners of the disposal sites in a form that is acceptable to the City of Toronto.

**Measurement and Payment**

All costs associated with this work, including but not limited to, the cost of haulage, any additional environmental testing and all associated dump fees, shall be included in all appropriate unit cost items requiring such work.
Pending prior approval from the Contract Administrator, should during the course of the Work, contaminated soils outside of the areas so delineated in the Geotechnical Reports be found, payment for this provisional item shall be made at the unit bid price for disposal of contaminated material.

18. Inspection and Testing – SPXX

Site Specific Special Provision October 2017

Per GN111SS, the Contractor is responsible for all Quality Control testing on the Contract, however Quality Assurance by the Contract Administrator will be completed on this Contract. Testing by the Contract Administrator shall in no way relieve the Contractor of their Quality Control responsibilities.

Unless otherwise specified in the Contract Documents, the cost of all testing and inspection of materials for the purposes of quality assurance such as granular, concrete, and asphalt will be borne by the City of Toronto, and arranged by the Contract Administrator.

The Contractor shall supply, at their own cost, to the Contract Administrator such materials, labour and other assistance as may be required to procure, package and ship any test samples if required.

The Contractor shall make known to the Contract Administrator the source of material at least one week prior to the time he proposes to use such material, unless otherwise specified in the Contract Documents.

Measurement and Payment

All costs arising from the above requirements shall be included in the appropriate unit price item in the Pricing Form.

If the tests show that the desired level of performance is not achieved, the Contractor must remove and/or reconstruct the rejected work as applicable and all subsequent testing shall be at the Contractor’s expense.

19. Approval of Granular Material and Concrete Mix Operation – SPXX

Site Specific Special Provision October 2017

For the purposes of this contract, and unless otherwise described on the design drawings or elsewhere in this spec,

Granular A means a set of requirements for dense graded aggregates as defined in OPSS 1010/TS 1010;

Granular B means a set of requirements for well-graded aggregates as defined in OPSS 1010/TS 1010. Granular B may be either Type I or Type II. Unless specified otherwise, Granular B shall be assumed to mean Type I;

Unshrinkable Fill (ufill) means a self-compacting cement treated aggregate with flowable consistency and controlled low strength properties as defined in OPSS 1359.
Concrete means a mixture of cementing materials as defined in TS 1350;

Grout means a mixture of cementing materials, with or without admixtures, and water as defined in TS 1350;

Mortar means a mixture a cementing materials, sand and water, with a butter-like consistency, as defined in TS 1350.

The use of Granular A RCM shall be per TS 1010. The use of Reclaimed Asphalt Pavement is strictly prohibited

Each Ready Mix Concrete Operation used in the production of concrete shall be certified that it conforms to the applicable Standard Specification or that it meets the requirements of the Ready Mixed Concrete Association of Ontario for Concrete Plant Certification.

Prior to the start of the Work, the Contractor shall submit proposed mix designs and granular gradations to the Contract Administrator for approval.

A certified plant and a "back up" shall be named for use on the project for the Contract Administrator’s approval. The aggregate source shall also be given in this submission for the Contract Administrator’s approval. Once the plants and aggregate source(s) have been approved by the Contract Administrator, no other plants or sources of aggregate shall be used. Aggregate sources shall be from the Ministry of Transportation Ontario's approved "Aggregate Source List".

20. Dewatering – SPXX

The Contractor shall prepare a dewatering plan which will be reviewed and approved by the Contract Administrator. The Contractor is responsible for adhering to all permit conditions during construction and for procuring a sewer discharge permit for dewatering prior to the start of the work. The Contractor shall note the Geotechnical Reports listed in Section 4 and shall note the proposed methods associated with dewatering systems. {Based on geotechnical report findings, a Permit to Take Water is not anticipated.} {Per the findings of the geotechnical report, a permit to take water has been applied for and can be found in Appendix XX} The Contractor is responsible for all dewatering as per OPSS 517 and TS 518. The Contractor shall also prevent surface run-off from entering excavations.

Prior to discharge, water shall be treated for management of suspended sediment and other parameters to meet the discharge criteria outlined in Toronto Municipal Code, Chapter 681, Sewers (for discharge to sewers) and the MOECC’s Provincial Water Quality Objectives (for discharge to the surrounding environment).

All dewatering operations that discharge to a downstream catch basin, or where the discharge runs along the surface, the Contractor shall provide and maintain sedimentation control barriers around the catch basins as per applicable OPSS and TS specifications. The Contractor shall ensure that all gutters are kept clear at all times for surface drainage. The Contractor shall not direct any discharge onto sidewalks, driveways, boulevards or private property. The Contractor shall clean up any and all sediment that might have accumulated as a result of dewatering and
treatment procedures.

The construction excavation for all pits must be such that dewatering required is minimal. If no PTTW exists under the Contract and the Contractor believes dewatering is required such that a Ministry of Environment and Climate Change (MOECC) Permit to Take Water is required, it is the responsibility of the Contractor to apply for the permit and acquire the permit. It will be the full responsibility of the Contractor to ensure that all conditions of the permit are met during construction, including, but not limited to the reporting requirements to the MOECC.

**Measurement and Payment**  
*{NTD: Select which one statement applies and delete the other}*

*{The following description applies only if no PTTW has been applied for}*

All costs relating to dewatering up to and including 50,000 L/day, including but not limited to installation and removal, discharge permits, monitoring, discharge quality control, erosion control, watertight shoring or other means of managing groundwater, shall be included in the bid prices for all affected construction items in the Pricing Form. No separate payment relating to management of groundwater will be considered.

In the event that the dewatering rates are greater than 50,000 L/day but less than 400,000 L/day for the purposes of construction site dewatering, the watering takings are eligible for registration in the Environmental Activity and Sector Registry (EASR). If the cause of the additional dewatering is outside of the control of the Contractor, the City will evaluate additional costs brought forward by the Contractor, and payment of these additional costs, including but limited to permit acquisition and pumping costs from the provisional dewatering allowance.

*{NTD: Ensure you have an item in the pricing form for this provisional allowance}*

*{The following description applies if a PTTW has been applied for}*

All costs relating to dewatering up to the maximum amount listed within the PTTW, including but not limited to installation and removal, discharge permits, monitoring, discharge quality control, erosion control, watertight shoring or other means of managing groundwater, shall be included in the bid prices for all affected construction items in the Pricing Form. No separate payment relating to management of groundwater will be considered.

21. **Backfill – SPXX**

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**Site Specific Special Provision**  
October 2017

Unless noted otherwise, backfill shall be imported Granular ‘B’ material in accordance with applicable City of Toronto Specifications. Use of unshrinkable fill (u-fill) material shall be utilized in accordance with applicable City of Toronto Specifications and as described below. Granular backfill shall be placed in maximum 300 mm lifts. Backfill utilized within the parks shall be native fill, unless specified otherwise outside of the “Backfill” Special Specifications section.

The use of Granular A RCM shall be per TS 1010. The use of Reclaimed Asphalt Pavement is strictly prohibited.
All Works located in any roadway that have trenches that are smaller than 1.2 metres wide shall be backfilled with u-fill. All trenches located in the boulevard within a metre of the curb shall be backfilled with Granular ‘B’. All trenches located in the boulevard over one metre past the curb shall be backfilled with approved native material. Backfill material around gas mains shall be provided according to utility company’s requirements.

**Measurement and Payment**

All costs associated with backfill shall be included in all appropriate unit price items. No separate payment shall be made.

**22. Compaction – SPXX**

Site Specific Special Provision October 2017

The method of compaction is the option of the Contractor; however, water shall not be used as a means of compaction. Water may be used only when required to achieve SPMD Proctor 98% compaction. Compaction tests will be arranged by the Contract Administrator; however, the Contractor shall supply, at their own cost, such materials, labour and other assistance as may be required to facilitate the testing. The Contractor is required to provide compaction in maximum 300 mm lifts irrespective of the methods employed. Fill materials shall be compacted according to TS 501.

**Measurement and Payment**

All costs associated with compaction and compaction testing shall be included in the appropriate unit price items. No separate payment shall be made.

**23. Fresh Concrete – SPXX**

Site Specific Special Provision October 2017

The Contractor shall place adequate signs and physical barriers around all areas of freshly placed concrete to advise of its presence and prevent access into it.

Barriers shall be placed as soon as the concrete has been placed and the crew has moved on, or as soon as the crew is five metres or more away from an unprotected area in the case of a continuous pour.

Barriers shall remain in place until at least twenty-four (24) hours after the concrete has set hard enough to walk on. (This does not imply that areas can be opened to traffic after only 24 hours).

The above conditions shall be construed as minimum requirements for safety around areas of freshly placed concrete.

Concrete surfaces marred by either public or by traffic from the Contractor’s own or Subcontractor’s forces, or due to animals, shall be replaced by the Contractor at his cost.
24. Non-Destructive Excavation – SPXX

Where required, the Contractor shall provide all labour, materials and equipment required to safely provide non-destructive excavation around trees and sensitive utilities. Contractor shall provide notice to the Contract Administrator to ensure that the Contract Administrator’s Representative is present during non-destructive excavation activities. Non-destructive excavation shall be completed by hydro-excavation or hand excavation. Contractor shall observe all applicable OHSA and other safety regulations regarding non-destructive excavation. All costs for fulfilling these requirements shall be included in the bid prices for all affected construction items in the Pricing Form. No separate payment will be made.

In the event that non-destructive excavation is required for an unanticipated utility or an unforeseen sensitive obstruction, payment shall be made through the provisional unit price item for non-destructive excavation and shall include all costs for labour, materials, and equipment.

{NTD: Ensure you have an item in the pricing form for this provisional item}

25. Tree Removals – SPXX

The Contractor shall obtain the Permit to remove or Injure Trees prior to any tree cutting or pruning. The Contractor shall not utilize the practice of "free falling" trees to be removed. All trees shall be limbed out prior to the final cutting of the trunk. Sidewalks, curbs, streets and manhole structures shall always be protected from the impact of falling wood by use of the tree or limb ground supports. Ropes or other mechanical devices shall be used to lower all limbs of sufficient size that may cause damage to other trees or surrounding public or private property.

All trees to be removed per Contract Drawings shall be removed by a certified arborist. Tree removals shall include the removal of tree stumps and disposal of trees. The Contractor shall permanently restore the location where the trees have been removed.

The removal and disposal of brush (dbh < 100 mm and not identified on the Contract Drawings as a tree) shall be considered incidental to the work and be included in the bid price. No separate payment shall be made for the removal and disposal of brush. Brush removal outside of the limits of construction shall not be permitted unless prior approval is obtained from the Contract Administrator.

{NTD: Include the following paragraph only if your contract has tree removals within a TRCA regulated area}

In order to avoid interference with the eggs, nests or young birds protected under the federal Migratory Birds Convention Act, tree removals located within TRCA regulation limits and/or Ravine By-Law limits shall not be completed between March 15th and August 1st. The Contractor is to schedule these regulated tree removal works such that they are completed outside of the associated regulatory windows. If the Contractor is unable to comply with the regulatory window, the Contractor shall retain a qualified avian biologist, with 5 years minimum experience, to
undertake a bird nesting survey of the trees, immediately prior to tree removals in order to confirm the presence or absence of protected species. If protected species are present, removals cannot occur without a permit from the Canadian Wildlife Service. The Contractor shall be responsible for obtaining such a permit. The City will not accept any claims for damages or for any costs arising from such a delay. All costs for retaining a third-party avian biologist and conducting a bird nesting survey shall be paid out through the unit price provisional item in the Pricing Form.

No Butternut Trees shall be removed or harmed without Ministry of Natural Resources Approval as per the Endangered Species Act, 2007 O. Reg 242/08. Rigid tree protection barriers are required for existing Butternut trees within the construction limits as shown on the Contract Drawings.

All Ash trees required to be removed per Contract Drawings shall not be mulched on site and spread into the existing beds. Ash trees shall be mulched into a truck and disposed of at the City Dufferin Transfer Station noted below. The load must be identified as Ash before dumping.

Dufferin Transfer Station
35 Vanley Drive
M3J 2C2
416-392-3161

Measurement and Payment

All costs associated with tree removals shall be included in the Tree Removal and Replacement Unit Price Item. No additional payments outside of the unit cost shall be made for Tree Removals.

26. Working Around Trees- SPXX

Site Specific Special Provision

The work locations on this project may feature natural and landscaped areas with mature trees whose branches may extend over the proposed work.

The Contractor shall be required to adhere to all requirements in the City’s “Tree Protection Policy and Specifications for Construction Near Trees”. Care is to be taken when operating construction equipment in the vicinity of trees so as not to damage the trees in any way.

All tree protection barriers shall be constructed and inspected by the Contract Administrator and the City’s Arborist prior to the start of Work. Where indicated, root zones shall be protected with mulch and steel plates.

Should any pruning of the trees be required, including roots, this shall be kept to the minimum required to allow for construction to proceed and any pruning of branches must be pre-approved by the City of Toronto. It is the responsibility of the Contractor to determine which, if any, trees require pruning and to notify the City well in advance of construction. The pruning is to be done according to the City Specifications and only by a certified arborist approved by the City of Toronto Urban Forestry Services. The arborist is to provide proof of insurance with the Contractor’s service agreement.
Site meetings to address specific concerns can be arranged with Urban Forestry. Forty-Eight (48) hours prior notice is required to coordinate any site meetings.

All costs associated with tree protection and pruning necessary to meet the requirements of this specification, and as detailed in the design drawings, including time spent at site visits and meetings, shall be included in the appropriate unit price items in the pricing form. No separate payment for tree protection and pruning will be paid to meet these requirements.

All materials and equipment shall be kept clear of trees at all times and may not be stored within the tree protection zone as defined in the City of Toronto’s Tree Protection Policy and Specifications for Construction Near Trees. No additional payment will be made for any delays that occur as a result of complying with these requirements.

The Contractor’s arborist must attend the initial tree walk at the start of the contract and is required to attend any subsequent walks due to addition or removal of pruning requirements that may arise during construction due to changes in means and methods.

A table is to be prepared by the Contractor prior to assessing the tree impacts and finalizing the permit application, and shall be presented to the City of Toronto and the Contract Administrator one week prior to the first onsite meeting. The table shall contain the following information:

- Street Name
- Proposed Status (eg. Preserve or Remove)
- Proposed Pruning (eg. Elevate to 6m at curb)
- Proposed Root Protection (eg. Tree protection fencing, jersey barrier, etc.)
- Reasons for Request (eg. Lateral connection, new pipe alignment, etc.)
- Removal Noted in Contract (Y/N)
- Removal/Pruning Included on Previous Permit (Provide permit date)

If it is deemed onsite by the City of Toronto or by the Contract Administrator that additional tree protection and/or tree pruning above and beyond what is delineated on the drawings and what is required to meet the City’s requirements, then the additional tree protection as requested by the City of Toronto or the Contract Administrator will be paid out through the unit price provisional item in the Pricing Form.

27. Tree, Shrubs, and Groundcover– SPXX

Site Specific Special Provision

October 2017

{NTD: Include only if completing tree replacements, or major landscaping features in park locations}

A. Tree, Shrubs, and Groundcover Requirements

This specification covers all trees, plants, planting pits, beds, and soil mixes requirements
included herein the Contract Documents for all Works. Herein all references made to “plant” shall refer to trees, shrubs, and groundcover.

All plants are to be planted as shown on the Contract Drawings.

Payment for planting shall be made at the unit price bid and shall include the supply of all labour, materials, and equipment for delivery, storage, handling, guying, staking, wrapping, weed control, repellents, antidesiccants, stimulants, soil preparation, plant installation, root deflectors, pruning, repair, testing and watering. No additional payment will be made.

Should the Contract Administrator direct the Contractor to plant a certain plant type more than that specified on the Contract Drawings, the Contractor shall provide, plant, and maintain them at the unit price in the Pricing Form. The unit price shall include all labour, equipment and materials required to plant the additional plantings as required herein this Special Specification.

QUALIFICATIONS OF CONTRACTOR

The Contractor shall provide experienced, qualified personnel under the direction and supervision of a foreman with at least five years of horticultural and planting experience will carry out planting and related work.

Contractor shall provide proof of a foreman with a minimum of five years of experience, competent and skilled in the work of this section to direct all of the work to be performed and to be present at all times during the performance of the work. Acceptable forms of proof of foreman’s qualifications include the following:

1. ISA Certification as an Arborist
2. Diploma in horticulture from a recognized College
3. Ontario Tradesman Certificate

REFERENCES

The following is a list of standards which may be referenced in this section:


MEASUREMENT DEFINITIONS

1. In size grading Balled and Burlapped (B & B), caliper takes precedence over height.
2. In size grading Wire Basket (W.B.), caliper takes precedence over height
3. Take trunk caliper 15cm above the ground level
4. Measure Bare Root plant by height and the diameter
5. Measure size of container-grown stock by pot size, height and width of plant.

6. Measure size of live stakes by length and diameter of cuttings.

**SUBMITTEDS**

1. Plant materials source list.
2. Product data on manufactured products specified.
3. Schedules:
   a. Planting sequence schedule
   b. Watering schedule
4. Soil percolation test results.
5. Operation and Maintenance Data:
   a. Instructions for storage, planting, care, and maintenance of each type of plant for 1 year period in climate and location of the Project.
6. A sample copy of the special warranty.

**DELIVERY, STORAGE AND HANDLING**

Contractor shall arrange for the inspection of all plant material outlined in the Plant Schedule at its source with the Contract Administrator. Acceptance of the plant material at its source does not prevent rejection of the plant material upon delivery on-site or during planting operation.

Delivery of plant material shall be coordinated with planting operations in order to ensure minimum time lapse between digging and replanting of the plants. All plant material supplied and planted under this Contract shall be protected from damage in accordance with OPSS 801, during construction operation. Plant material damaged by the Contractor’s operations shall be replaced at Contractor’s own expense.

All plant material shall be inspected upon delivery to the Contract site prior to unloading. A copy of the delivery receipt shall be provided at the time of delivery. Off spec material shall be removed from Contract site immediately and replacements shipped to the site within 2 working days.

All plant material shall be inspected again prior to planting. Off spec material shall be removed from Contract site immediately and replacements shipped to the site within 2 working days. All plants shall be contained as specified in the Plant Schedule and meet the minimum height and dimension requirements. Plants shall contain a tag from nursery identifying the nursery, botanical description, container size, and plant height/spread/caliper.

Roots of each load of bare root stock shall be adequately covered with silvertarps or an approved equivalent during transportation and while in storage the day of planting.

Transport plants specified as balled & burlapped/wire basket with solid root balls wrapped with 150 gram Hessian burlap. Securely bind burlapped rootballs with twine, natural fibre cord, or wire for shipment and handling. Drum-lace balls with a diameter of 800 mm or more. Transport plants with frozen ball only when they are complete with root system intact.

Transport plants with branches tied to prevent damage and pad trunks to avoid abrasion from equipment during transport. Avoid binding of plant material with rope or wire that would damage bark, break branches or destroy natural shape of plant.
Transport plants in enclosed vehicles or covered by tarps. Do not permit plants to be desiccated by wind. Plants arriving on site in unprotected transport shall not be accepted.

The Contractor shall prevent drying out of roots, root balls, trunks, branches and leaves of plants from time of removal at place of origin until they are planted.

All deciduous trees that have budded out and all coniferous trees shall be thoroughly sprayed with an anti-desiccant immediately before transport to Contract site. Apply a sufficient amount over trunks, branches and foliage. Plants may be re-sprayed after delivery to Contract site and once planted if deemed necessary by the Contract Administrator.

Balled and burlapped, wire basket, and container grown plant material shall not be stored on the Contract site unless the rootball or container is protected from the sun and wind and kept moist.

Live stakes will be delivered on site on the scheduled planting day. Live stakes will be stored in a sealed plastic container and kept in cold storage at temperature of 4 degrees Celsius until planting day. The Contractor shall remove live stakes from cold storage one day prior to planting and hydrate the cuttings by placing them in a clean/new bucket filled with potable water that is maintained at 4 degrees Celsius for 24 hours.

While temporarily stored at the site, plant material shall be placed in the shade where possible, and soil, dampened straw or similar material shall be placed around the root ball and kept moist at all times.

Plants with broken or abraded trunks or branches, or with broken cracked root balls, or plants that are desiccated, shall be rejected. Any live stakes that develop mold, mildew or are exhibiting root development will be discarded and replaced.

Plant material deemed unacceptable shall immediately be removed from the Contract site by the Contractor.

**SCHEDULING AND SEQUENCING**

The Contractor shall provide to the Contract Administrator a detailed schedule outlining proposed planting sequence. The Contractor shall notify the Contract Administrator at least 3 working days in advance of each delivery date.

The Contractor shall conduct planting during times of year that are normal for such work as determined by accepted local practice. Installation of Balled & burlapped (B&B), Wire Basket (W.B.) and Container Grown plant material (C.G.) shall be carried out from the time the ground is frost free to October 15.

For all plantings in this Contract, upgrades made by the Contractor to plant type and/or size shall be subject to approval by the Contract Administrator. If the Contractor so chooses to upgrade the type and/or size of planting stock, all costs including but not limited to material, and labour, shall be at the Contractor’s expense. No separate payment for upgrading the type and/or size of planting stock will be made.

Plant trees and shrubs after installation of all hard surfaces and upon establishment of final grades. All planting work shall be completed prior to initiating sodding work but following any seeding work. Plant materials to be installed within a period of time that shall allow for seeding and sodding of lawns and grasses during an acceptable time of year.

The location of all plant material shall be staked out on the ground for review by the Contract
Administrator. Excavation shall commence following the Contract Administrator inspection and approval of staking.

A watering schedule must be provided to the Contract Administrator at least 24 hours in advance of commencing watering. The schedule must include the frequency of watering and a list of locations where trees will be watered. Once watering is complete, the contractor must contact the Contract Administrator by email within 8 hours, so that watering can be inspected.

B. Tree, Shrubs, and Groundcover Material

This specification covers all plants, planting pits, beds, and soil mixes accepted products and materials included herein the Contract Documents for all Works.

**PLANT MATERIALS**

All general use plant material shall be nursery grown and meet the specifications as set out in the latest edition of Canadian Standards for Nursery Stock (CSNS) prepared by the Canadian Nursery Landscape Association (C.N.L.A.) for type of root preparation, sizing, and grading.

The seed source of the specified plant material and the plant material itself shall be grown in Zone 5 according to Agriculture Canada Plant Hardiness Zone Map. Native plants to be sourced from nurseries within 100 km of Toronto, unless otherwise approved by the City.

The Nomenclature (Names of Plants) shall be in accordance with “Hortus Third” and conform to the International Code of Nomenclature of Cultivated Plants, and the latest edition of Standardized Plant Names.

The Stock Quality and Size shall be as follows:

1. Nursery-grown, habit of growth normal for species.
2. Sound, healthy, vigorous, and free from insects, diseases, and injuries.
3. Equal to or exceeding measurements specified in plant list. Street trees and caliper trees shall be a minimum of 60 mm caliper. Measure plants before pruning with branches in normal position.
4. Root System of Container-Grown Plants: Well developed and well distributed throughout the container, such that the roots visibly extend to the inside face of the growing container.
5. Perform necessary pruning at time of planting.
6. Sizes: Dimensional relationship requirements of CSNS AAN Z60.1 for kind and type of plants required.
7. Bare root plants shall have healthy, well branched root system characteristic of species and adequate spread. All bare root trees to be planted while dormant: in the Spring before buds and leaves open but after the ground has thawed, or in mid-Autumn after the leaves have fallen but before the ground freezes.
8. Balled and Burlapped, Wire Basket and Container-grown plant material shall be dug and potted in accordance with the latest edition of the Guide Specification for Nursery Stock prepared by Canadian Nursery Landscape Association
9. Stock: Grown in delivery containers for at least 6 months but not over 2 years. Container grown street trees shall not be permitted for planting, unless approved by the Contact Administrator.

10. Label each tree and at least one shrub of each variety with securely attached waterproof tag bearing legible designation of botanical and common name.

11. Live stakes will be composed of softwood cuttings that are no more than two years old. Live stake sizes are to be as per Plant Schedule shown on the dwgs. Live stakes will be collected and stored as follows:
   a. Cuttings will be obtained from local sources within a 100 km radius of the construction site.
   b. Cuttings will be collected from local plant sources with approval from land owners or agency representative or may be purchased from a local nursery.
   c. Cuttings will need to be collected in early spring (February, March, April) while plant stock is dormant. Once cuttings have been harvested they will be moistened, placed in a plastic lined container and refrigerated (kept at a constant temperature of 4 degrees Celsius until time of installation.
   d. Depending on timing of installation, prior arrangements shall be made to create and store a sufficient amount of cuttings in cold storage.

All plant material to be supplied as per Tree Removal and Replacement Tables and Plant Schedules outlined on the Contract Drawings.

Substitutions to the plant schedules shall not be permitted unless prior written approval for substitution from the Contract Administrator has been obtained. Plant substitutions must be of similar species and of equal or greater size than those originally specified. No additional cost shall be entertained for substituted plant material.

**ANTIDESICCANT**

The Contractor shall provide transpiration retarding material to be used where any plant material is moved during the growing season. Anti-desiccant emulsion shall be a product specifically manufactured to provide a flexible surface film to reduce transpiration yet not impede passage of carbon dioxide and oxygen. ‘Wilt Pruf Antiperspirant Concentrate’ manufactured by Wilt Pruf Products, Inc. shall be used, or an approved equivalent.

**Guying, Staking, and Wrapping Materials**

1. Staking and guying of trees shall be used in areas of extreme wind, sandy soil or on slopes to stabilize the trees. Staking and guying shall be removed after the warranty period.

2. Wood stakes shall be 50 mm by 50 mm by 2.1 metres.

3. Fastening for tying and guying trees shall be ArborTie.

**MULCH**

Organic Mulch is to be used in street tree planting pits. Mulch provided for street trees shall be a mix of locally available premium grade, shredded pine bark mulch and non-green partially
composted wood chips, shredded to an average chip size of 20mm to maximum 50mm diameter particle size, free from stones, twigs, leaves, branches, noxious weed seed and foreign material harmful to plant growth and other extraneous material.

The Contractor shall provide a submittal of information regarding supplier, source, sample, and testing if requested. Samples of the above are to be provided to the Contract Administrator for review and approval prior to delivery of any mulch to the contract site. The information shall be submitted at least two weeks prior to installation. The Contractor shall be responsible for pick-up and delivery of all approved mulch from the source of supply to the contract site.

City of Toronto Forestry Mulch Blend is to be used in Parks. City of Toronto Forestry Mulch Blend is a mix of Aged Pine Mulch –screened to 1 inch –(75%), and Compost Type AA (CAN/BNQ Standards) screened to ½ inch, with a pH less than 8.0, total salts (electrical conductivity) 2-3 MMHO/CM, organic matter content, 55% or more (25%).

City of Toronto Forestry Mulch Blend must:

1. Be fully composted through aerobic decomposition (produced under high oxygen conditions) and guaranteed to be free of weeds, weed seeds, and pathogens.
2. Be completely free of all foreign, non-pine bark based material. Mulches derived in any part from wood pallets, recycled paper and/or sewage sludge is not acceptable. Compost to meet standards in Soil Amendment section.
3. Have a pH between 6-7
4. Have a Carbon to Nitrogen (C:N) ratio not more than 100:1
5. Have a particle size less than 50mm with not more than 40% less than 15mm.
6. Not be contaminated with soil, stones, salts, chemicals, roots, or any other extraneous, foreign material.
7. Have proper weight and density so that it stays in place once applied.
8. Be proven to be an effective weed barrier, soil amendment and retainer of soil moisture.

The Contractor must provide proof of purchase of City of Toronto Forestry Mulch Blend prior to any installation. No substitutions will be accepted.

**WEED CONTROL FABRIC**

Weed control fabric shall not be used unless approved by the Contract Administrator.

**TOPSOIL**

Native topsoil shall be used for all planting work (including trees), especially within RNFP By-law areas. Outside of RNFP By-law Area, topsoil shall be in accordance with the Construction Specification for Growing Medium, TS 5.10.

**FERTILIZER**
Fertilizers: Commercial, complete, of neutral character; in granular, packet, or pellet form, 75 percent of nitrogen shall be slow release form, 50 percent of the elements of which shall be derived from organic sources.

The following fertilizer requirements are for tendering purposes only:

1. Trees: 10-6-4 at 1 kg per 25mm of tree caliper or as outlined in planting soil analysis fertilizer recommendations
2. Planting beds: 12-6-4 at 1kg per cubic meter of planting soil or as outlined in planting soil analysis fertilizer recommendations. Plantings within the RNFP should not be fertilized.

Slow-release and natural fertilizers shall be incorporated into planting soil. Quick –release fertilizers shall be broadcast after planting and then watered in. Do not mix quick-release forms with the planting soil used to backfill the planting pit.

**ROOT STIMULANT**

“Wurzil” root stimulant dip as manufactured by the Professional Gardener Co. Ltd or approved equivalent.

**WATER**

Water shall be potable and free of impurities and chlorine that would inhibit germination and growth. Water temperature shall not be more than 10 degrees Celsius below ambient air temperature. The Contractor shall be responsible for obtaining water from own sources. Contractor shall be responsible for obtaining permits or certificates for water usage.

Watering bags placed around tree trunks must be used for caliper tree watering. Defective watering bags will be rejected and must be replaced immediately for the duration of the warranty period.

Water tanks used for application of water shall be clean and free of any contaminants that shall be hazardous to the growth and development of plant material or to the general environment. Pumps used for watering plant materials shall be capable of reaching the limits of the Contract site. The outlet end of the hose shall be 25mm in diameter with quick shut-off valve connected to a functioning water injection pipe.

**SURVEY STAKE**

Wood or metal stake measuring 600 mm in length. Colour flagging tape shall be used to differentiate between stake markers.

**REPELLENT**

‘Super Hunter’ mammal and bird repellent manufactured by Superior Control Product Inc. or approved equivalent.

‘Super Hunter’ distributor: Manchester Products

**CONIFEROUS TREE WRAP BURLAP**

Wrapping material for coniferous trees shall be new burlap, at least 270g/m² in weight supplied in 1.0m wide or 1.5m wide rolls.

**ROOT DEFLECTOR**
Root deflectors used to protect root damage around gas pipelines and/or hardscapes shall be submitted and approved by Contract Administrator prior to installation.

C. Trees, Shrubs, and Groundcover Installation

This specification covers the installation requirements of all plants, planting pits, beds, and soil mixes included herein the Contract Documents for all Works. The Contractor shall install and maintain all plants as specified below.

PERCOLATION TESTS

Perform percolation tests to determine subsoil drainage in planting areas by licensed Contractor according to method specified in Minimum Property Standards For One and Two-Unit Dwellings, FHA Section 1103 103. The Test Hole Depth shall be 750 mm.

Drain test shall ensure adequate subsoil drainage by filling bottom one-third of tree pit with water and checking for complete drainage after 24 hours. Obtain approval of drain test from the Contract Administrator prior to planting and backfilling.

LOCATION OF PLANTS

Locate new plantings as shown on the Contract Drawings unless obstructions are encountered, in which case notify the Contract Administrator. Location of individual trees and planting modules where indicated, are approximate and may require adjustments in the field due to site conditions. The layout locations of all plant material shall be reviewed by the Contract Administrator prior to planting. Excavation shall commence following the Contract Administrator’s inspection and approval of staking.

In cases where horizontal clearance of minimum 1.2 metres between a proposed tree location and gas main cannot be maintained, a root deflector shall be installed on the sides of the root ball adjacent to the gas pipeline.

PREPARATION

The Contractor shall prepare plant pits and beds after percolation test results are received and approved by the Contract Administrator.

For Planting Soil, the Contractor shall delay mixing of amendments and fertilizer if planting shall not follow preparation of planting soil within 2 days. For pit and trench type backfill, mix planting soil prior to backfilling and stockpile at Site.

Plants: Place on undisturbed existing soil or well-compacted backfill.

Trees and Shrubs:

1. Pit and Trenches: Excavate with vertical sides. Scarify sides and break up soil at bottom of planting hole to a depth specified in the Contract Drawings.

2. B & B and W.B. Trees and Shrubs: Make excavations at least twice as wide as root ball.

4. Install root barrier to the full depth of the tree planting pit.

5. Fill excavations with water and allow to percolate out prior to planting.

6. Bare Root Stock: make excavations 300 mm wider than the spread of the roots

7. Live stake area: cultivate entire live stake area to a depth of 300 mm. Place planting soil in live stake area. Ensure that texture of planting bed is loose textured and permits manual installation of cuttings by hand.

**PLANTING**

Plant material shall not be placed in the planting pit until all evidence of frost has left the ground.

Plant trees before planting surrounding smaller shrubs. Set plants plumb so they are in the same relationship to finished grade after settlement, as they were in the nursery or pot. Trees to be planted at a level that places trunk flare above finished grade.

Face plant to give best appearance when viewed from prime vantage points and prominent views (sidewalk, building, driveway to acceptance of the Contract Administrator).

For B & B and W.B. Plants, place in pits by lifting and carrying by its ball (do not lift by branches or trunk). Lower into pit. Set straight and in pit center with tip of rootball 25mm to 50mm above adjacent finish grade.

For Container-Grown Plants, remove containers, slash edges of rootballs from top to bottom at least 25mm deep. Plant as for B & B plants.

For Bare Root Plants create a firm soil mound at the bottom of the planting hole. Spread roots so that root flare is at finished grade and the tree is straight. All broken or damaged roots shall be cut back to the point where they are clean and free of rot. No other root pruning shall be done.

For live stakes, remove cuttings from cold storage one day prior to the installation date and commence hydration of the live stakes. Live stakes will remain in water filled buckets during planting. Install live stakes with buds facing upward into prepared planting bed. Install by hand. If too much resistance is encountered, install a pilot hole using a dibble that is roughly equivalent to the diameter of the live stake. Install live stakes with two terminal buds above the surface elevation. Ensure that the live stake is in contact with soil by pressing soil against live stake.

**BACKFILLING**

Backfill with existing topsoil in RNFP Area or imported topsoil (tested and approved by Contract Administrator) shall be used in areas outside of RNFP Area. For Balled and Burlapped (B & B) / Wire Basket (W.B.) Plants:

1. Remove all synthetic materials prior to backfilling
2. Partially backfill pit to support plant.
3. Backfill in maximum 150mm lifts and compact to remove air pockets until planting pit is 1/3 full.
4. Remove burlap and binding from sides and tops of B & B plants, do not pull burlap from under rootballs.

5. When excavation is approximately 2/3 full, water thoroughly before placing remainder of backfill to eliminate air pockets even if it is raining. Finish backfilling pit sides.

6. Never cover top of rootball with soil. Form a saucer above existing grade, completely around the outer rim of the plant pit.

7. Establish a berm/saucer above existing grade and water as outlined above

Provide an earth saucer at the base of individual trees and shrubs. Diameter of saucer to correspond to planting pit diameter as outlined on planting detail drawings.

For Bare Root Plants:

1. Spread roots of bare root plants into natural position, over the pedestal of firm soil free of bunching, kinking or circling.

2. Backfill planting hole with existing unamended soil and water thoroughly. Soil should be worked firmly into and around the roots so that there are no air pockets.

**GUING, STAKING, AND WRAPPING**

Staking is not a requirement. Trees with excessive stem movement within the root ball at the time of planting will not be accepted. The contractor will be required to straighten and stake trees, at no additional cost to the city, if the tree moves 10 degrees or more at any time during the warranty period.

Where stakes are required, the contractor shall use two (2) wooden stakes, 50mm by 50mm by 2.1m, which are to be driven 70cm below the grade line, into non-excavated soil next to the rootball, leaving at least 5cm between the top of the stakes and the first branch, to support the tree. The stakes must be in line with the direction of the prevailing winds.

Only ArborTie will be accepted for fastening.

Adjust tension in fastening as required during warranty period. Remove and dispose of stakes and fastening at the end of warranty period.

**FERTILIZER**

Add as top dressing depending on plant size and manufacturer’s recommendation upon completion of planting operation or during warranty period. Unless major deficiencies are discovered the planting within the RNFP Area shall not be fertilized.

**MULCHING**

Immediately after planting, prior to the initial watering install mulch or within two days after installation of plant material.

Mulch bed shall be applied in a uniform continuous blanket to the surface area surrounding each individual tree, shrub and groundcover. Depth of mulch surrounding each individual tree,
shrub and groundcover shall be 100 mm (after settlement). The mulch surface area shall extend over the full extent of the planting pit and the earth berm/saucer and include an additional 150mm radius beyond the circumference of the earth berm/saucer.

Within the RNFP Area, where construction works are not immediately followed (2 weeks or less) by restoration planting works, all planting beds scheduled for planting with shrubs and vines shall be seeded, instead of mulched, after construction works according to the Special Specifications for Seeding and Sodding.

For all other areas and conditions, all planting beds planted with shrubs and groundcover shall be covered with a uniform continuous blanket of mulch. Depth of mulch in planting beds shall be 100mm (after settlement). The mulch surface area shall extend 150 mm beyond perimeter of the planting bed; mulch surface should be levelled with adjacent finished grade.

Planting bed edge shall be cut with straight sharp edges to min depth of 75mm. The trench shall be filled to grade with slightly compacted mulch.

Excess mulch shall be removed by Contractor. Seeding within fully mulched planting beds will not be required.

Keep mulch 150 to 250 mm away from trunks or stems of all plant material to prevent rodent nesting and disease (rot).

Saturate planting area with water after placing mulch.

Mulch shall be maintained at the specified depth throughout the warranty period. Additional mulch may be required or displaced mulch may need to be redistributed as required throughout the warranty period. The addition of supplemental mulch to meet the required 75mm and 100-mm depth shall be carried out by the Contractor at no additional cost to the Contract.

Mulch shall not be installed on slopes greater than 3:1 (horizontal/vertical).

**WATERING**

Watering of all plant material shall commence immediately following planting. Apply sufficient water to saturate root zone of plants. Water each caliper tree with a minimum of 40L of water immediately following planting and prior to watering bag installation. Initial watering shall be uniformly applied to each individual tree by two injection applications directly into the soil. Both injections shall be located at the outer edge of the planting pit and shall penetrate the ground to a depth of 450 mm.

Watering of all plants, excluding caliper trees, shall be carried out as required during the maintenance period between April 15 and October 15 of each year. Watering of caliper trees shall be carried out as specified below during the maintenance period between June 1 and September 30 of each year. All coniferous trees shall be watered in late fall, just prior to freeze-up.

Each nursery stock tree (greater than 40 mm caliper or 1.2 m height) shall be watered using watering bags. Each watering bag must be filled with 60 L of water. Contractor shall ensure that watering bags drain properly and are securely installed. Watering bags must be filled every two weeks, with each tree being watered a minimum of 8 times. During dry periods, more frequent watering may be necessary. For planting beds, water shall be applied to the entire planting bed surface area. Ensure a minimum penetration of 300 mm depth.
Water shall be uniformly applied to avoid dislocating mulch, soil, and tree guards. Damage incurred as a result of watering shall be immediately repaired to the satisfaction of the Contract Administrator at no additional cost.

Do not overwater plants. Contractor shall maintain appropriate hydrological conditions, as required to maintain plant material in a vigorous, healthy growing condition. Under no circumstances shall foliage be allowed to wilt or evergreens be allowed to dry out.

The Contractor shall obtain any permits or certificates for water usage. No water is available for usage in the Park and Watercourse. All water utilized shall be trucked in.

Remove all watering equipment and materials at the end of warranty period.

**PRUNING AND REPAIR**

All pruning shall be carried out by a Certified Arborist in accordance with Agriculture Canada Publication 1507-1977 “The Pruning Manual” and the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees.

Prune only after planting and in accordance with standard horticultural practice to preserve natural character of the plant. Perform in the presence of the Contract Administrator. Remove all dead wood, suckers, and broken or injured branches. Do not remove leaders. Do not plant trees without a prominent, vigorous leader. Use sharp, clean tools.

Make cuts smooth, clean and flush to base members. Leave no stubs. Cut back cambium to living tissue where cuts are made, and at bruises, scars and other injuries. Shape wood to prevent the retention of water.

**WEED CONTROL**

Maintain a weed-free condition within planting areas. All weeding shall be carried out by hand. Weed whackers or whipper-snippers shall not be used to remove weeds in the vicinity of plant material. The application of herbicides shall not be permitted unless otherwise approved by the Contract Administrator. Removed weeds shall be disposed off of the Contract site.

At a minimum, weeding of planting and mulched areas shall be carried out once each month or as required to keep all grass/wildflower/weed growth less than 250 mm in height. A 2.0 m wide band around all mulch planting beds shall be cut bi-weekly at a height of 120 mm. More frequent cutting shall be required to ensure that grass within 2.0 m wide band never exceeds 250 mm.

Application of herbicide to control unwanted weed growth within planting beds and individual planting pits shall be coordinated with a licensed herbicidal applicator. Any application of chemicals shall be approved by the Contract Administrator prior to use. Cultural or non-toxic methods shall be given first priority. Do not use D.D.T. or other chemicals prohibited by Agriculture Canada.

All mulched planting beds and individual planting pits shall be weeded immediately prior to final warranty inspection.

**PROTECTION OF INSTALLED WORK**
Protect planting areas and plants against damage for duration of maintenance period. Install tree wrap around all coniferous trees over the winter and remove each spring.

28. Seeding and Sodding within Parks – SPXX

Site Specific Special Provision October 2017

{NTD: This specification has been written for large areas of soft restoration, such as parks. For Contracts where work is only taking place within the right of way, this specification is not required and the topsoil and sod requirements within the restoration PS will govern.}

A. Seeding and Sodding Requirements

This specification covers all seeding and sodding requirements for areas within Parks outside of the Road Right-of-Way. For sod restoration within the Road Right-of-Way, refer to the Restoration SP.

SUBMITTALS

1. Product labels/data sheets.

2. Seed: Certification of seed analysis, germination rate, and inoculation:
   a. Certify that each lot of seed has been tested by a testing laboratory certified in seed testing, within 6 months of date of delivery. Include with certification:
      1) Name and address of laboratory.
      2) Date of test.
      3) Lot number for each seed specified.
      4) Test Results: (i) name, (ii) percentages of purity and of germination, and (iii) weed content for each kind of seed furnished.

   b. Mixtures: Proportions of each kind of seed.

3. Seed Inoculant Certification: Bacteria prepared specifically for legume species to be inoculated.

4. Certification of sod; include source and harvest date of sod, and sod seed mix.

5. Description of required maintenance activities and activity frequency.

DELIVERY, STORAGE, AND PROTECTION

Seed:

1. Furnish in standard containers with seed name, lot number, net weight, percentages of purity, germination, and hard seed and maximum weed seed content, clearly marked for each container of seed.

2. Keep dry during storage.

Sod:
1. Do not harvest if sod is excessively dry or wet to the extent survival may be adversely affected.
2. Harvest and deliver sod only after laying bed is prepared for sodding.
3. Roll or stack to prevent yellowing.
4. Deliver and lay within 24 hours of harvesting.
5. Keep moist and covered to protect from drying from time of harvesting until laid.

Hydroseeding Mulch: Mark package of wood fiber mulch to show air dry weight.

WEATHER RESTRICTIONS
The Contractor shall only perform work under favourable weather and soil moisture conditions as determined by accepted local practice.

SEQUENCING AND SCHEDULING
Complete Work under this section within 10 days following completion of soil preparation.

Notify Contract Administrator at least 3 days in advance of:

1. Each material delivery.
2. Start of planting activity.

Planting Season: The Contractor shall wait until adequate time in the spring when growing conditions are acceptable for seeding and sodding.

Unless otherwise noted on the Contract Drawings, where planting beds planted with shrubs and vines are covered with a uniform continuous blanket of mulch (as specified in Special Specifications for Trees, Shrubs and Groundcover) and where slope gradient is less than 3:1, seeding within fully mulched planting beds will not be required.

B. Seeding and Sodding Materials
This specification covers all approved products and materials seeding and sodding included herein the Contract Documents for all Works.

FERTILIZER
Commercial, uniform in composition, free-flowing, suitable for application with equipment designed for that purpose. Minimum percentage of plant food by weight.

Application Rates: Determined by soil analysis results.

Top Dress Type: As recommended by local authority.

SEED
Fresh, clean new-crop seed that complies with the tolerance for purity and germination established by Official Seed Analysts of North America.

Seed mix species and ratios shall be as specified in the Contract Drawings and shall be applied at the specific application rates indicated on the Contract Drawings.
Nurse Crop (if required and dependent upon the planting period)

1. Annual Rye.
2. Incorporated into the seed mixes at a rate specified on the Contract Drawings.
3. Obtain approval of Contract Administrator prior to incorporating nurse crop into seed mix.

SOD
Grass Sod Type: to be used in all areas to restore grassed areas as part of the works or as damaged by construction activities. Certified, containing the following grass species:

<table>
<thead>
<tr>
<th>Species</th>
<th>Proportion By Weight</th>
</tr>
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<tbody>
<tr>
<td>Kentucky Blue Grass</td>
<td>60-70%</td>
</tr>
<tr>
<td>Creeping Red Fescue</td>
<td>30-40%</td>
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Strongly rooted pads, capable of supporting own weight and retaining size and shape when suspended vertically from a firm grasp on upper 10 percent of pad.

1. Grass Height: 40 to 60 mm.
2. Strip Size: minimum dimensions 400 mm wide by 910 mm long.
3. Soil Thickness: Uniform; 25 mm plus or minus 6 mm at time of cutting.
4. Age: Not less than 10 months or more than 30 months.
5. Condition: Healthy, green, moist; free of diseases, nematodes and insects, and of undesirable grassy and broadleaf weeds. Yellow sod, or broken pads, or torn or uneven ends shall not be accepted.

TOPSOIL
For all work within RNFP Area, only on site topsoil shall be used for all planting work, including seeding and sodding. Outside of RNFP Area, imported topsoil may be used if the existing soil has been analyzed and determined to be suitable for tree planting. If additional soil is required, imported topsoil may be used outside of RNFP Area.

All topsoil provided shall be supplied and placed as per TS 5.10 to a minimum depth of 150 mm. Topsoil provided shall be fertile, friable, natural loam containing 5% minimum organic matter for clay and 3% for sandy loams, to a maximum of 25% with acidity range from pH 6.0 to 7.8.

Topsoil shall be capable of sustaining vigorous plant growth and be free of the following:

1. Mixture of subsoil, lumps and stones greater than 5 mm in diameter.
2. Coarse vegetative material greater than 10 mm in diameter and 100 mm in length.
3. Weeds, weed seeds and rhizomes.
4. Toxic material and soil sterilants that shall inhibit plant development.
The soil backfill used for the subdrain system shall be classifiable as a sandy loam and contain 3-5% of organic matter (refer to the USDA system of nomenclature for soil texture).

**HYDROSEEDING MULCH**

Wood Cellulose Fiber Mulch:

1. Specially processed wood fiber containing no growth or germination inhibiting factors.
2. Dyed a suitable color to facilitate inspection of material placement.
3. Manufactured such that after addition and agitation in slurry tanks with water, the material fibers shall become uniformly suspended to form homogenous slurry.
4. When hydraulically sprayed on ground, material shall allow absorption and percolation of moisture.

Erosion Control Blanket Matting:

1. Light, 100% biodegradable, without netting;
2. Minimum functional longevity of 18 months;
3. Product: W Netfree distributed by Terrafix Geosynthetics Inc., or approved equal

*Staples (For Erosion Control Blanket):*

1. 100% biodegradable; 150mm long
2. Product: E-staple distributed by Terrafix Geosynthetics Inc., or approved equal

**TACKIFIER**

VerTack Hydroseeding Tackifier derived from natural organic plant sources containing no growth or germination-inhibiting materials.

1. Capable of hydrating in water, and to readily blend with other slurry materials.
2. Wood Cellulose Fiber: Add as tracer, at rate specified by seed mix manufacturer.

**WATER**

Water used for seeding and sodding shall be as per the water requirements for plants, shrubs and groundcover.

**SURVEY STAKE**

Wooden or steel survey stake (500mm long) with colored flag shall be used to identify seeding area limits.

**C. Seeding and Sodding Installation**

This specification covers the installation requirements of all seeding and sodding included herein the Contract Documents for all Works. The Contractor shall install and maintain all seeding and sodding as specified below.
EXAMINATION
Make available topsoil test results and soil amendments recommendations for review by Contract Administrator

Ensure that all rough grading and backfilling has been completed in accordance to Grading Plan. Check subgrade condition for conformity with elevations shown on Contract Drawings. Notify Contract Administrator of any irregularities before proceeding.

Ensure that topsoil has been placed on all seeding areas as specified. All structures, hard surfaces such as walks, and curbs shall be in place prior to commencing seeding Work.

Identify and mark with steel survey stake the boundary of the seed mixes and sod areas. Mark each boundary with marker spaced every 20 m along the boundary line. Distinguish between boundaries by using different colour survey stake. No planting shall take place until these boundaries have been marked in the field.

Ensure that all barrier fencing is in place to protect existing vegetation to be retained prior to commencing cultivation of seeding areas.

Notify the Contract Administrator immediately if unsatisfactory conditions are found. Do not start subsequent stages without approval of the Contract Administrator.

PREPARATION
Grade areas to smooth-even-surface with loose, uniformly fine texture.

Seed Bed Preparation for Spring Seeding:

1. Cultivate area to be seeded in the Spring during the first two weeks of May after spring runoff. Cultivate to a depth of 100 mm removing all unwanted vegetation from seeding area. Cultivate area for a second time 14 days later
2. Till the prepared seed bed to a depth of 50 mm 5 to 7 days after the first good rainfall following second cultivation. Incorporate fertilizer during tilling operation.
3. Prepare the seed bed by immediately roller packing the tilled area, removing any ridges, depressions to meet finished grades.
4. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding. Do not create muddy soil conditions.
5. Apply seed material immediately after free surface water has drained away
6. Target seed application date should be between April 15 and May 31.

Seed Bed Preparation for Fall Seeding:

1. Maintain seeding area so that existing vegetation is kept less than 300 mm in height and seed heads are not allowed to develop. Cut seeding area regularly to maintain 300 mm height of existing vegetation until cultivation of seeding area is initialized.
2. Cut unwanted vegetation to the ground and remove cuttings from contract site.
3. Cultivate area to be seeded in mid-summer between the last week of July and the first week of August. Cultivate to a depth of 100 mm removing all unwanted vegetation. Cultivate area for a second time 14 days later.
4. Till the prepared seed bed to a depth of 50 mm 5 to 7 days after the first good rainfall. Incorporate fertilizer during tilling operations.

5. Prepare the seed bed by immediately roller packing the tiled area.

6. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding. Do not create muddy soil conditions.

7. Apply seed material immediately after free surface water has drained away

8. Target seed application date should be between August 15 and September 30.

**FERTILIZER**

Apply evenly over area in accordance with manufacturer’s instructions. Mix into top 50 mm of topsoil.

The following fertilizer recommendations are for tendering purposes only:

1. Apply four applications of 10-6-4 fertilizer at 2.5kg/100m² in the spring (as soon as snow melts), late May, early July, and early September.

2. Apply a single application of 0-20-0 fertilizer at 2.0kg/100m² in early spring or late fall.

3. Fertilizer requirements and rates shall be adjusted to conform to topsoil testing report recommendations.

**SEEDING METHODS**

Start seeding within 2 days of preparation completion.

There are two primary methods to be used to apply the seed material: mechanical drill seeding and hydroseeding.

Hydroseed slopes steeper than 3:1. Flatter slopes may be mechanically seeded.

**Mechanical:**

1. Use drill (e.g. Brillion) type seeder.

2. Roll with ring roller to cover seed, and water with fine spray.

3. Broadcasting shall be allowed only in areas too small to use drill type seeder. Where seed is broadcast, increase seeding rate 20 percent. Broadcast seed in two different directions, compact seeded area with cultivator or roller.

**Hydroseeding:**

1. Apply on moist soil, only after free surface water has drained away.

2. Prevent drift and displacement of mixture into other areas.

3. Upon application, allow absorption and percolation of moisture into ground.

4. Mixtures: Seed and fertilizer may be mixed together, apply within 30 minutes of mixing to prevent fertilizer from burning seed.

**Cover Crop Seeding:** Apply seed at rate specified on the Contract Drawings.

**Mulching:** Apply uniform cover of wood fiber mulch at rate of 1,680 kilograms per hectare.

**Netting:** Immediately after mulching, place over mulched areas with slopes steeper than 3:1 in
accordance with manufacturer’s instructions. Locate strips parallel to slope and completely cover seeded areas.

Tackifier: Apply over mulched areas with slopes steeper than 25 percent in accordance with the manufacturers recommended requirements.

Water: Apply with fine spray after mulching, to saturate top 100mm of soil.

**EROSION CONTROL**

Erosion control blanket to be placed on all banks with slopes 3:1 (horizontal/vertical) and steeper. Remove all rocks, clods, vegetative or other obstructions so that the installed erosion control blankets will have direct contact with the soil. Erosion control blankets to be installed using manufacturer specifications.

**SODDING**

Do not plant dormant sod, or when ground is frozen. Place Topsoil as per TS 5.10 prior to the placement of the sod.

Lay sod to form solid mass with tightly fitted joints; butt ends and sides, do not overlap.

1. Stagger strips to offset joints in adjacent courses.
2. Work from boards to avoid damage to subgrade or sod.
3. Tamp or roll lightly to ensure contact with subgrade; work sifted soil into minor cracks between pieces of sod, remove excess to avoid smothering adjacent grass.
4. Complete sod surface true to finished grade, even, and firm.

Fasten sod on slopes to prevent slippage with wooden pins 150 mm long driven through sod into subgrade, until flush with top of sod. Install at sufficiently close intervals to securely hold sod.

Water sod with fine spray immediately after planting. During first week, water daily or more frequently to maintain moist soil to depth of 100 mm. Water sodded area regularly after the first week to maintain sod in healthy, vigorous growing condition. Keep a record of the dates on which watering occurred. Water after six weeks if prolonged periods of drought occur (more than three days without rainfall). Always water in early morning. Ensure that watering activities do not cause sod and soil to be displaced.

It is the Contractor’s responsibility to ensure that any new sod placed throughout this Contract has rooted (ready for cutting).

**FIELD QUALITY CONTROL**

Inspect erosion control blankets every 3 weeks following installation and after every rain event to check for damage, erosion and undermining. Any failure shall be repaired immediately. If washout or breakage occurs, reinstall the material after repairing the damage to the slope.

Four (4) weeks after seeding is complete and on written notice from Contractor, the Contract Administrator shall, within 10 days of receipt, determine if a satisfactory stand has been established. A satisfactory stand shall be a grass or section of grass of 1,000 m² or larger that has:
1. No bare spots larger than 0.27 m².
2. Not more than 10 percent of total area with bare spots larger than 0.1 m²
3. Not more than 15 percent of total area with bare spots larger than 40 cm²

If a satisfactory stand has not been established, the Contract Administrator shall make another determination after written notice from Contractor following the next growing season.

**PROTECTION**

Protect from pedestrian traffic by maintaining temporary fence around each newly seeded and sodded area.

**29. Warranty and Maintenance for Landscaping Works – SP25**

<table>
<thead>
<tr>
<th>Site Specific Special Provision</th>
<th>October 2017</th>
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{NTD: Only use this section if any of the below listed site specific special provisions is included within this Contract}

All Works contained herein the Contract shall be covered under Warranty as per GC 7.15.

This special specification applies to the additional warranty and maintenance requirements for all trees, groundcover, shrubs, topsoil, seed, and sod provided in this Contract.

**ADDITIONAL WARRANTY**

Submit an additional warranty for the Work of this Site Specific Special Provision Section “TREES, SHRUBS, AND GROUNDCOVER REQUIREMENTS”, “TREES, SHRUBS, AND GROUNDCOVER MATERIALS”, “TREES, SHRUBS, AND GROUNDCOVER INSTALLATION”, “SEEDING AND SODDING REQUIREMENTS”, “SEEDING AND SODDING MATERIALS”, and “SEEDING AND SODDING INSTALLATION” with Owner named as beneficiary, in writing, as special guarantee. Warranty shall provide for removal and replacement with new plants those transplanted or newly planted plants found defective or to be dead or not in a vigorous, thriving condition during the warranty period. Duties and obligations for correction or removal and replacement of defective Work as specified in the General Conditions.

The Contractor shall replace defective plants with new material of the same type and quality as outlined in the Contract Documents. Closely match new plants to adjacent specimens of the same species and meet requirements of this Specification.

Plant replacement plants that die during a season unfavourable for planting during first month of next favourable planting season.

Plants damaged or lost due to vandalism are not subject to this warranty.

**MAINTENANCE OF TREES, GROUNDCOVER AND SHRUBS**

The Contractor shall commence to maintain plant life immediately after planting and shall maintain for a period of one (1) year and until plants are well established and exhibit a vigorous growing condition through warranty period.

In accordance with accepted Submittal on care and maintenance of plants and as follows:
1. Maintain by watering, pruning, cultivating, and weeding as required for healthy growth. Restore planting saucers.

2. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required.

3. Restore or replace damaged wrappings. Spray as required to keep trees and shrubs free of insects and disease.

4. Remove guys, stakes, and other supports at end of maintenance service.

5. Maintenance includes temporary protection fences, barriers, and signs as required for protection.

6. Coordinate watering to provide deep root watering to newly installed trees. Contractor shall note that no water is available at the Site, and all Water utilized shall be trucked in.

7. Install winter protection (burlap) to coniferous trees and remove the following spring during the maintenance period.

**MAINTENANCE OF TOPSOIL, SEED, AND SOD**

The Contractor shall perform maintenance operations during the maintenance period to include:

1. Watering: Keep surface moist.

2. Washouts: Repair by filling with topsoil, liming, fertilizing, seeding, and mulching.

3. Mulch: Replace wherever and whenever washed or blown away.

4. Mowing: Mow to 2 inches after grass height reaches 3 inches, and mow to maintain grass height from exceeding 3 1/2 inches.

5. Fences: Repair and maintain until satisfactory stand of grass is established.

6. Reseed or resod unsatisfactory areas or portions thereof immediately at the end of the maintenance period if a satisfactory stand has not been produced.

7. Reseed/replant/resod entire area if satisfactory stand does not develop by July 1.

The maintenance period for topsoil, seed, and sod shall begin immediately after each area is planted (seed or sod) and continue for a period of eight (8) weeks after all planting under this section is completed.

Upon the completion of the maintenance period, the Contractor, Contract Administrator, and representative from the City shall determine if the area has properly established itself into a satisfactory stand. A satisfactory stand shall be a grass or section of grass of 1,000 m² or larger that has:

1. No bare spots larger than 0.27 m²

2. Not more than 10 percent of total area with bare spots larger than 0.1 m²

3. Not more than 15 percent of total area with bare spots larger than 40 cm²

If the area has been found to have a satisfactory stand, the Contractor shall remove all temporary fencing and the City shall take over the maintenance of this area. If not, the Contractor shall be responsible for maintaining the area until it a satisfactory stand is present at his own expense.
The Contractor shall also provide maintenance for the entire contract period for areas located within the erected tree protection barriers until the tree protection barriers have been removed.

**ADJUSTMENT AND REPLACEMENT OF TREES, GROUNDCOVER, AND SHRUBS**

Perform adjustment and replacement Work with materials of the same type and quality as outlined in the Contract Documents. Replacement Work shall have a guarantee of the same length with the same conditions as outlined in this Specification. All replacement Work shall be done as per specifications, including maintenance and warranty periods. Date of renewed warranty shall be from time of approval of replacement work. Contractor shall document all replacement materials on Contract Drawings identifying plant material location, plant species name, quantity, reason for replacement and date of replacement.

A copy of all adjustment or replacement work carried out shall be provided to the Contract Administrator within three weeks of completion of Work.

**ADJUSTMENT OR REPLACEMENT OF SEEDED AND SODDED AREAS**

Perform adjustment and replacement Work with materials of the same variety and quality as outlined in Contract Documents. Replacement work shall have a warranty of the same length with the same conditions as outlined in this Specification. Date renewed warranty from time of approval of replacement work. All replacement work shall be done as per specifications, including maintenance and warranty periods.

Reseed areas in which seed has not established itself due to seed mortality, erosion or weed invasion. Note location and seeding date on a plan drawing for warranty purposes.

Resod areas in which sod has not established itself. Note location and sodding date on a plan drawing for warranty purposes.

A copy of all adjustment or replacement work carried out shall be provided to the Contract Administrator within three weeks of completion of Work.

30. **Slope Protection and Erosion Control – SPXX**

The Contractor shall be responsible for all slope protection and erosion control within construction limits as stated in the Contract Documents. All sediment control measures shall be installed, maintained, and removed as per OPSS 805 and shall be maintained throughout the full duration of the Work. Construction works including excavation shall not adversely impact any slope or surrounding area. The Contractor shall take all necessary precautions to mitigate adverse effects to slopes and surrounding areas.

**Heavy Duty Silt Fencing**
Heavy Duty Silt Fencing shall be placed as per OPSS 805 and OPSD 219.130. The silt fencing shall be placed 0.5 metres offset inside the construction fencing surrounding the entire site, and 1 metre offset the locations where there is an existing residential fencing. All silt fencing shall be installed with metal stakes, nonwoven geotextile, and toed into place.

**Erosion Control Blankets**

Erosion control blankets shall be biodegradable and constructed of jute, straw, or coir, with no plastic-like polymers.

Erosion control blankets shall be placed on all banks with slopes 3:1 (horizontal/vertical) and steeper and on all disturbed areas where restoration is unable to be completed until the next planting/seeding/sodding session. Erosion control blankets to be installed using manufacturer specifications.

**SiltSoxx™**

A SiltSoxx™ is a tubular-shaped material comprised of a fabric exterior filled with wood chips or compost. The SiltSoxx™ is typically laid on the top of the ground along the down-slope areas and along side-slope areas as required to prevent or reduce erosion. The SiltSoxx™ has to be installed as per the manufacturer’s specifications. The Contractor shall confirm that provided SiltSoxx™ is enough to be able to serve its purpose of prevention of silt erosion.

**Measurement and Payment**

All costs associated with erosion control shall be included in the appropriate erosion control price item; no separate payment will be made.

**31. Concrete Box Culvert- SPXX**

Site Specific Special Provision October 2017

All new box culvert shall as per OPSS 1821 specifications and installed as per OPSS 422 for Precast Reinforced Concrete Box Culverts and Box Sewers in Open Cut.

Box culverts shall be installed as shown on the Contract Drawings.

*(NTD: Below is the standard listed bedding support desired for the box culverts. Ensure that the Contract Drawings showing the bedding details of the box culverts match this description. In places where the ground conditions warrant different bedding, the bedding details are to match the designers discretion)*

The concrete box culvert bedding shall be placed on a surface prepared to support the box units consisting of 300mm Granular ‘B’ and a 100mm concrete levelling course as shown on the Contract Drawings. The Contractor shall utilize plant mixed 15 MPa concrete, dry ready-mix concrete shall not be accepted. All concrete box culverts shall be installed on concrete blocks prior to levelling surface. Contractor to provide full concrete support for the width and length of the concrete box. Bedding requiring compaction shall be placed in 150mm lifts and each layer shall be compacted to OPSS 501 with a maximum dry density of 98% as measured using the standard proctor test.
All joints shall be sealed with a mortar. A 600mm wide strip of geotextile, as specified in OPSS 1860 shall be placed to form a continuous barrier centered around the exterior of all buried joints. Geotextile shall be free of folds, tears, and wrinkles. The geotextile shall be joined so that the material laps a minimum of 500mm and shall be pinned together. The Contractor shall ensure that the box culvert is sealed at all joints.

All water lateral connections under the box culvert shall be thermally insulated with 50mm thick high density Styrofoam. Styrofoam shall be 1 m in width and the length shall be the length under the box culvert. Backfill lateral connections and place Styrofoam with 300mm Granular B above.

All concrete box elbows shall have angles as specified on the Contract Drawings.

Box Culverts shall be manufactured with pre-cored holes for concrete pipe connections at the elevation shown on the Contract Drawings.

Concrete pipes connections shall be grouted with non-shrink grout and the first flexible joint shall be placed as follows:

1. For pipe diameter up to 300mm, the first joint shall be at 300mm from the face of maintenance hole wall;
2. For pipe diameters between 300mm and 1200mm, the first joint shall be at one diameter length from the face of maintenance hole wall; and
3. For pipe diameters above 1200mm, the first joint shall be at a minimum distance 1200mm.
4. To achieve pipe joint to be within the pipe diameter length from the maintenance hole wall, crews may move the maintenance hole to achieve this.

Concrete pipe connections from High Capacity Ditch Inlets shall be installed at the inverts indicated on the Contract Drawings.

Precast Concrete Box Maintenance hole shall consist of pre-cored hole to suit 1200mm diameter riser sections, and end caps/bulkheads where required. Frames and covers shall be included in unit price bid. Aluminum rungs are to be included in the maintenance holes as per OPSD 405.020. Maintenance Hole openings shall be located on the corner on the opposite side of any pipe opening if applicable. Maintenance Hole precast concrete adjustment units to be supplied and installed as per T 704.010-1. The last step shall be 300mm above the invert, or 600mm above the invert if no benching is required.

Backfill and cover for Concrete Box Culverts shall be as per OPSD 803.010. Backfill and cover material shall be Granular ‘B’ and shall be placed in maximum 200mm lifts. Backfill on each side of the box units shall be compacted simultaneously. At no time shall the levels on each side differ by more than 400mm. Cover shall be placed to the subgrade of the road.

**Installation**

The installation of the Box Culverts shall include:

- excavation, sheathing, shoring, and trench dewatering;
- the removal and disposal off site of asphalt pavement, concrete road base, brick gutter, concrete or asphalt curb, curb and gutter, monolithic curb and sidewalk,
sidewalk, crosswalks, walkways, flag stone, boulevards, driveways and entrances (all thicknesses);

- remove and salvage existing unit pavers and interlock stone;

- protecting and supporting of adjacent components that shall remain during and after the work including, existing structures, sewers, laterals and watermains, services and utilities, light poles, hydro and traffic signal poles, hand wells, maintenance holes, catch basins, retaining walls, curbs, road base, driveways, sidewalks, crosswalks, walkways, valve boxes, signs and posts, fences, landscaping walls, bollards, gardens, decorative stones, garden edging and vegetation, residential sprinkler systems and lighting systems, any damage to existing components shall be repaired at no extra cost to the City;

- removal and disposal off-site of trench excavation including unshrinkable fill or concrete bedding according to TS 2.10 – Construction Specification for General Excavation;

- removal and disposal of existing sewer pipe, maintenance holes, catch basins and other appurtenances where indicated on the Contract Drawings or encountered during installation of new sewers or both;

- control of sewage flow during construction with bypass pumping shall be according to TS 4.01 – Construction Specification for Sewer Bypass Flow Pumping;

- supply and installation of box culvert complete with gaskets and fittings;

- supply and installation of sewer laterals by open cut or augering;

- supply and installation of all tees for services, couplings, adopters, Kor-N-Seals and all components and pieces of pipes in various locations;

- connect service connections to new sewers according to TS 410 – Amendment to OPSS 410 (Nov 2012) – Construction Specification for Pipe Sewer Installation in Open Cut;

- coring into existing maintenance holes, catchbasins and existings sewers shall be according to TS 410 – Amendment to OPSS 410 (Nov 2012) – Construction Specification for Pipe Sewer Installation in Open Cut;

- connections to maintenance holes, catch basins and sewers shall be by core drilling;

- Bulkheads and Pre-cast End Caps required to terminate the Box Culvert Sections;
- supply and placement of embedment or bedding material, cover material and backfill as specified in the Contract Documents (Note: Where Granular A material is specified in this special provision, it shall be from a source that is free of reclaimed asphalt pavement (RAP) and according to TS 1010 (April 2015) – Amendment to OPSS.MUNI 1010 – Material Specification for Aggregates – Base, Subbase, Select Subgrade and Backfill Material (April 2013));

- install trench dams or cut off plugs in accordance with OPSD 802.095 using bentonite, concrete, clay material with a permeability less than 10^-6 cm/sec. Spacing between clay collars shall not exceed 100m;

- supply and placement of unshrinkable fill according to TS 13.10 – Construction Specification for Unshrinkable Fill; and,

- Permanent restoration.

**Backfill Material**

Backfill material used above the embedment or cover material and below the lower of the subgrade or finished grade or the ground shall be Granular ‘A’ in accordance to TS 1010 compacted by approved mechanical means in 150 mm layers to 98% of maximum dry density.

**Trench Dams**

- Trench dams or cut off plugs shall be installed in accordance with OPSD 802.095 using bentonite, concrete, clay material with a permeability less than 10^-6 cm/sec. Spacing between clay collars shall not exceed 100m. Preferred spacing shall be every 30m and situated within the middle of box culvert sections.

**Trench Box**

The use of trench boxes is permitted within the roadway on this Contract; however, permanent shoring shall be considered included if required.

**Sewer Service Installation and Connections**

Prior to installing the sewer service lateral tees in the sewer mainline pipe, the Contractor shall confirm the location of all existing sewer service laterals and condition. Should existing storm service laterals be deemed deficient by the Contract Administrator, they should be replaced up to the property line. The Contractor may coordinate with the homeowner to replace the service beyond the property line per the conditions of Supplemental Specification SW304SS

During the installation of new sewer service connections, the Contractor shall ensure that the sewerage flow in the connection is free flowing, so that no sewage flows back into the houses. Should sewage backup into the houses, all damage caused shall be rectified at the Contractor’s
own expense. Prior to the installation of any sewer service connection, the Contractor shall ensure that the sewer service connection upstream of the new connection is clear of all debris and free flowing.

All existing dual connections (wye connections) shall be removed and two separate connections shall be installed in two separate trenches. New sanitary service connections to single family and semi-detached dwellings shall be individual service connections. No dual connections are permitted.

Minimum trench widths shall be as specified in the Contract Documents.

For storm services which are identified as deficient or substandard, the Contractor shall install a cleanout for each service connection at the property line and extend the proposed sewer service lateral to meet the existing sewer lateral inside the private property. The Contractor shall co-ordinate with the affect property owners regarding this construction. The additional cost to plug and disconnect the existing lateral and install a bend where the proposed lateral meets the existing lateral shall be included in the Contract Price for the sewer service lateral installation. No separate payment shall be made.

The Contractor shall excavate the trench using non-mechanical methods where utility congestion is present. The cost for non-mechanical excavation shall be included in the cost for sewer service lateral connection installation. No separate payment shall be made.

Any existing water service requiring replacement shall be installed to maintain a minimum 2.5 m horizontal or 0.5 m vertical clearance from the sewer service lateral. No separate payment shall be made for adhering to this requirement.

**Bulkheads**

The Contractor shall supply all equipment, labour and materials required to ensure the ends of the box culvert sections are caps and are able to transition/connect to typical storm sewer sections, as required. This may include the installation of bulkheads and/or pre-cast concrete end caps.

Bulkhead installations shall consist of a 300mm think concrete wall poured in place with 15M rebar @ 300mm c/c both ways across the open culvert ends. Rebar shall be drilled and epoxy a min. 75mm into box wall. The bulkhead shall be keyed into the pre-cast box culvert by removing concrete of box culvert to first cage. A rubber bead + Sika swell caulking shall be installed all around the inside joint between the keyed in section of pre-cast and poured concrete prior to pouring.

- All form work shall adhere to OPSS 919 and any hot work shall adhere to City standards as specified in the Contract Documents. Concrete shall adhere to City Specifiication TS1350 and meet the following specification:
- 28 day strength - f’c = 40 MPa
- exposure class c-1
- (CSA A23.1-14 and A23.2-14)

The Contractor shall be required to submit shop drawings for any bulkheads.

All costs related to the works shall be considered included in the unit prices for the supply and installation of the box culvert sections.

**Temporary Restoration**

The Contractor shall complete temporary restoration of all roadways including curb, and curb and gutter upon completion of the sewer installation and backfill operation at end of each Working Day of sewer construction, even before work is started on installation of the sewer services.

**Measurement for Payment**

Measurement for payment shall be according to TS 410 and as amended herein.

**Basis of Payment**

Payment at the Contract Price shall be full compensation for all labour, Equipment and Material to do the Work.

32. **Acceptance of Sewer Work – SPXX**

Site Specific Special Provision  
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The sewer works shall not be accepted by the City of Toronto until a CCTV inspection has been performed and submitted by the Contractor and reviewed by the Contract Administrator. The CCTV inspection is to be performed and submitted in accordance with the City of Toronto Standards and Specifications and Special Specification “CCTV Sewer Inspection Surveys”.

Flushing, cleaning, and CCTV inspection shall include the supply of all labour, material, and equipment necessary to carry out the work in accordance with the City of Toronto Standards and Specifications.

Prior to the acceptance of sanitary sewers, the Contractor shall, on all new sewers installed, pass the low pressure air testing requirements as stated in OPSS 410. All new PVC sewers must also pass the deflection testing requirements.
The Contractor shall also supply a survey check for all of the Works installed to verify that all Works have been installed as shown on the Contract Drawings. The Contractor shall secure a third-party Surveyor, licensed to work in the Province of Ontario, to independently confirm all elevations shown on the contractor’s record drawings. The Contractor shall also provide as-built sewer inverts and lateral services to the Contract Administrator.

**Measurement and Payment**

**All costs arising from the above requirements shall be included in the unit prices for the installation of sewers. No separate payment will be made for these requirements.**

### 33. Maintenance Holes – SPXX

**Site Specific Special Provision**

October 2017

Precast concrete maintenance holes are to be supplied and installed in the locations and as per the standards specified in the Contract. Frames and covers shall be included in the unit price items for maintenance holes and are to be according to OPSD 401.010 Type ‘A’. Aluminum rungs are to be included in the maintenance holes as per OPSD 405.020. Maintenance Hole openings shall be located on the upstream part of the chamber. Maintenance hole precast concrete adjustment units to be supplied and installed as per T 704.010-1.

The Contractor shall use Kor-N-Seal or equivalent assembly to connect all PVC pipes to the maintenance holes. For proposed maintenance holes the Kor-N-Seal or equivalent assemblies are to be installed by the manufacturer of the maintenance holes. No site adjustment or modifications will be permitted, unless approved by the manufacturer.

Concrete pipes shall be grouted with non-shrink grout and the first flexible joint shall be placed as follows:

1. For pipe diameter up to 300mm, the first joint shall be at 300mm from the face of maintenance hole wall;
2. For pipe diameters between 300mm and 1200mm, the first joint shall be at one diameter length from the face of maintenance hole wall; and
3. For pipe diameters above 1200mm, the first joint shall be at a minimum distance 1200mm.
4. To achieve pipe joint to be within the pipe diameter length from the maintenance hole wall, crews may move the maintenance hole to achieve this.
5. If the maintenance hole cannot be moved because of existing conditions, dowel (3) pieces of 15M rebar into manhole wall under proposed pipe invert and extend rebar the length of the pipe to further support first length of pipe once concrete bedding is poured.

The maintenance hole and the pipe up to the first flexible joint shall be supported with 20 MPa concrete.

Existing maintenance holes are to be connected in the dry and in such a way as to minimize damage to the existing maintenance hole. The existing maintenance hole is to be exposed, with precautions being taken to avoid detrimental effects on any existing sewer pipe connections and a new hole cored into the concrete structure.

For all maintenance holes that exceed 5 m in depth, the contractor shall provide a safety
platform. The safety platform shall be located 2 metres below the maintenance hole cover and 2.8 metres above the maintenance hole invert. The platform shall be placed as per OPSD 404.020. For maintenance holes greater than 2400mm in diameter, the safety platform shall be specially designed.

Benching if present depending on service within the maintenance hole is to be broken out and replaced, as necessary, to accommodate the new sewer and sewage flow pattern. All benching shall conform to T-701.021. Steps in the benching shall be provided where the pipe diameter is greater than 450 mm. The last step shall be 300 mm above the invert, or 600mm above the invert if no benching is required.

The Contractor shall only supply maintenance holes with monolithic bases for up to 1500 mm. Precast slab bases shall be supplied for 1800mm maintenance holes and larger. Cast in place bases are not allowed.

The Contractor shall submit shop drawings of all new maintenance holes and appurtenances to the Contract Administrator for approval.

Prior to their acceptance, sanitary maintenance holes shall pass the leakage testing as stated in OPSS 407.

The Contractor shall abandon all maintenance holes as specified in the Contract Drawings. The Contractor shall remove the top of the existing maintenance hole to 1.0m depth, fill with Granular B and cap as per OPSD 710.010.

Removal and disposal of existing maintenance hole is to be included in the unit price for the supply and installation of the new maintenance hole, and shall be undertaken as per TS 510. No additional payment will be made for the removal and disposal of the existing maintenance hole.

Payment for the supply and installation of new maintenance holes will be made at the unit price bid and shall include the supply of all labour, materials, and equipment for saw cutting, removal and disposal of existing asphalt and concrete road base and existing maintenance hole and chamber, excavation, shoring, installation of the maintenance hole as specified, backfill and compaction, benching, adjusters, leakage testing, frame and cover, connection of sewers to maintenance holes, and all restoration as specified. No additional payment will be made for the connection of sewers to maintenance holes.
34. **Drop Structures- SPXX**

Site Specific Special Provision October 2017

Where called for on the Contract drawings, or where the difference between the invert of the incoming pipe and the invert of the maintenance hole is greater than 1.22 metres, a drop structures shall be provided. All drop structures provided shall be external, internal drop structures are not allowed except where shown. The external drop pipe shall be one diameter smaller than the inlet pipe, minimum 200mm. Unless noted otherwise, the external drop structure shall be provided and installed as per T-1003.01 Type ‘C’.

**All cost associated with drop structures shall be included in the appropriate unit prices for the maintenance holes. No separate payment shall be made.**

35. **Maintenance Hole Sealing – SPXX**

Site Specific Special Provision October 2017

Maintenance holes that are to be sealed (WATER TIGHT) on the Contract Drawings shall be sealed using a watertight rubber frame assembly system inclusive of locking cams which mechanically tighten and lock the lid to the frame. Maintenance hole lid material shall be composite. Frame and risers shall be provided according to ASTM D2240, D412, D573, D395B, D746B, and D1149. Lid and frame shall include a notch mating system for precise alignment when installing the lid onto the frame. Butyl sealant is to be used between all components of the assembly and between concrete and rubber surfaces, to make watertight. Assembly installation shall be as per manufacturer’s instructions.

Watertight rubber frame assembly system shall be the Lifespan® System or approved equal. The Contractor shall provide a watertight rubber frame assembly system submittal for approval.

**Measurement and Payment**

All costs associated with maintenance hole sealing shall be made for each maintenance hole sealed.

36. **Catch Basins – SPXX**

Site Specific Special Provision October 2017

Catch basins provided shall be pre-cast catch basins with sump and shall come equipped with weepholes. The frame and cover shall be as per OPSD 400.020. The Contractor shall only use precast adjustment units for the final adjustments to a maximum of 300mm. All catch basins shall be placed on 300mm of Granular A and backfilled with u-fill.

The unit price in the pricing form for catch basins shall include the excavation and disposal of the existing material including the catch basin and lead, and placement and compaction of backfill material. The old frame and grate shall be salvaged and returned to a City of Toronto Yard to be determined at the time of construction. There will be no separate payment for this
All catch basin leads 300mm and smaller shall be PVC and shall be installed to the same specification as PVC sewers.

The Contractor shall submit shop drawings of all new catch basins and appurtenances to the Contract Administrator for review prior to fabrication.

Catch basins that are to be removed and not replaced in the roadway shall be removed to full depth, disposed, and backfilled with Granular B.

The unit price for the replacement and reconnection of catch basin leads shall include all labour, materials, and equipment to remove, dispose, reconnect to the catch basin and/or sewer, installation of the catch basin lead as specified, bedding, u-fill backfill, and all restoration as specified.

The unit price for the supply of catch basins shall include the excavation and disposal of the existing material, placement and compaction of bedding and backfill material, installation of a new catch basin, goss trap, frame and grate, connection to the existing sewer leads, installation and adjustment of a new frame with grate and restoration as specified.

This unit price for the removal of catch basins shall include the removal of existing catch basins and shall include the supply of all labour, material, and equipment required to complete all works as described herein.

37. High Capacity Catch Basins - SPXX

The installation of high capacity catch basin assemblies shall include the supply of all labour, material, and equipment to complete the installation as per City of Toronto Standards. The high capacity catch basins work in a variety of different configurations with none, one or two ditch inlets connecting to the ditch inlet with sumps.

The Contractor shall submit shop drawings of all new catch basins and appurtenances to the Contract Administrator for review prior to fabrication.

Due to the variability in the configurations, the unit price for the high capacity catch basins shall be paid out under three separate items: Ditch Inlets, Ditch Inlets with Sump, and Subdrain. The unit price for the storm sewer from the Ditch Inlet with Sump to the storm sewer shall be paid out for under their respective items in the Pricing Form.

The unit price for Ditch Inlets shall include all labour, material and equipment required to install a 1200mm by 600mm horizontal precast concrete ditch inlet manufactured in with a 1.2 m depth, a heavy duty riveted roadway steel grating that is galvanized to ASTM-A123, designed for H20 loading, and has 75mm by 75mm by 6mm angle iron that is integrally welded across the clear openings of the grating, bedding, backfilling, and excavation. Contractor shall coordinate exact grating dimensions to ensure that the grating has a clear span opening of 1200mm by 600mm. Four 13mm by 95mm 304 stainless steel expansion anchors with stainless steel offset washers per grating section shall be installed through the angle iron. Fastener heads shall be flush to or lower than the top of the grating. Ditch Inlets shall have quick drain connect insert to
accommodate a subdrain connection, and shall connect to the Ditch Chamber or Ditch Inlet with Sump by a 375mm concrete lead. The unit price for the ditch inlets shall also include up to a metre of the 65-D 375mm diameter concrete lead pipe that connects the ditch inlet to the supporting structure, bedded in u-fill down to undisturbed earth and backfilled with u-fill.

The unit price for Ditch Inlets With Sump shall include all labour, material and equipment required to install a 1200mm by 600mm horizontal precast concrete ditch inlet manufactured to a 2.1 m depth, a heavy duty riveted roadway steel grating that is galvanized to ASTM-A123, designed for H20 loading, and has 75mm by 75mm by 6mm angle iron that is integrally welded across the clear openings of the grating, 300mm of Granular ‘A’ bedding, backfilling, and excavation. Contractor shall coordinate exact grating dimensions to ensure that the grating has a clear span opening of 1200mm by 600mm. Four 13mm by 95mm 304 stainless steel expansion anchors with stainless steel offset washers per grating section shall be installed through the angle iron. Fastener heads shall be flush to or lower than the top of the grating. Ditch Inlets With Sump shall be equipped with a 304 Stainless Steel goss trap for the discharge pipe, up to two 375mm Concrete inlets and an outlet as shown on the Contract Drawings.

The unit price for the subdrain shall include all labour, material and equipment required to install the 100mm diameter perforated polyethylene subdrain with knitted sock geotextile. Subdrain shall be bedded with clear stone and backfilled with Granular ‘B’. Inspections of the subdrain shall be included into the unit price of the subdrain installation. No separate payment shall be made for this provision.

The 375mm lead shall be concrete pipe, class 65-D, bedded and backfilled with u-fill down to undisturbed earth.

The Contractor shall provide shop drawings for all items included in the high capacity catch basins.

The unit price in the pricing form for high capacity catch basins shall include the excavation and disposal of the existing material including the catch basin and lead, placement and compaction of backfill material, and restoration as specified. The old frame and grate shall be salvaged and returned to a City of Toronto Yard to be determined at the time of construction. There will be no separate payment for this delivery.

38. Maintenance of Sewer Flows – SPXX

Site Specific Special Provision October 2017

Maintenance of flow and sewer bypass flow pumping shall be as per TS 4.01.

During construction of the sewer works under this Contract, temporary diversion sewers or a bypass pumping system shall maintain the flow in the existing sewer system and any affected services. The bypass system shall be capable of handling the peak flows in the existing sewers and shall include standby equipment such as standby pump, portable generator etc. to deal with emergency situations. The proposed bypass system shall be submitted to the Contract Administrator for review prior to implementation.

To minimize the disruption to local traffic, any bypass pumping system must be setup as to not
impact the regular cross street traffic flow outside the immediate work zone. The Contractor shall contact all property owners and/or tenants to coordinate any service interruptions as to minimize any impact on residents and/or businesses. The Contractor is to make all necessary arrangements with the owners of each building.

Any bypass pumping system may not be run during off-hours of construction, due to the City’s noise bylaw, regardless of methods employed. The sewer flow must be temporarily diverted through the open excavation, by means approved by the Contract Administrator. The Contractor shall not, under any circumstance, divert or pump storm sewer flows into an adjacent sanitary or combined sewer without prior written authorization.

All bypass pumping operations that discharge to a downstream catchbasin, or where the discharge runs along the surface, the Contractor shall erect straw bale barriers around the catchbasins as per applicable OPSS and TS specifications. The Contractor shall ensure that all gutters are kept clear at all times for surface drainage. The Contractor shall not direct any pumping discharge onto sidewalks, driveways, boulevards or private property. The Contractor shall maintain the straw bale barrier for the duration of the bypass pumping into that location, and shall clean up any and all sediment that might have accumulated as a result.

The Contractor shall factor in any additional bypass pumping needs for that location into the appropriate unit items.

**Measurement and Payment**

**There shall be no separate payment for maintenance of sewer flow and all associated costs shall be included in the appropriate unit price items.**

39. **Water Service Connections– SPXX**

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**Site Specific Special Provision October 2017**

In addition to the requirements of WM203SP, the Contractor shall note the following:

In instances where the new service is installed in the same location as the existing service, the Contractor shall disconnect the old water service by excavating at the watermain where the service is connected, shut the old stop-cock and cut the old water service pipe. The abandoned water service curb stop, box and rod are to be removed if they are in the same water service excavation trench. The Contractor is also required to excavate/remove abandoned water service curb stop, box and rod and remove abandoned curb stop, box and rod outside of the new water service excavation trench. All costs associated with abandoning the existing water service shall be included in the unit price for installation of water services and no separate payment will be made.

**CLEARANCE BETWEEN PRIVATE WATER SERVICES AND OTHER UTILITIES**

There must be a minimum clearance of 1.0 metre between private water services and private drains. A 1.0 metre clear separation is also required between drains/water services and gas services/mains.

**ABANDONING EXISTING WATER SERVICE CONNECTIONS**

Water services which are being abandoned should be detached at the main. In case of water service connections to the main with driven nipple, the driven nipple requires removal and the resulting hole in the main filled with a plug or, if necessary, covered with a repair sleeve. If it is a
tee, it is to be removed and a filler piece installed. For connections made with a tapping valve and where the valve is in good condition, the valve must be closed and a mechanical plug installed on the service side of the valve.

**NOTIFICATION FOR INSPECTION**

The Contractor shall notify the Contract Administrator’s Representative, on a daily basis, of the water service installation schedule and identify any unusual installations.

**40. Saw Cutting and Pavement Removal – SPXX**

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All excavations that will disturb asphalt or concrete pavement or structures shall be saw cut. All saw cutting shall be completed wet. All sawcuts shall be made either parallel or perpendicular to the direction of travel. Sawcuts shall be straight and vertical to the full depth of the asphalt and concrete layers of pavement.

Saw cutting shall stop at, or just short of, corners to avoid overcutting. After saw cutting the edges, removal of pavement materials shall be performed with care to avoid lifting or breaking the road pavements beyond the sawcut borders.

If during the course of the work additional asphalt or pavement has breakage beyond the trench width, the Contractor shall saw cut completely around the breakage prior to completing the restoration.

**41. Temporary Snow Fence – SPXX**

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<thead>
<tr>
<th>Site Specific Special Provision</th>
<th>October 2017</th>
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Given that the Contract Administrator has directed the Contractor to deposit and store any material or equipment on any portion of the street, sidewalk, boulevard, grass plot, or other City’s or public property, the Contractor must install temporary orange snow fence supported on steel Tee bar posts to surround the material, protecting the Public to such materials.

Post spacing shall be a maximum of 2.4m. The location shall be determined on site as directed by the Contractor Administrator.

Utilities/ Communication cables may be buried within the City’s right-of-way. Utility stake out shall be performed to locate the cables prior to install any posts for snow fence. The Contractor must clear all utilities for the installation of the posts.

The Contractor shall supply, install, maintain, relocate if necessary and remove at the conclusion of the project orange snow fence supported on steel Tee bar posts. Snow fences will be installed around the areas as directed by the Contract Administrator.

**Measurement and Payment**

All costs associated with meeting the above requirements shall be borne by the Contractor. No separate payment shall be made.
42. **Temporary Construction Fencing – SPXX**

**Site Specific Special Provision**

October 2017

Contractor to provide 1.8 metre high standard construction fencing as required.

The Contractor shall affix the hoarding required to meet the Tree Protection Zone requirements as specified in the “Working Around Trees” specification and the Contract Drawings.

Should, throughout the course of the Work, any damage occur to the back or side yard residential fencing, the fence shall be replaced or repaired to the satisfaction of the Contract Administrator.

Construction fencing is to be maintained in good repair and made secure when work is not in progress. Appropriate signage is to be used per applicable specifications. The construction fence shall be inspected daily to ensure that it is providing adequate protection around the Site.

At the access point for all equipment and trucks, the Contractor shall ensure that this location is lockable and capable of preventing public entry. The Contractor shall ensure that, regardless of the locking method utilized, that three keys are supplied to the Contract Administrator prior to the start of the Work.

Heavy Duty Silt Fencing shall be placed as per TS 577 and OPSD 219.130. The silt fencing shall be placed 0.5 metres offset inside the construction fencing surrounding the entire site, and 1 metre offset the locations where there is an existing residential fencing. All silt fencing shall be toed into place.

All fencing shall be constructed prior to the mobilization of equipment and materials to the Site and shall remain in place and maintained for the full duration of the Work, including restoration, until the end of the specified maintenance period.

**Measurement and Payment**

Payment for the temporary construction fencing shall be paid by the following schedule:

- 50% Supply and installation;
- 50% Removal and restoration.

43. **Clean Up of Site - SPXX**

**Site Specific Special Provision**

October 2017

The Contractor, during the progress of the work shall keep the site and work in as tidy a condition as practicable and to the satisfaction of the Contract Administrator. The Contractor shall not deposit any material on any portion of street, sidewalk, boulevard, trails, grass plot, or other City’s or public property, without the permission of the Contract Administrator, and shall remove same without delay when and as directed by the Contract Administrator. Upon completion of the work, the Contractor shall carefully examine all work, remove all plant or surplus materials as well as any rubbish accumulated on account of the Contractor’s operations,
make good any defects or damage and shall leave the site in a condition satisfactory to the Contract Administrator.

Should the Contractor fail to comply with this requirement within 24 hours of notification in writing, the Contract Administrator shall arrange for the cleanup to be done by others and charged to the Contractor.

44. Monitoring Well Decommissioning – SPXX

Site Specific Special Provision October 2017

{NTD: Include only if there are monitoring wells to be decommissioned as part of this Contract.}

The Contractor shall retain the services of a water well contractor licensed by the MOECC to abandon monitoring wells prior to the start of the Work for the wells identified within [List specific Geotechnical Report here] Geotechnical Report. The wells shall be abandoned in accordance with O. Reg. 903 and records of the abandonment shall be submitted to the MOECC and copied to the Contract Administrator upon completion.

Measurement and Payment

All costs associated with the decommissioning of wells shall be included in the appropriate unit price in the schedule of prices. The Contractor shall include all costs for the decommissioning of monitoring wells including all labour, equipment, and material required to decommission each monitoring well and complete the required submissions to the MOECC.

45. Limits of Construction in Parks and Parkette - SPXX

Site Specific Special Provision October 2017

{NTD: Include only if the Contract includes work within a Park}

The Contractor shall limit all activity located within _________ Park to the areas as shown on the Contract Drawings. The Contractor shall stage the temporary work areas as stated in the Contract Documents. The Contractor shall take all necessary steps to ensure that no undue damage is caused to existing structures, roads, property, utility services, or similar items during the progress of the Work. If any damage is caused, the Contractor shall repair and make good such damage at their own expense to the satisfaction of the Contract Administrator.

Only the areas designated by the City for the Contractor access shall be used.

The Contractor shall provide public access to all recreational facilities, areas, and equipment. The Contractor shall confine operations within areas designated for construction, storage, and access on the Contract Drawings and/or as directed by the Contract Administrator.

Should the Contractor require additional areas outside of the designated limits as shown on the
Contract Drawings, the Contractor shall submit working drawings to the Contract Administrator prior to the start of the Work with a proposed extension of area. The Contractor shall not occupy the additional area until written authorization to do so has been granted from the Contract Administrator.

In order to minimize disruptions to the use of the park recreational trails and walkways by the public, trails and walkways in and around the construction limits will remain open. Consequently, the Contractor shall not obstruct any trail nor walkway longer or to any greater extent than is absolutely necessary. Where trails and walkways are obstructed due to construction, the Contractor is to provide safe, ample and convenient means of alternative access.
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Field Services Manual
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Appendix

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Glossary
Introduction

We’ve written the Field Services Manual for inspectors and contract administrators in the Engineering & Construction Services division to use and refer to when carrying out your responsibilities on linear infrastructure projects such as watermains, sewers and roads, vertical infrastructure projects such as bridges or expressways, or on plant and facilities related construction projects.

The purpose of this manual is to provide you a source of knowledge and the expectations of you—the inspector or contract administrator—as you carry out your duties during construction.

This manual will allow you to understand the responsibilities that accompany each role, how to prepare factual records of activities during construction, and how to be consistent in the review and monitoring of any construction related activity.

This manual should be utilized in conjunction with the General Conditions of Contract, Capital Works Projects Procurement and Administration Procedures Manual, and the contract documents. It does not have precedence over the contract documents. Inspectors and contract administrators should fully review all contract documents, applicable specifications, special provisions, and drawings to ensure compliance with all contract requirements.

This manual is available in an online version only.

What This Manual Contains

Chapter 1 – Project Team – covers the responsibility of inspectors, contract administrators, contractors, engineering surveys, assistant inspectors and inspection coordinators.

Chapter 2 – Project Control – covers the purpose of meetings, what should be discussed at pre-construction meetings, progress meetings, and joint health and safety meetings, activities that could impact the schedule, how to document these issues, and conflict resolution procedures if there are differences of opinion.

Chapter 3 – Communication – covers the importance of communication between all parties, telephone conversations, purpose of contract administrator’s site visits, how to handle project issues that lead to contract modifications, public complaint process, monitoring
health and safety on construction sites and spill requirements compliance.

Chapter 4 – Field Construction Procedures – covers filing system structure, the importance of facts and to record them on daily and weekly reports, deficient material or equipment, materials quality assurance tests, example of submittals by contractors, deficiency lists, as-built drawing requirements, tree protection, substantial performance, making right of all items on the deficiency list for final completion, contract payment, documentation to include for contract close-out, and final inspection as part of project close-out.

Appendix A – Forms – contains a list of forms referred to in this manual and which should be used by the inspector and contract administrator.

Appendix B – Inspection Tasks – contains a listing of inspection tasks along with a description of each activity for that task.

Appendix C – Materials Testing Protocol – contains a guide on topics such as general administration and material management duties for inspectors and quality assurance of consultants, project engineers and managers, ready mixed concrete, hot mixed asphalt, granulars, imported earth and crack filling material.

Appendix D – As-built Drawing Guidelines – contains an explanation of the difference between record drawings and as-built drawings, the purpose and process of as-built drawings and what to submit at the completion of the project.

Appendix E – As-built Features Requirements – contains the as-built requirements such as field verification, survey pick-up and drawing mark-up for assets like storm sewers, sanitary or combined sewers, watermains, stormwater management facilities, transportation assets and other utilities.

Appendix F – Utility Inspections – contains the activities the inspector is responsible for when inspecting the work of utility companies.

Appendix G – Weight Verification Protocol – contains the protocol outlining the scope and procedures for weight verification to construction materials that are priced based on weight in City construction contracts.
Appendix H – Health and Safety – contains the roles and responsibilities of inspector and contract administration staff as well as other important aspects such as personal protection, rights of a worker, expectations, incidents, accidents, near misses, safety contraventions, violations, and the emergency response program.

Appendix I – Sidewalk Repair Protocol – contains the assessment schedule, and the type of defects expected.

Appendix J – Bibliography – contains a listing of field services manuals published by current city of Toronto divisions, and other neighbouring cities, directives issued, and styles guides used in the production of this manual.

Glossary – an alphabetical list of technical terms relating to construction field services provided by inspectors and contract administrators. Many of the words listed have been italicized and defined in the text.
I must thank the workshop participants for their active participation in the workshops and contributions to this manual, which without their effort and experience, this manual would not have been written:

**Engineering and Construction Services**

- Penelope Palmer     Manager, Business Improvement and Standards
- Ross Ruffolo        Inspector
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- Vincent Domey        Senior Engineer, Linear Underground Infrastructure
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Thank you!

Tony Tsui
Engineer
Business Improvement and Standards Unit
Chapter 1 – Project Team

Inspectors

The importance of proper inspection on a construction project cannot be over emphasized and cannot occur without a properly trained inspector. The inspector provides the essential link between the City, the contractor, and the public.

The main duty of an inspector is to protect the interest of the City while assuring that the works are constructed properly and in accordance with the contract documents. All City contracts place the onus on the contractor for complying with all applicable bylaws, statutes, and regulations and so on and for carrying out the works in such a manner so as not to unnecessarily or unreasonably inconvenience the public. While it is the contractor’s responsibility to comply with the aforementioned, it is the inspector’s duty to ensure compliance with the contract documents and assure that the City receives the product specified in the contract documents.

It is extremely important to have an appropriate balance between protecting the interest of the City and being fair to the contractor. Inspectors and contract administrators must be fair in their dealings with contractors, consultants, and others while maintaining a firm and reasonable approach to ensure that contract standards and specifications are met.

Without External Service Provider

The City inspector leads all inspection activities on site and works directly with the contract administrator. The inspector also documents field activities by the contractor and where applicable, coordinates with the appropriate operating divisions, Toronto Police Services, TTC, Enbridge Gas, Bell, Rogers Cable, Transportation Services, Toronto Water and so on. The contract administrator and the inspector should meet prior to project start up to discuss project specific requirements. Some of the activities that the inspector is responsible for are as follows:

Inspecting work for conformance with the contract documents and preparing daily and weekly inspection reports.
Documentation

• Maintaining project field documentation according to Chapter 4, *Field Construction Procedures* of this manual.

• Creating water or sewer service cards or both.

• Compiling information with regards to all field changes—red line information—in the contract document for as-built drawing preparation.

• Providing observations in writing along with photographs of any noncompliance issues for review and possible use by the contract administrator for the contractor performance evaluation.

Coordination

Coordinating construction activities such as testing, pre-engineering work, utility work and operation of City watermain valves by Toronto Water with contractor’s field supervisors, operations staff, and testing companies contracted by the City.

Inspecting work of utility companies and developments for conformance with permit requirements, standards and specifications.

Payment

Measuring and documenting quantities of work completed for payment purposes. Verifying work progress and assisting in reviewing contractor’s pay request where applicable.

Scheduling

Informing the contract administrator on the contractor’s method of construction and progress.

Materials and Testing

Coordinating and observing materials testing, sampling, collecting tickets, weigh bills and so forth.
Meetings

Attending pre-construction and subsequent construction progress meetings and may be assisting the contract administrator with taking meeting notes.

Change Management

Assisting the contract administrator with the change management process, submittal process, progress payments, information from the field, and so forth.

Developing deficiency lists with contract administrator and the contractor and conducting post-construction inspections with assistance of the client groups and pre-end of warranty inspection.

Public Relations

Responding to the public and directing them to the proper authority.

Warranty

Conducting or assisting with warranty inspection prior to the end of the guarantee maintenance period.

With External Service Provider

When an external service provider is involved in the project, it acts as the owner’s representative and completes all of the tasks listed above that the inspector typically carries out and as stated in the Request for Proposal and consulting services agreement for the project or program. On these projects, the external service provider is the inspector. This role is sometimes referred to as the resident inspector, site inspector, field inspector or resident engineer.

Other References:

For the definition of an inspector, see General Conditions of Contract, clause GC 1.04.01.
Third Party and Utility Review Inspectors

Inspectors operating under the Third Party & Utility Review unit of the Engineering Review section interact with the permit holder or proponent of the work rather than the contractor. The external service provider or consultant will have their own inspector or field representative on site—the external inspector—to ensure compliance with project specifications. Contract-related items such as change management, contract issues, and materials tracking are handled exclusively between the external inspector and the contractor. The Third Party & Utility Review inspector will perform "spot checks" only of the work affecting City infrastructure for compliance with City standards.

Some of the activities undertaken by the Third Party & Utility Review include:

- Inspection of the work on site to confirm compliance to permit conditions, terms of agreement and other requirements.
- Providing a single point front line site staff to interface directly with the permit holder representative's designated site staff for resolution of field issues.
- Coordinate with office staff to support construction work and resolution of issues arising during construction.
- Attend regular site progress meetings as requested by permit holder in order to stay current with construction progress in relation to utility and services work and to identify potential field issues in advance of work, where possible.
- Coordinate and facilitate with Toronto Water and Transportation Services with respect to field activities required to support permit holder during construction such as temporary services, shut off, connection and/or reconnection of services, realignment of lane configuration and so on.
- Regular consultation with permit holder site staff to keep current of the daily activities on site and provide appropriate level of inspection to ensure protection of the City's interest while mitigating potential work stoppages.
- Participate in field meetings with permit holder with its consultants and contractors as necessary to support resolution of field issues during construction.
• Review, in consultation with office staff, proposed design changes as proposed by permit holder and its contractors during construction as to resolve issues that may impact permit conditions.

• Front line resolution of issues during construction to allow construction to proceed in event of unanticipated field conditions.

• Front line resolution of issues that require temporary or deferred solution as deemed required by permit holder to allow work to continue.

• Assist permit holder, consultants and contractors with interpretation of permit requirements, and specifications.

• Document persistent problems, such as non-compliance with permit, non-attendance at critical milestone tasks, observed health and safety infractions, public relation problems, non-compliance with traffic requirements or other City divisional requirements, failures to follow specifications and any other significant issue, encountered with permit holders, consultants and contractors and review with case manager as required and at end of project.

• Help to ensure required information for submittals are gather during the work and audit check to ensure compliance with permit requirements

• Participate in inspections of completed work for all phases of construction and invite attendees from City divisions as required.

• Observe and note problems with issues identified by case manager prior to and during construction.

• Document and prepare reports indicating progress, concerning issues and other pertinent information.

Other References:

For the definition of an inspector, see General Conditions of Contract, clause GC 1.04.01.
Contract Administrators

The City's project manager must ensure that for internal and external contracts, contract administrators are in compliance with the various terms of the construction contract.

The City's project manager and contract administrator must ensure that the general contractor provides an authorized representative on the project site at all times that is knowledgeable and has the authority for making decisions. Insufficient work direction and delays could result due to absence of contractor's representative on site for decision making purposes.

Without External Service Provider

The contract administrator is responsible for a number of tasks related to contract management of the project. They provide functional direction to the inspector and are accountable for all matters related to the project in accordance with the contract documents.

It is extremely important to have an appropriate balance between protecting the interest of the City and being fair to the contractor. Inspectors and contract administrators must be fair in their dealings with contractors, consultants, and others while maintaining a firm and reasonable approach to ensure that contract standards and specifications are met.

The following provides a list of some of the activities that the contract administrator is responsible for:

Provide project oversight, manage project within scope, budget, schedule, and report project progress to city management.

**Documentation**

- Maintain project documentation.
- Review inspector’s daily and weekly reports.
- Certify substantial performance and completion

**Meetings**

Chair meetings such as pre-construction, progress, schedule and so on and prepares meeting minutes.
Change Management

Process contract changes per the change management protocols.

Payment

Review, authorize, and process contractor progress payments. Ensure appropriate permits are obtained, for example road cut permit.

Materials and Testing

Review third party testing company reports and follow up on non-compliance with contract plans and specifications.

Coordination

Coordinate activities with other agencies, city divisions, and any public liaison committee. Manage third party activities in consultation with the inspector.

Conflict Resolution

Lead conflict resolution procedures and construction claims resolution process.

Warranty

Initiate and oversee completion of warranty work prior to the end of the guaranteed maintenance period.

With External Service Provider

When an external service provider—typically a consultant—is involved in the project, it acts as the owner’s contract administrator and shall complete all of the tasks listed above that the owner typically conducts. On these projects, the consultant must work with the City's Project Manager throughout the project as defined in the Request for Proposal (RFP). Details of roles and responsibilities are outlined in the RFP and consulting services agreement for the project or program. Generally, the City's project manager is responsible for decisions related to scope, schedule, budget and design impacts, and ensuring that the project is delivered on time and on budget while meeting the
City's requirements. The external service provider makes the reviews and makes recommendations to the City's project manager on a variety of items such as contractor payments, contract modifications, for example change directives, change orders, and so on and the City provides the final approvals.

The contract administrator and case manager must be active participants in all meetings and communications.

Other References:

For information related to the role of the contract administrator, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.5.

For the definition of contract administrator, see General Conditions of Contract, clause GC 1.04.01.

For information related to the contract administrator’s authority, see General Conditions of Contract, clause GC 3.01.

For definitions of external service providers, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.5.

Contractor

The contractor, when in a binding agreement with the City, is required to fulfill the obligations as outlined in the contract documents and specifications within a given schedule and price. The inspector must assure that the quality of materials and workmanship is not compromised during the contractor’s due process. Any deviation from the contract design or specifications must be approved by the contract administrator prior to being implemented.

It is the contractor’s responsibility to direct their staff and subcontractors. An inspector should not direct the means and methods of the delivery of the project, but should assure that the contractor provides acceptable methods of good workmanship and quality of work according to the contract.
Other References:

For the definition of contractor, see General Conditions of Contract, clause GC 1.04.01.

For information related to the contractor’s responsibilities and control of work, see General Conditions of Contract, clauses GC 7.01–GC 7.19.

Engineering Surveys

The Engineering Surveys unit in the Engineering Support Services section provides full support to all internally delivered Capital Works Programme projects in coordination with Managers of the Design & Construction Transportation Infrastructure section. Engineering Surveys will:

- Attend construction meetings.
- Work with contract administrator and contractor to schedule survey requirements in order to effectively manage the survey and field layouts to avoid costly re-layouts.
- Perform and record the construction layout.
- Establish and keep a record of horizontal and vertical stations along the alignment at an appropriate offset and frequency to enable the accurate construction of the proposed feature.
- Prepare grade sheets and all other field notes to record and convey the work done.
- Provide assistance and input on issues that may arise requiring revision to completed surveys, and provide remedial work.
- Record and make notes and sketches of relevant information that will be of value in the subsequent as-built drawings.
- Provide assistance for the tie-in of underground infrastructure, if required.
- Assist in final quantity measurements when a dispute arises.
- Perform audit check of private layout as required.
Assistant Inspector

The role of the assistant inspector is to provide assistance to the inspector with daily tasks on a project site. The inspector and the assistant inspector should meet prior to project start up to designate tasks; however, the tasks can be assigned throughout the duration of the project. Strong communication between the assistant inspector and the inspector should occur to ensure all tasks are being completed.

Inspection Coordinator

The role of the inspection coordinator is to report to the construction supervisor and provide assistance to the inspector with coordination tasks. The team should meet prior to project start up to define roles; however, the tasks can be designated throughout the duration of the project. Strong communication between the team should occur to ensure all tasks are being completed.

The major responsibilities of the inspection coordinator can include:

- Assisting with assigning and monitoring and cover off for construction staff, for example the inspector and assistant inspector.
- Notifying contractors when not following City policies and procedures and follow-up as required.
- Assisting engineers with investigation of complaints and deficiencies from residents or councillors and prepares reports.
- Upon request, audit check work done by consultants
- Carrying out other duties as assigned by the construction supervisor
- Audit check work inspected by consultant inspectors.

Coordination

Assisting coordination of work between contractors and TTC forces.
Meetings

Meeting with key team members such as the contract administrator, inspector, design team and so on and so forth as required to discuss specifications and drawings.

Attending pre-construction, progress meetings and other meetings as required and assisting with taking meeting notes.

Health and Safety

Assisting the construction supervisor in compliance with contract specifications and requirements of the Occupational Health and Safety Act (OHSA) and Regulations for Construction Projects (Ontario Regulation 213/91).

Assisting in the scheduling of occupational health and safety training as required by inspectors and assistant inspectors.

Documentation

Assisting in the review of plans, specifications, special specifications and drawings.

Warranty

Assisting in the preparation of the 2-year warranty inspection list and updating the 2-year warranty deficiency list

Supervisor

Duties and Responsibilities

The supervisor is responsible for the day to day management of construction inspection staff. The supervisor provides daily functional direction to the construction inspection staff deals with site and contract issues. Duties can include but are not limited to:

• Reviewing documentation prepared by inspectors, inspection coordinators and assistant inspectors and provide comments in writing for the project file to show due diligence.

• Ensuring that the required documentation prepared by inspectors, inspection coordinators and assistant inspectors is prepared in
compliance with the *Field Services Manual* and the most recent directives from the Engineering & Construction Services during the construction and upon completion of the contract.

- Ensuring all inspector submittals are saved electronically.
- Ensuring that all final calculations are checked for accuracy and payment for items are completed in accordance with audit requirements.
- Providing constructability review comments to the contract administrator prior to the tendering process.
- Visiting inspector work sites to monitor performance as required
- Ensuring inspectors’ health and safety is protected as required by the Occupational Health and Safety Act (OHSA) and Regulations for Construction Projects (Ontario Regulation 213/91) and City Policies.

**With External Service Provider**

When an external service provider—that is the consultant—is involved in the project, they act as the owner’s contract administrator and shall complete all of the tasks listed above that the owner conducts.

**Case Manager**

The role of the case manager is specific to the Engineering Review section. The case manager provides support to Engineering review projects, working in conjunction with Engineering Review inspectors. Some of the activities undertaken by the case manager include:

- Review of drawing submissions against engineering design standards as they relate to Toronto Water and Transportation Services standard design requirements.
- Coordination of design comments from Toronto Water and Transportation Services operations and maintain with respect to the impact to their infrastructure.
- Provide single point office support for management of utility issues related to full stream cut permit and development applications.
• Review proposed design changes as proposed by permit holder or applicant and its contractors during construction as to resolve issues that may impact permit or approval conditions.

• Attend site meetings as required to support site staff in resolution of construction issues with respect to utility work.

• Review of applications for Ministry of the Environment and Climate Change approvals and signing-off on application on behalf of the municipality.

• Process the Drinking Water Applications and coordinate the review with City's Transfer Review unit.

• Attend internal coordination meetings with other City units such as City Planning, Solid Waste, Fire Services, and Transportation Services to ensure coordination of the review for the works proposed and submitted through the site plan process.

• Review important and non-standard issues with inspector prior to and during project phases.

**City Project Manager**

On internally-managed projects, the project manager provides functional project direction to the inspector and is responsible for all matters related to the project. This role includes managing the project's scope, budget, schedule, and reporting progress to the unit's manager as well as all project clients (or stakeholders). With internally-managed projects, the project manager is often also the contract administrator.

When an external service provider is involved on a project and is assigned the role of the contract administrator, the external service provider (typically a consultant) is managed by the City project manager. The City project manager provides support and oversight along with final authorization on items such as payments and contract changes, upon receipt of recommendations from the Consultant contract administrator. The City project manager also liaises with internal and external client (or stakeholders).

The City project manager must review and be familiar with the Request for Proposal (RFP) terms and conditions, RFP appendixes, as well as the technical and financial proposal from the external service provider. This is done to ensure that the consulting assignment can be managed in accordance with the scope and the terms and conditions of...
the consulting agreement. The consulting agreement includes the RFP, any addenda, cost proposal, and the legal agreement.

The City project manager must ensure that the consultant involves experienced staff as identified in their original proposal. If a staff change is proposed by the consultant, the approval process identified in the *Capital Works Projects Procurement and Administration Procedures Manual* must be followed.
Chapter 2 – Project Control

Meetings

Various types of meetings are necessary throughout the life of any project. Such meetings can include the following:

- pre-construction meetings
- progress meetings
- pre-concrete pour meetings
- pre-pave meetings
- joint health and safety meetings or tailgate meetings or both—chaired by constructor

The schedules for meetings are dictated by the project complexity, contract progress, and the need to promptly address major issues. The meeting frequency is determined by the contract administrator and can be determined in conjunction with the inspector and the contractor. In the case where there is a consultant, the meeting frequency is pre-defined in the request for proposal (RFP). Items to be discussed in meetings can include the following:

- summary of contractual milestones
- schedule
- overview of work completed this period—provided by contractor
- a review of construction issue decisions and rationale
- recommended course of action
- protocol for construction changes
- health and safety
- tree protection
- new issues and others

The contract administrator chairs the meetings and minutes must be recorded with copies distributed to the all attendees, the project team and other key personnel. The inspector or inspection coordinator may assist—by taking meeting notes—with the meeting minutes at the discretion of the contract administrator. A copy of the meeting minutes should be circulated for comments to all attendees and changes or revisions noted. A copy of the final meeting minutes should always be included into the project files.
Other References:

For information related to the requirements for the pre-construction meeting, see the *Capital Works Projects Procurement and Administration Procedures Manual*, Section 5.5.2.2.

For information related to the attendance and discussion items for site meetings, see the *Capital Works Projects Procurement and Administration Procedures Manual*, Section 5.5.3.

For requirements on joint health and safety meetings, see the *Occupational Health and Safety Act and Regulations for Construction Projects (Ontario Regulation 213/91)*.

Pre-Construction Meetings

A pre-construction meeting is required to outline and discuss administrative procedures and define responsibilities of the City, contractor(s), subcontractor(s), and consultant(s) in order to complete the project in an efficient and satisfactory manner and in accordance with the contract documents. A sample outline of a progress meeting is attached in Appendix A, *Forms*.

Detailed discussions on method of construction, staging, schedule, and traffic control plan should take place. All relevant submittals are also part of the agenda for the pre-construction meeting. Submittals for mix designs are required for pre-pour or pre-pave meetings. The pre-construction meeting is typically held after the contract is awarded but before the commencement of any work on the contract.

The contract administrator arranges the time and location, prepares a list of invitees, and sends out meeting notices to all involved parties. Project drawings, documents, design information, environmental data, templates, horizontal and vertical control, construction notices, or any other site specific information as appropriate for the project should be made available to the meeting participants. The contract administrator also advises the contractor on the frequency of contractor performance evaluations during the pre-construction meeting.

The contract administrator chairs the meeting and is responsible for generating and distributing the minutes. The agenda can be revised as appropriate for the contract. At the beginning of the meeting, an introduction of all attendees should be conducted. This includes the name, company, role, and responsibility. In addition, business cards should be distributed to all and an emergency contact list prepared for
distribution. An example contact names sheet is provided on the next page. It is also important to identify key stakeholders during this meeting.

Table: Contact names sheet

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Work Number</th>
<th>Fax</th>
<th>Cell Phone</th>
<th>Pager</th>
<th>Emergency Phone</th>
<th>E-mail</th>
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</table>

Other References:

For information related to the requirements for the pre-construction meeting, see the *Capital Works Projects Procurement and Administration Procedures Manual*, Section 5.5.2.2.

**Progress Meetings**

Progress meetings are typically held continuously throughout the duration of the project. The frequency of the progress meetings vary depending upon the complexity and length of the project. The contract administrator, inspector, and the contractor should determine the frequency of the progress meetings for each project. In the case where we have an external service provider, the frequency of the meetings is specified in the RFP.

Progress meetings can address a number of topics and are typically held to encourage communication, resolve any issues, and plan activities before they occur. The following are some items that could be discussed:

• review of previous action items
• contract administration issues such as progress payments and contract changes
• construction schedule: overall schedule and contractor’s weekly or biweekly plan
• safety issues
• coordination between construction, plant and district operating divisions in Transportation Services and Toronto Water, external service providers such as material testing companies and so on
• construction submittals, change order document status  
• inspection and testing  
• status of permits, for example, RoDARS, cut permits, MOECC permits, and so on  
• subcontractor status  
• deficiency items  
• third party or public complaints  
• engineering surveys  
• traffic and pedestrian access  

Progress meetings are chaired by the contract administrator and are attended by the inspector and key contractor personnel. However, engineering surveys, transportation services, or plant operations staff and other key personnel may attend as requested. Meeting minutes with action items should be prepared and distributed for each meeting.

A final progress meeting should be held to wrap up the project and close out any issues.

Other References:

For information related to attendance and discussion items for site meetings, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.5.3.

Joint Health and Safety Meetings

Joint health and safety committees are a requirement of the Occupational Health and Safety Act and Regulations for Construction Projects (Ontario Regulation 213/91), where there are more than 20 workers regularly employed, designated substances are present on site, or there is an order by the Ministry of Labour to have a committee. It is the responsibility of the constructor on the project to designate a joint health and safety committee and to hold regular joint health and safety meetings. Joint health and safety meetings can provide a forum for the following:

• identification of changes and hazards  
• exchange documentation  
• demonstration of a safety conscious work atmosphere  
• identification of expectations for safety on site  
• provides an opportunity to resolve outstanding issues
Significant issues in the field that require immediate attention should not be left until the next joint health and safety meeting to be discussed.

When the City is not the constructor, the inspector should attend joint health and safety meetings as an observer only. The inspector may participate in coordination efforts such as contacting Toronto Water for valve operations. Attending these meetings will also help the inspector to determine the level of safety culture from the contractor. The constructor chairs the meeting and prepares meeting minutes; however, the inspector and contract administrator should ensure that they receive agendas and meeting minutes from these meetings.

For Toronto Water facilities projects where the City is the constructor, the plant designates a competent staff person from Toronto Water to be the health and safety supervisor for that construction project to fulfill the requirements of the *Occupational Health and Safety Act*. In the case where the contractor is the constructor, the contractor will have a competent person on site to act as supervisor to fulfill the requirements of the *Occupational Health and Safety Act* and may be requested to attend the plant joint health and safety meetings as required to ensure safety of the facility.

**Other References:**

For requirements of the constructor with regard to joint health and safety meetings, see the latest revision of the *Occupational Health and Safety Act* and *Regulations for Construction Projects (Ontario Regulation 213/91).*

**Schedule**

In accordance with contract documents, the contractor develops a construction schedule for projects. Once an initial detailed schedule has been developed, it is submitted by the contractor, reviewed by the contract administrator, and modified by the contractor as necessary to ensure compliance with specifications. This forms the baseline project schedule. The schedule will change during the course of the project and the contractor is required to update the affected schedule activities as required for the project.
The contract administrator, inspector, engineering surveys, and contractor use the schedule as a tool to:

- Evaluate impact of change requests with respect to schedule.
- Aid in coordination of scheduled events and specified milestones.
- Identify and coordinate plant operations with construction activities and with third parties, such as utilities, regulatory bodies and so on.
- Communicate project status to stakeholders.
- Identify potential delays, liquidated damages and so forth.

The inspector is responsible for monitoring and noting any considerable changes to the scheduled activities and should notify the contract administrator of any deviations based upon the agreed method of communication.

A list of some activities that could impact schedule is detailed below. These examples provide the inspector with activities that should be looked for and noted in the daily reports:

- changes in workforce
- unforeseen conditions
- inclement weather conditions
- utility locates and mark-ups
- change of subcontractor(s)
- change in soil and groundwater conditions
- insufficient workforce, equipment or materials
- non-compliant or failed materials tests
- changes in the work, for example extra work or additional work
- equipment breakdown
- failure of contractor and subcontractor to show up on time
- lack of coordination from third parties, such as agencies, utilities, regulators, testing companies
- health and safety issues
- regulatory approvals or orders
- delivery of materials
- design issues
- public relations
- labour disputes, strikes, lockouts or other forseen disruptions
- archaeological finds
• for other examples, see GC 3.07 (Extension of Contract Time) and GC 3.08 (Delays) and specific conditions of contract, as amended

The contract administrator and the inspector should collectively review the schedule with the contractor on a regular basis—at least monthly—and at a minimum, review the contractor’s progress with key project milestones. The contract administrator and inspector should ensure that the schedule is included as an agenda item at each construction progress meeting.

Other References:

For specific requirements related to scheduling, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.5.2.3.

For the contractor’s responsibilities and control of work related to scheduling, see the General Conditions of Contract, clause GC 7.01.11.

Conflict Resolution Procedures

During any project, differences of opinion regarding contract responsibilities, contract changes, budget, schedule, and contract interpretation can occur between the contractor and contract administrator or inspector or both. The initial level of conflict resolution is between the contractor and the inspector. The representatives should discuss any issues that arise during construction that they believe they are authorized to resolve. Any issue undertaken at this level must be resolved in a timely manner. If the resolution requires a higher degree of authority, such as if it affects design, cost, schedule, or scope of the work, or if the issue cannot be resolved quickly, the issue must be forwarded to the contract administrator for action.

It is important to document the issue and resolution in its entirety in the Inspector’s Daily Report (see Appendix A, Forms) regardless of how simple the issue may appear. This information must also be communicated to the contract administrator as soon as possible preferably through an email message.
Some possible conflicts that could impact the work are:

**Example 1: Conflicts the inspector deals with independently.**

- Compliance of the work in accordance with the contract documents. This may include
  - defective or incomplete work or materials
  - work sequence or rate of production
- – access to work or public access
- quantities—minor
- property damage
  - notification to contractor
  - direct public to city of Toronto claims process

**Example 2: Conflicts where immediate notification to the contract administrator is required and the inspector may be requested to assist the contract administrator.**

Conflicts can include any unresolved items as listed above or any of the following:

- scope
- design changes
- cost
- schedule
- quantities—major
- quality—issues unresolved in the field
- health and safety issues
- contract interpretation

When there is a private property damage issue the inspector must inform the contractor to correct the problem. If the contractor does not believe they are at fault, the inspector should refer the dispute to the contract administrator. The inspector must document the issue and take any photographs as necessary. If the contract administrator determines that the claim may be legitimate, he or she will suggest to the private property owner to submit a claim.

For detailed information on how a member of the public can submit a claim, visit the following webpage:

http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=ccd328541f71410VgnVCM10000071d60f89RCRD
Other References:

For specific requirements related to the contractor claims procedures, see the *Capital Works Projects Procurement and Administration Procedures Manual*, Section 5.5.12.

For requirements related to the claims, negotiations, and mediation process, see *General Conditions of Contract*, clause GC 3.14.

For requirements related to arbitration process, see *General Conditions of Contract*, clause GC 3.15.
Chapter 3 – Communication

Communications

A strong communication link between all parties is critical to the success of any project. Inspectors should be attentive, professional, and fair when dealing with contractors. Instructions should be clear, concise, and should be limited to issues within the scope of the contract documents. Instructions should only be given to authorized contractor personnel such as the supervisor. Instructions should never be given to the contractor’s subcontractors. Important instructions should be given in writing, using the standard forms provided in Appendix A, *Forms*. Instructions for minor issues, such as those that do not impact schedule, budget, scope, or design, may be verbal after confirmation is obtained from the contract administrator. All verbal instructions must be recorded in the inspector’s daily report.

Any misunderstandings or differences of opinion between the inspector and the contractor should be resolved promptly, fairly, and within the scope of the contract documents. Issues or disagreements that cannot be resolved at the field level should be escalated to the contract administrator.

All correspondence, transmittals of drawings, and information from the contractors and vendors should be submitted directly to the contract administrator. Hard copies of all documents are maintained in the project files.

The inspector must notify the Toronto Water division directly for coordination of valve and hydrant operation. The contractor should not contact Toronto Water directly; rather he or she should be instructed to contact the inspector on the site for any valve opening/closing needs.
Telephone Conversations

A record of third party telephone conversations of significant issues must be documented in the Inspector’s Daily Report. Significant issues can include those that address:

- cost
- schedule
- health and safety issues
- scope
- operation impact
- contract interpretation
- information
- contractual matters
- quality assurance results

Any issue that is related to a minor contract interpretation can be dealt with directly by the inspector. If the issue deals with matters beyond this, the contractor should be directed to the contract administrator or the inspector must contact the contract administrator for a resolution.

The inspector or the contract administrator should log all conversations in the inspector’s daily report. If other parties are relevant to the outcome of the telephone conversation, the contract administrator should distribute the information as appropriate.

Contract Administrator’s Site Visits

Contract administrator’s site visits are typically limited and are based on the project’s needs. The purpose of site visits can include:

- minimum monthly progress meetings
- pre-pave meetings
- monitoring schedule and project progress
- conflict resolution
- meet with public and other project stakeholders
- technical review of and assistance with ongoing construction
- observation or evaluation of field performance tests
- assistance in problem resolution
- assistance in project start-up or project closeout
- participate in final inspection
- others as required
The contract administrator visiting the site should initially meet with the inspector to review procedures and goals of the visit. Before leaving the site, the contract administrator should debrief the inspector. The inspector will then log in the daily report the purpose of the site visit, any engineering issues or observations, requested actions, and any proposed solutions. For details on preparing reports, see section on daily and weekly reports on page 40.

**Issue Management and Contract Modifications**

This section summarizes the different approaches to be taken to manage project issues that can lead to potential contract modifications. Such project issues typically occur by various means, as described below:

**Changes in the Work** – The deletion, extension, increase, decrease or alteration of lines, grades, dimensions, quantities, methods, drawings, changes in the character of the Work to be done or materials of the Work or part thereof, including changes in geotechnical, subsurface, surface or other conditions.

The process flow for issues identified and the appropriate process to be taken is shown below.

There are several forms provided as part of the contract modification process that allow for managing changes. These forms include:

- *Field Instruction* (FI)
- *Change Directive* (CD)
- *Request for Quotation* (RFQ)
- *Change Order* (CO)

Detailed descriptions and process flow diagrams are provided in this chapter. These figures are for information purposes only. For complete details, refer to the *Capital Works Projects Procurement and Administration Procedures Manual*. 
Design, cost, schedule, or scope impact?  

- NO

Contractor impact?  

- NO  
  - Contractor performs work

- YES  
  - City issues FI to contractor
  
  - CA issues instruction to proceed and reviews claim at end of project. Inspector tracks time and material for possible claim.

Work on critical path?  

- NO  
  - City issues RFQ
  
  - Contractor responds to RFQ

- YES  
  - Assess impact to schedule

Change in work?  

- NO  
  - City issues CD
  
  - Contractor performs work

- YES  
  - City issues CO

CA issues instruction to proceed and reviews claim at end of project. Inspector tracks time and material for possible claim.

Payment as per the contract price item. No need to issue CO.

Is change related solely to quantities of tender unit price items?  

- YES  
  - City issues CO

- NO  
  - City issues CO

CA – Contract Administrator
CD – Change Directive
RFQ – Request for Quotation
CO – Change Order

Figure: Issue identified
**Field Instruction (FI)**

The *Field Instruction* form (see Appendix A, *Forms*) is used to provide information or requests to the contractor or to authorize minor variations to the contract documents that do not impact schedule, scope, cost, or design. Field instructions issued to the contractor can be prepared by either the inspector or the contract administrator.

Field instructions may be issued with an email message provided the same information as required on the form is captured and that the email message is printed off and attached to the daily report for the day it was sent.

If the contractor disagrees with the field instruction information, the inspector and the contract administrator must evaluate other options for having the work performed. This can include issuance of a change directive or request for quotation, having others perform the work, or revising the scope and re-issuing as the next field instruction.

Field instructions and responses should be numbered and logged for tracking purposes.

The field instruction process is shown in the figure on the next page.
Field Services Manual

Field Instruction (FI) Process

Inspector or CA issues FI to the contractor → Review by contractor

CA issues a CD, RFQ or revises scope to reduce impact and reissues the FI

Contractor disputes and responds to the inspector

Impact to cost, design, scope, or schedule?

YES → Contractor performs work

NO → Contractor performs work

CA – Contract Administrator
CD – Change Directive
RFQ – Request for Quotation
FI – Field Instruction

Figure: Field instruction process
**Change Directive (CD)**

The change directive is used to order the contractor to make revisions to the contract, which are on the critical path or will impact time or cost or both. If the change in the work relates solely to quantities of unit price work items in the tender call, payment for the work shall be made according to the tender price items. If the change in the work does not relate solely to quantities of unit price work items in the tender call, the contract administrator shall issue a change order.

The contract administrator will finalize in written form and issue the change directive—as soon as possible. Third party agreement should be sought prior to the change in work starting, if required.

For unit price contracts, a change directive should be issued for each item that quantities exceeds the signing authority of the contract administrator. A change order must also be issued as soon as possible. The change directives are issued to monitor and track the unit price contract.

For works performed on a Time and Material basis, the inspector must document manpower, materials, and equipment—including hours worked—on a daily basis in the *Report of Extra Work Completed* form (see Appendix A, *Forms*) in order to verify progress and facilitate contractor progress payments. For works performed on a negotiated lump sum or negotiated unit price basis, the *Inspector’s Daily Report* form is to be completed for verification of progress payments.

The change directive process is shown in the figure on the next page.
Change Directive (CD) Process

CA issues CD to contractor

Terms and conditions acceptable?

NO

Contractor refuses to perform work; returns CD to CA

YES

Contractor performs work

CA investigates alternate options for having work performed

CA – Contract Administrator
CD – Change Directive

Figure: Change directive process
Request for Quotation (RFQ)

The Request for Quotation form (see Appendix A, Forms) is prepared by the contract administrator and provided to the contractor. RFQs are typically used to obtain detailed pricing and scheduling information on the scope of work when there is an anticipated change in work.

The contract administrator must provide sufficiently detailed information on the changes for the contractor to fully understand the scope of work and to be able to submit a realistic price and time impact to perform the change in work. This can be sent with an email message. Turnaround times for RFQs must be specified on each RFQ. A change directive should be issued prior to the change in work starting.

The request for quotation process is shown in the figure below.

![Request for Quotation (RFQ) Process](image_url)

**Figure: Request for quotation process**
Change Order (CO)

Change orders are written amendments to the contract and are typically used for change in the work, and obtaining credit for deleted scope. All engineering or technical revisions to the contract documents involving changes to the design, contract cost, contract times, or other conditions of the contract, if the change does not relate solely to quantities of unit price work items in the tender call, must be documented and approved using the Change Order form, (see Appendix A, Forms).

Change orders are prepared by the contract administrator in conjunction with the Capital Works Projects Procurement and Administration Procedures Manual. The manual provides detailed information on the City of Toronto’s internal signature authorities that are required prior to issuing the change order.

Supporting documentation, such as an RFQ, should be used by the contract administrator to provide detailed scope and pricing information for the change in work to be performed. Other supporting documentation, such as a change directive, can also be used as back up for the contract administrator to develop the change order. Any other relevant supporting information available such as photos, e-mails, sketches, and so on should be appended to the change order.

The change order should clearly and concisely address the following:

• What was included in the original scope and a detailed scope of the work to be performed as part of the change order.

• Identify the change in work—who, what, where, when, and how. The rationale identifying “why” should be documented separately and not attached to the documentation provided to the contractor.

• Precise locations of the work with station-to-station limits and offsets. Detailed photographs, drawings, sketches, and so on may be attached.

• When the work is scheduled to be performed including project milestones and incentives or disincentives, working days or completion dates—time impact including all impact costs.

• Time extensions to the contract.

• Reductions and deletion of existing tender item quantities as a result of the work on the change order.
• Change Order Summary sheet

A copy of the change directive and supporting documentation must be provided to the inspector. The inspector uses the information to inspect the change in work, completed by the contractor.

For works performed on a time and material basis, the inspector must document labour, materials, and equipment—including hours worked—on a daily basis in the Report of Changes in Work Completed form (see Appendix A, Forms) in order to verify progress and facilitate contractor progress payments. For works performed on a negotiated lump sum or negotiated unit price basis, the Inspector’s Daily Report form is to be completed for verification of progress payments.

For works performed on a negotiated lump sum or negotiated unit price basis, the Inspector’s Daily Report form is to be completed for verification of progress payments.

The measurement for change in work should also be reviewed for calculations, errors and omissions, and adequacy of supporting documentation.

For time and material work, the contract administrator must ensure that the contractor completes and submits the contractor payroll burden form and other applicable mark-ups, which should then be attached to all time and material change orders as back up. The payroll burden value is to be determined in accordance with the contract documents.

Costs associated with all change orders will need to be monitored to ensure that the originally approved costs are not exceeded. As the total costs associated with a change order or change directive may not always be known or accurate, a new change order must be prepared once the original estimate or quote is expected to be exceeded. The appropriate authority must be obtained based on the revised total cost of the change in work. Under no circumstances should a change order be issued after all the work is completed.

Contractors are required to submit invoices for work performed under a change order for payment based on unit quantities or time and material. If the invoice contains errors, requires corrections or if the final amount of work performed is different from the invoice provided then an updated invoice must be submitted by the contractor. The contract administrator must not make manual adjustments to invoices.
since it increases the risk of fraud and can potentially result in over payments.

**Other References:**

For specific requirements related to changes during construction, see the *Capital Works Projects Procurement and Administration Procedures Manual*, Section 5.5.10.

**Public Relations**

Inspectors are representatives of the City of Toronto. On a project, contractors may also be perceived by the public as representatives of the City—which they are not. As such, the public perception of the City is developed from the actions and attitudes of all people on a project. All on-site personnel should conduct themselves in a manner that earns the respect and confidence of the general public, as well as property owners, business owners, local citizens, tourists, and municipal officials. Courteous explanations and answers to questions raised by the public are essential in maintaining the good image of the City.

The inspector checks to ensure that notices for sewer, watermain, and road projects are posted and delivered and contain the appropriate contact information for the contract administrator. All media requests or questions should be directed to the contract administrator.

When a public complaint is made, the inspector should attempt to resolve the issue in the field with the contractor. There may be cases when the public is visibly upset and confrontational about a particular issue or the contractor may not be willing to resolve the issue. In these situations, the issue must be escalated to the contract administrator. All complaints made must be documented by the inspector in the daily report and photographs taken as supporting documentation.

The contractor typically takes a pre-construction video or photographs of the area prior to start of work. This could also be utilized to resolve issues, should a conflict occur.

The figure on the next page outlines a workflow for the complaint process.
Projects involving the Toronto Transit Commission (TTC), large scale, or contentious projects have access to the Public Consultation Unit. Under this scenario, assigned staff would attend meetings as required, prepare and distribute notices, and address concerns raised by the public.

If a complaint relating to a construction project cannot be resolved by the contract administrator, the resident can be directed to the Program Manager, Customer Service and Issues Management for further response and resolution. If a resident has a complaint regarding damages to their property or bodily injury resulting from construction, the resident or business owner can submit a claim to the City in accordance with the City's claim process.

For more information on how a member of the public can submit a claim, refer to the claims process on the City website.

http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=ccd328541f71410VgnVCM10000071d60f89RCRD&vgnextchannel=dafa28541f71410VgnVCM10000071d60f89RCRD

Other References:

For resident or property owner complaints or claims, see General Conditions of Contract, clause GC 7.17.
Health and Safety

All individuals on site are responsible for becoming familiar with and fully complying with applicable regulations and codes, their company health and safety policies and procedures, and the health and safety requirements of the constructor. It is the inspector’s role to monitor the contractor to ensure compliance to the contract. For more information, see Appendix H, Health and Safety.

Other References:

For information related to the role and responsibilities of the constructor on construction projects, see the Occupational Health and Safety Act and Regulations for Construction Projects (Ontario Regulation 213/91).

Spills Response

All spills aside from regular collection of rainwater must be reported to the contract administrator immediately for follow up in accordance with the Toronto Water spills response plan and any other applicable legislation.

Spill requirements for the contractor are outlined in the contract documents. The inspector should monitor for compliance, should a spill occur.
Chapter 4 – Field Construction Procedures

Filing System

A master project file is maintained by the contract administration section including:

**Contract administration file** – folders on tender books, low bidder, purchase requisitions, purchase orders, purchase order amendments, permits, RFIs, RFQs, schedules, and so on.

**Construction file** – folders on quality assurance, pre-construction and construction meeting minutes, final measurements, deficiency list, photographs, copies of contractor submittals such as mix designs, traffic control plans, utility stakeouts, and so on.

**Payment file** – folders on payment certificates, change orders and so on.

**Inspector file** – folders on complete contract documents, contract price list, supporting documentation, field instructions log and so on.

**Daily reports and tickets file** – folders on inspector’s daily reports, material tickets, and construction photographs and so on.

The inspector should also maintain a similar temporary file structure for all documentation in the field. The inspector may collect and manage a significant portion of the construction file and must ensure that all documents are forwarded to the contract administrator. The proper handling of documents by field staff determines the accuracy of the files and records. Without the collective cooperation of every member of the team, document management and control cannot be effective.

At project close-out, all documents must be forwarded to the contract administrator for incorporation in the project files as required by this chapter of the *Field Services Manual* and the Request for Proposal. The contract administrator will review and submit the materials to the contract administration section for filing. External service providers shall manage their filing system in accordance with the Request for Proposal.
Other References:

For information related to payment file, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.1.

Daily and Weekly Reports

Each inspector must prepare a daily report for each workday at the project site so that the events of that day may be recreated by those not on site, but who may need information to deal with the claims from the contractor as well as claims or complaints from the public. This requirement also applies to the contract administrator when they are assigned site activities. The inspector must also complete a weekly inspection summary report based on the daily reports.

The weekly report and supporting daily reports must be submitted to the contract administrator through the construction supervisor. Each daily report must be supported by weigh tickets for all material delivered to site and calculator tape or on an Excel spreadsheet showing the total quantities for the respective tender items where applicable. The contract administrator must review and confirm the quantities based on information received from the inspector and field test reports. The Inspector’s Daily Report and Inspector’s Weekly Report forms are provided in Appendix A, Forms.

Daily and weekly reports will be signed off by the inspector, contract administrator and contractor. If the contractor declines to sign the daily inspection report, the inspector will record in the report, and in their daily log book, that the contractor has been shown the report or advised of the contents of the report. The inspector shall complete daily reports for changes in work done under time and material and the inspector, contractor, and contract administrator shall sign-off the same.

Note: Inspectors daily reports – field inspectors are required to sign and submit the Inspector’s Daily Report form to the office for processing. The contractor is also required to co-sign the front page of the Inspector’s Daily Report form and to verify that the work recorded on the form and only the work recorded on the form has indeed been performed by the contractor. The contractor is not to view or sign the page with the remarks.

Inspector’s daily report additional remarks – field inspectors can use the Inspector’s Daily Report Additional Remarks form to record various payments or non-payment related activities occurred and
observed by the inspectors on site and to provide comments, if necessary, to support and supplement the inspector’s daily report. Inspectors are required to sign the Additional Remarks form as part of their submission to the office. The contractor does not co-sign the Additional Remarks form.

Daily report of extra work completed – both the inspector and the contractor have to sign the Report of Extra Work Completed form to confirm that the changes in the work have been performed and the form can be used as a reference document for payment.

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Note: For projects with an external service provider – if time and materials work is being performed, both the site representative or the owner’s representative on site, and the contractor are to sign the Daily Report – Facilities form related to time and material work.

The inspector should notify the contract administrator on any provisional work performed on site by noting it on the daily report. All work done as a result of a change in the work must be approved by the contract administrator prior to any work starting.

Daily reports should be accurate and thorough, addressing factual information only and avoiding opinion, conjecture, or speculation. All entries pertaining to a single contract must be maintained separately from all other projects. If there is more than one location within the contract then separate entries or daily reports or both shall be made when work is done on each individual location. The daily report should contain the following information:

- Report every workday and account for every calendar date. If no work is done on a given date, the date should be entered and the reason for not working should be recorded, for example, “No activities scheduled for this date due to (reason), no onsite inspection services provided”.

- Report when Report of Extra Work Completed form has been used.

- Include references to on-site conversations and phone calls. For more information on communications and telephone conversations, see pages 23–24.

- Document site activities. References to specific scheduled activities should be made in accordance with the specific areas of
responsibility. Problems or abnormal occurrences should be described clearly and photographed, including the reason for the specific event.

The following are examples of observations, tasks, and site activities that typical report entries for linear projects. Note that not all tasks are applicable to facility or vertical projects:

- Document repairs to existing or contractor damaged utilities using the Record of Damaged Utilities Form (see Appendix A, Forms).

- Report the number of construction employees, by trade, on the contract. Note contractors and individual subcontractors. This information should be obtained from the contractor; however, the number of employees on site should be corroborated by visual count.

- Report the work performed by the contractor and reference scheduled activities when possible.

- Record all individual items worked on by the contractor on a daily basis referring to survey chainages, where possible or measurement ties and street addresses as well as showing calculations for total quantities performed each day.

- Report on soil conditions and type of shoring used for all underground construction work.

- Report the type, model number, and number of each piece of heavy equipment on site. Note whether the equipment is owned or rented, and if the equipment is working, on standby, or not in use.

- Report quantities installed for each tender item, for example: cubic metres of concrete, linear metres of pipe noting each relevant contract item number when applicable as well as indicating starting and ending survey chainages wherever possible or measurement ties and street address with calculations.

- Report and photograph work on provisional items performed including the quantities, location, and time of the work, and the reason for the work.

- Report extra work with the change directive reference number if applicable.
Chapter 4 – Field Construction Procedures

- Payment on third party invoices, for example paid duty officer charges must be based on original invoices submitted by contractor. Photocopies of invoices should not be processed for payment.

- Contract administrator and inspector should review documentation supporting progress payment, including documentation on third party work.

- Refer to field tests as either pass or fail, if fail, identify course of action. Collect and attach to daily reports all field test results where the documents are provided by the material testing consultant.

- Potential out of scope work.

- Document and photograph areas that could not be constructed in accordance with specifications due to unforeseen circumstances.

- Document and photograph sensitive areas that may result in potential claims.

- Every time there is a significant change to the traffic control plan and work zone location has changed.

- All visitors to the site, the reason for their attendance, time on site and instructions, directions or comments provided.

- Complete all checkboxes noted in the daily report form or any other form required to be completed and submitted.

Report use of testing services received in all field test reports. If subcontracted, include name of company, the number of people, type, and number of tests, and time spent on testing and on the site.

- When a specific scheduled activity or measured event is completed, for example: a portion of a basic slab is cast, a length of pipeline is laid, a specific piece of equipment is set, and the date should be recorded.

- Note any questions on workmanship, to whom the question was raised, and the context in which the question was asked, for example, was it a complaint, a general comment, or a question regarding scheduling.

- Record the content, date, and parties involved of all substantive conversations held with the contractor.
• Record all materials or equipment delivered and obtain delivery tickets to be reviewed and attached to daily reports.

• Ensure that proper documentation is prepared and filed for the manufacturer’s representative site visits in compliance with contract documents for equipment checkout and testing.

• Label last daily report made of significant field activities "project complete except for deficiencies". Afterwards, prepare daily reports on the day when deficiencies were addressed.

Photographs should be taken on a daily basis for any unusual activities observed or to demonstrate progress. This can include sub-excavations, buried material or equipment, or anything that could lead to a potential third party or contractor claim. Photographs should be named accordingly and uploaded to the appropriate project folders on the City’s server.

**Photography Requirements**

On the daily report, note the number of photographs taken each day with the approximate time and a note as to what is in the photos.

On a daily basis, photographs are to be taken of the following:

• General site set-up where crew(s) are working showing general progress of work.

• Any changed conditions.

• Any agreed upon extra work or situations where there is a possible claim.

• Any site safety issues or other issues pertaining to negative contractor performance appraisals.

• When trenching begins and any changes to the type of shoring, tunnelling or sub-grade conditions.

• Any time traffic control that has changed from the previous day, unless the contractor has done so and forwarded the information to the inspector and the project manager or contract administrator.

• Photographs are to be taken prior to working at any location back of the sidewalk such as from lawns or driveways, and so on.
• Any obvious recent damage adjacent to the work location.

In addition, during the early stages of the contract the inspector should take photographs of the following:

• All key phases and new operations.
• Equipment used on site.
• Typical and representation parts of all underground work such as buried bends, anodes compaction operations, and so forth.

**Ministry of Labour Inspection Visits**

The inspector will report all Ministry of Labour (MOL) visits to the site during construction, irrespectively of whether the MOL inspector has taken any action or not. The MOL inspection and the details of the visits should be recorded in the inspector's daily report. The inspector should report the visits along with the details to the contract administrator who will then send a copy to the Program Manager, Health & Safety & Emergency Planning in the division.

**Other References:**

For information related to daily work records, see *General Conditions of Contract*, clause GC 8.02.04.02.

**Equipment and Material Monitoring**

The inspector should be active in the identification of deficient materials or equipment received on site. The inspector should inform the contractor of the deficiencies and record details and actions taken in the *Field Inspection of Materials and Equipment* form (see Appendix A, *Forms*) and on their daily report. The inspector must also notify the contract administrator. In the event the contractor refuses to comply with the inspector’s notification, the contract administrator issues a field instruction. The *Field Instruction* form (see Appendix A, *Forms*) should be filed and transmitted to all parties involved.

The inspector must follow up in the field to ensure that action has been taken on any deficient equipment or material received.
**Materials Testing**

The contract administrator and inspector must have a copy of and be familiar with the Request for Proposal (RFP) for material testing requirements.

The contract documents typically make reference to municipal, provincial, or federal codes and standards. There may be exceptions where the contract is tailored, specifying the type and frequency of sampling and testing of construction materials for quality assurance. In cases where batch or lot size of the material supplied and placed does not coincide with those specified in contract documents, the contract administrator may revise the frequency of sampling and testing; however, the rationale for deviating from the contract documents must be documented.

The contract administrator must verify that the minimum quality requirements for materials are correct on the testing forms by initialing the test result forms and that the appropriate commentary is provided for test results when exceptions are noted. The contract administrator must ensure that inspection staff are advised of these actions.

Contract administrators are required to verify that quality assurance of construction materials, performed by third party consultants, are in accordance with contract documents.

The City's project manager is responsible for ensuring that the contract administrator for consultant-managed contracts adhere to the above requirements.

The inspector is responsible for arranging material quality field assurance tests, including having samples picked up for laboratory testing. The contract administrator is responsible for review of all laboratory test results.

Inspectors must be knowledgeable of the contractor’s work activities and make the necessary arrangements for sampling and testing as per the terms of the material testing RFP prior to the contractor conducting the work. The inspector should inquire with the contractor in order to make necessary arrangements for material tests.

The material testing company should be invited to the pre-construction meeting by the contract administrator so that they may be informed about the general testing requirements, and other pertinent information as per the RFP and other contract protocols.
When materials are delivered to site, the inspector or his or her designate must collect the ticket from each truck prior to discharge for weight based payment items (see Appendix G, Weight Verification Protocol).

For all other items delivered to site, material tickets are to be collected and attached to the daily reports. If tickets are not produced, the contract administrator is to be notified. The missing tickets are to be documented in the daily reports as well discussed at the progress meetings.

All coordination, field test results and sample pick-ups must be documented. For example, the request for sample collection including type of samples to be taken, quantity of samples, time required and so on, must be documented with a copy provided to the material testing company. The material testing company must also submit a copy to the contract administrator with the final invoice.

A record of the field testing, sample preparation, and sample pick-up work should be recorded by the inspector in the daily report. Information kept in the daily report should include time on the project, name of technician, and tests or samples taken with locations indicated. The testing technician should provide an immediate copy of the field activity report to the inspector before their departure. This field activity report should summarize activities conducted and allow the inspector to verify that the correct information and locations have been recorded. The inspector will then sign the field activity report and attach it to the daily report.

Any delays with regard to the field testing arrival on site and delays to the field testing representative after they arrived on site are to be documented by the inspector as under the terms of the RFP payment for standby time may be required.

The material testing company must report to the inspector all failed field tests. The inspector should immediately follow up on all failed field test with the contractor and document and advise the contract administrator of issues and actions taken. The contract administrator is to follow-up with all failed laboratory test results.

All defective work has to be replaced or rectified immediately to the satisfaction of the contract administrator or inspector or both. No payment should be recommended until all defective work has been corrected and this is to be documented on the deficiency report.
All laboratory test results for the contract submitted by the quality assurance laboratory should be carefully reviewed by the contract administrator. The contract administrator should follow-up on all defective work with the contractor and put them on the deficiency list. Payment of the defective work should be withheld until the work is corrected.

All material testing results should be kept in a material testing quality assurance (QA) folder for easy retrieval by the contract administrator. The results should be tabulated and cross-referenced to the respective contract.

The construction supervisor is to audit and document the results of materials testing as arranged by the inspectors to ensure compliance with Appendix C, Materials Testing Protocol, and discuss reasons for non-compliance on each contract. Such audits are to be discussed with the contract administrator and placed on the contract file. The contract administrator is responsible for reviewing tests results of all laboratory testing, which are sent to them by the materials testing company.

In general, material testing is required for the following:

- gradation analysis on fill materials
- sulphates testing of recycled concrete material
- subgrade evaluation—bearing capacity/penetrometer test asphalt cores for Marshall density, gradation, compliance and so on
- field compaction and moisture tests on fill materials laboratory extraction and gradation test and Marshall test on hot mix asphalt
- asphalt compaction testing for paving operations
- mold, cure, and break concrete cylinder specimens
- slump test for cast-in-place concrete
- air content for cast-in-place concrete
- concrete temperature for cast-in-place concrete
- sample testing of mortar, grout, crackfilling material
- other tests and samples requested by the contract administrator

Other References

For details on the outline the scope and procedures for the provision of weight verification to construction materials, see Appendix G, Weight Verification Protocol.

For details on material testing for the inspector and QA consultant, see Appendix C, Material Testing Protocol.
For details related to deficiencies with concrete materials testing, see latest release of TS 1350, Amendment to OPSS.MUNI 1350 (Nov 2014) Material Specification for Concrete – Materials and Production.

For the material inspection and materials testing guide, see the General Conditions of Contract, clause GC 5.0.

Testing Required for Concrete and Asphalt Material

Contractor's Quality Control Plan

The contractor's quality control plan must be submitted and reviewed if required as per the contract document. A copy of the reviewed and accepted plan by the contract administrator and the material testing consultant is to be provided to the inspector.

The inspector is to document instances of non-compliance with field tests and discuss instances of non-compliance with the contract administrator. Performance issues are to be reviewed with the contractor and will be documented on contractor's performance evaluation form.

The inspector is to ensure that material testing requirements in Appendix C, Material Testing Protocol, are followed whether a quality control plan is required or not.

Concrete

All mix designs are to be submitted and reviewed by the material testing consultant.

Arrange for material testing as per the specifications and contract requirements. Typically the first three loads per mix per day are tested and cylinders cast, and until consistency is established, one for every slump test, and one for every strength test.

Cast concrete cylinder samples for laboratory compressive strength tests. Three cylinders on the first load of the day typically and every 50m³ with no fewer than one test for each class of concrete placed on any one day.

Check the delivery time of the load – time when the concrete was batched to the time the concrete was unloaded – if it falls within the requirements as stipulated in TS 1350.
Check if the load is produced from concrete plant(s) that was specified in the contract, or the plants were agreed upon in the pre-construction meeting or in pre-concrete placement meeting.

**Asphalt**

Review contract requirements, Appendix B, *Inspection Tasks* and Appendix C, *Material Testing Protocol* prior to work commencing. Discuss pre-paving issues such as traffic control plan, night time lighting, arrow boards, and so on at progress or pre-pave meeting prior to work commencing.

Arrange for field testing according to the *Field Services Manual* and ensure availability of an infrared thermometer temperature gun and asphalt temperature gun for use when checking asphalt temperature.

Ensure proof rolling and compaction testing are done on granular materials as required in Appendix C, *Material Testing Protocol*.

Ensure all other preliminary work is completed so that paving may proceed including casting adjustment, gutter brick placement, delivery of notifications, if required, and tack coat placement immediately prior and placement of line markings immediately after.

For contracts where material is paid by weight discuss and arrange for check weight to be done according to Appendix C, *Material Testing Protocol*. Arrange for continuous ticket collection as a second inspector may be required to assist with this requirement.

Review specifications and on day of paving, safely check the temperature of asphalt mix at point of discharge—at least 120°C at point of discharge and air temperature of pavement for hot mix asphalt placing—for binder at least 2°C, for surface at least 7°C.

Ensure the material testing consultant performs compaction tests on hot mix asphalt mat using nuclear density gauge as required under contract documents.

**Test Strip Method – Proof Rolling**

- one test section per 300 metres of pass
- minimum two test sections per street
- five tests per test section
Prepare plate samples of hot mix asphalt on site for extraction and gradation tests and Marshall mix design tests for each type of mix—reject samples prepared by shovels. Test the first production load from the asphalt plant on each paving day, and every 250 Mg (tonne) thereafter.

**Other References**

For a complete list of testing requirements for these and other materials, see Appendix C, *Material Testing Protocol*.

**Test Reports**

Hydrostatic leak tests and disinfection tests are two types of tests that can occur on a project. Prior to performing the tests, the contractor must prepare and submit a plan to the contract administrator for approval. Upon approval of the plan, the contractor and inspector make the necessary arrangements to prepare for testing. For example, the inspector will contact the Toronto Water division for valve coordination, such as valve opening/closing.

**Note:** Toronto Water will not accept a valve opening/closing request from the contractor; this request must come from the inspector with a minimum of 48 hours’ notice.

The Hydrostatic Leak Test Record and Disinfection Test forms (see Appendix A, Forms) are filled out by the contractor during testing. Information should be documented on the forms that indicate who conducted the tests, when the tests were completed, the location of the tests and so forth. The inspector is required to witness all tests and record the observations in the daily report.
Construction Submittals

Any submittals provided by the contractor should be submitted to the contract administrator directly for review and as required. The contract administrator must date and log all submittals and provide a copy of the approved submittal to the inspector. The inspector should provide information to the contract administrator, as requested, to aid in the approval process.

On projects where an external service provider such as a consultant is contracted, they may provide design, site inspection, and construction administration roles. For more information on external service providers, see Chapter 1, Project Team. In these cases, the contractor is required to provide all submittals to the consultant directly.

All submittals must be submitted in the format prescribed in the contract documents. Submittals can include drawings and other information prepared by the contractor and vendors that provide detailed information about equipment or materials to be supplied under the contract. The information is reviewed by the contract administrator and returned to the contractor with appropriate comments. No changes to the contract are made during this process—it is a review for current contract conformance and compliance.

For monthly schedule submittals accompanying the contractor’s monthly payment application for Engineering & Construction Services – Design & Construction Section contracts, hard copies of the schedule shall be submitted as required per the contract documentation or the specifications package or both.

Examples of submittals can include:

- shop drawings
- construction schedules
- operation and maintenance manuals for equipment
- equipment warranties
- certificates of proper installation—mechanical fitness
- as-built drawings
- utility locates
- Ministry of Labour reports
- traffic control plans

For projects that require the preparation and submission of shop drawings by the contractor, the contract administrator must maintain a log of all shop drawings with the date received, reviewed and when it
was approved. The contract administrator shall adequately safeguard approved copies of shop drawings and copies of the same are to be provided to the City at the completion of the contract.

The goals of the submittal review process are thorough reviews conforming to the intent of the design and not contract changes through the submittal process.

The processes for submittals are shown in the figure below.

![Submittals Diagram]

**Figure: Submittals**
Consultant Review of Submittals

1. Contractor submits to consultant
2. Review by consultant
3. Conform with specifications?
   - YES
     - Return to contractor “Exceptions Noted Resubmit”
     - Route to owner for review
   - NO
     - Requires additional changes?
       - YES
         - Return to consultant
       - NO
         - Respond to contractor with “No Exceptions Taken”, “Exceptions Noted” or “Exceptions Noted Resubmit”

Figure: Consultant review of submittals
Deficiency Lists

The inspector maintains a continuous list of deficient items for each contract and submits to the contract administrator. The contract administrator should review it as appropriate with the contractor at regularly scheduled progress meetings. For more information on progress meetings, see page 17.

Upon receipt of notification from the contractor signifying substantial performance, acceptance and final completion, the inspector and the operations group, along with the contractor, should perform a thorough examination of the work to ensure deficient and incomplete work items are resolved or completed. The contract administrator arranges for design staff and specialty inspections, as necessary. The Deficiency List form can be found in Appendix A, Forms.

The deficiency list should consist of an accumulation of one or more items of the following:

- work-to-date inspection report
- checklist of deficient items, including defective works that need to be reworked
- review of specification, submittals, and drawings related information
- owner comments
- specialty inspection and testing reports
- value of deficient work to be performed—value should be equivalent to the payment amount to an external party, if the contractor decides not to rectify the deficiency as determined by the contract administrator based on the deficiency list

The inspector prepares an initial comprehensive copy of the overall deficiency list for review by the contract administrator. With approval from the contract administrator, the list is provided to the contractor for action. At a minimum, the deficiency list should be given to the contractor monthly at progress meetings and documented in minutes of meetings, at the end of a project phase, prior to substantial performance or prior to completion. Further, warranty deficiencies must be identified within two years of the end of warranty and corrected.

Upon notification by the contractor that specific work items have been completed, the inspector examines the completed work with the contractor. If the item is correctly completed, the inspector initials and dates the item on the confirmation copy of the deficiency list.
official confirmation copy of the deficiency list is maintained in the project files. Any items disputed by the contractor are sent to the contract administrator, who reviews them with the inspector and, if necessary, the contractor.

Other References:

For information related to deficiencies and holdback, see the Capital Works Projects Procurement and Administration Procedures Manual, Sections 5.5 and 6.2.

As-Built Drawings

The requirement for as-built drawings is dependent upon the type of project. Unless otherwise specified in a consultant RFP and contract with the contractor the following is to be done:

For the Design & Construction Section, Major Infrastructure contracts, the contractor is usually responsible for producing red line mark-ups on his or her set of contract drawings; the inspector is responsible for the subsequent inspection of the contractor's redline mark ups. The inspector reviews with the contractor all revisions marked on the contractor’s drawings to consolidate all changes before transmitting the drawings to the contract administrator for updating the computer aided design and drafting (CADD) files. As-built drawings are not signed or stamped by a professional engineer, as the engineer is not present on site during construction in a manner that all activities could be overseen concurrently.

For all design and construction linear infrastructure projects and other projects as required, the inspector is responsible for red lining as-built information on the contract drawings. This requirement is for all types of work and is required so that quantities and changes in the limits are recorded for final payment purposes and these changes can be identified on the redline plans. In cases whereby the contractor is required to produce redline mark-ups the inspector is also required to produce these drawings and compare them and reconcile them so that there is agreement with all changes. If the inspector is unable to verify and agree to the contractor's as built redline drawings then this is to be reported to the contract administrator for action and listed as a deficiency.

The office design staff generates the as-built drawings according to the red lined drawings.
If a third party consultant is involved, he or she is responsible for both the inspector’s and contract administrator’s roles as described above.

**Water and Sewer Service Cards**

It is the inspector’s responsibility to complete the sewer and water service cards, which are then submitted to the construction supervisor for review and forwarded to the contract administrator. The contract administrator will ensure that one copy be included in the project file, and one copy sent to Toronto Water’s water infrastructure management and the district operations and maintenance sections.

The sewer and water service cards are used to assist in the preparation of the as-built drawings. Toronto Water will use the cards to update their asset inventory database and work management system. The sewer and water service cards can be found in Appendix A, *Forms*.

**Other Requirements:**

For information on as-built and record drawings, see Appendix D, *As-built Drawing Guidelines*. This document should be given to the contractor prior to project start-up and discussed in the pre-construction meeting.

For minimum requirements and responsibilities, see Appendix E, *As-built Features Requirements*.

**Engineering Surveys**

For in house design projects, lines and grades are typically set by the engineering surveys unit. If there are any alterations to the design, engineering surveys will amend the layout to reflect the revisions. All engineering survey work is coordinated with the contract administrator.

**Substantial Performance**

The contractor’s responsibilities for substantial performance are defined in the general conditions with reference to the *Construction Lien Act*. Work on any area, system, facility, or the like, must be to the point where it is able to be fully operational in the mode for which it was designed, unless specifications allow otherwise. The value of deficient and uncompleted work must be accounted for determining if
the contract is substantially performed. In addition, operations and maintenance documentation and all warranty and guarantee information must be properly filled out for all equipment and material items and must be submitted to the contract administrator before substantial performance is granted.

Substantial performance is granted by the issuance of a certificate of substantial performance by the contract administrator. As stated in the general conditions, the warranty period begins on the date of substantial performance.

At the time of substantial performance, the on-going deficiency list prepared by the inspector is provided to the contractor and an inspection is conducted by the inspector. A new deficiency list is generated after substantial performance to document any deficiencies that may have occurred after substantial performance through to completion of the contract. Prior to end of warranty, a deficiency list is provided to the contractor to rectify the deficient items.

Other References:

For the requirements on the certificate of substantial performance, see the General Conditions of Contract, clauses GC 8.02.03.04 and GC 8.02.03.05.

For information related to substantial performance, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.5.15.

Completion

Completion is achieved when all items on the deficiency list have been rectified, all required submittals have been completed, and all other obligations of the contract have been satisfied. The contractor’s responsibilities for completion are defined in the general conditions with reference to the Construction Lien Act.

To achieve completion, the contractor must satisfy the contract requirements. As a final review, the inspector evaluates each item on the deficiency list and submits an updated list verifying the contractor’s completion of the work, or listing items not satisfactorily corrected. The contractor must remedy any deficient or incomplete work and notify the contract administrator that the work has been completed.
The inspector then examines the corrected work. When the inspector finds the work acceptable and the required submittals are complete, the contract administrator requests the contractor to make final application for payment. Final payment to the contractor is made after completion of all required work.

The following is a list of some examples of documentation that the inspector shall collect or prepare prior to final completion:

- watermains – as-built drawings and drawing indicating pavement and curb road cut locations and area, pressure tests, tracer wire continuity reports
- road, curb, and sidewalk as-built drawings
- electrical work – ESA as-built drawings
- final operations and maintenance manual
- measurements and calculations of all work items and sketches or marked-up plans to indicate where measurements were taken
- final review survey of work
- environmental compliance approval (ECA)
- quantity sheets
- water and sewer service cards
- deficiency lists

Other References:

For the requirements on the certificate of completion, see General Conditions of Contract, clause GC 8.02.03.06.

Contract Payment

For Engineering Support Services section projects and lump sum projects, the contractor must submit the proposed payment application or a breakdown of prices documentation for approval by the contract administrator prior to the first progress payment. Prior to each of the contractor’s payment applications, the contractor must prepare an updated progress schedule (see page 19) showing current progress on all work activities. The progress schedule must show work activities, planned start and finish dates, original duration, current percent complete, and remaining duration.
Upon receipt of the contractor’s schedule report and other required payment application documentation, as defined by the contract documents, the contract administrator proceeds with formal review of the payment application in consultation with the inspector. Upon verification of completion of the work, the inspector submits a final weekly report to the contract administrator. The contract administrator reviews and provides final approval on the payment request. Payment application documents not recommended by the inspector are returned to the contractor for re-submittal. Deficient work should also be documented and a value assigned to the deficient work in order to adjust contract payment. For more information on deficiency lists, see page 55.

Deficient work should also be documented and a value assigned to the deficient work in order to adjust contract payment. For more information on deficiency lists, see page 55.

For all unit price contracts, progress payments shall be made based on the compilation of quantities on the daily inspection reports for the specific contract.

Other References:

For specific requirements related to progress payments, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 5.5.6.

For the contractor’s responsibilities and control of work related to measurement and payment, see the General Conditions of Contract, clauses GC 8.01 and GC 8.02.

Contract Close-Out

The contract administrator along with the inspector, are responsible for day-to-day construction observations and documentation of required services for the contract close-out progress. The contract administrator assists with the inspections, as required, and with input from the inspector, coordinates with the contractor the closing documentation of the project. This documentation can include:

- certificate of substantial performance
- certificate of completion
- as-built drawings
- water or sewer service cards
- completed deficiency list
• pre-end of warranty inspection report
• engineering surveys
• warranty inspection reports and certification that they have been completed

The contract administrator must ensure that all items on the current deficiency list, prepared by the inspector, are addressed and resolved prior to contract close-out.

It is important that all documentation is submitted to the contract administrator at contract close-out. Some of this documentation may be in duplicate, but it should be submitted regardless to ensure the project files are complete.
Other References:

For information related to final acceptance, see the Capital Works Projects Procurement and Administration Procedures Manual, Section 6.4.

For the requirements on the certificate of substantial performance and contract completion, see the *General Conditions of Contract*, clauses GC 8.02.03.04 to GC 8.02.03.07

End of Construction Inspection

End of construction inspections may be required as part of project close-out to ensure that all requirements of the contract have been met.

Client representatives shall be invited by the inspector to the end of construction inspection.

Warranty Inspection

Three to six months prior to the warranty expiring, a joint inspection between the inspector and the contractor is to be done with an invitation sent to representatives from internal and external client divisions.

The contract administrator will then issue a *Notice of Defects* to the contractor a minimum of 60 days prior to expiration of the warranty. The notice of defects requires approval from the City’s internal signature authority.

Upon rectification of the deficient items, the inspector reviews to ensure acceptance.

Other References:

For information related to warranty monitoring, see the *Capital Works Projects Procurement and Administration Procedures Manual*, Section 6.3.
## Appendix A – Forms

### Table: Forms inventory

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<th>Version (month/yr)</th>
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<tbody>
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<td>Inspector’s Daily Report Storm Sewer / Sanitary Sewer / Watermain</td>
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<tr>
<td>TS 101</td>
<td>Inspector’s Daily Report Road / Sidewalk</td>
<td>12/15</td>
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<tr>
<td>TS 102</td>
<td>Report of Changes in Work Completed</td>
<td>12/15</td>
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<tr>
<td>TS 105</td>
<td>Inspector’s Weekly Report</td>
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<td>TS 108</td>
<td>Field Instruction</td>
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<td>TS 109</td>
<td>Request for Quotation</td>
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<td>TS 110</td>
<td>Inspector’s Daily Report Additional Remarks</td>
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<td>Field Inspection of Materials and Equipment</td>
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<td>Deficiency List</td>
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<td>Disinfection Test</td>
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<td>Hydrostatic Leak Test Record</td>
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<td>Daily Observation Report – Major Infrastructure</td>
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<td>Request for Quotation – Form A</td>
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<td>Utility Construction Site Visit Report</td>
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<td>TS 120</td>
<td>Utility Pre-Construction Meeting Summary</td>
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<td>TS 121</td>
<td>Full Stream Line Change Process and Redline Submission Form</td>
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<td>Record of Damaged Services</td>
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<td>TS 124</td>
<td>Change Order Checklist</td>
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Complete all boxes or indicate N/A – add remarks to second page
One report for each street location. Indicate separate work forces for general and each sub-contractor

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<tr>
<th>Report No:</th>
<th>Inspector:</th>
<th>Date:</th>
<th>Contract No:</th>
</tr>
</thead>
</table>

Location:

Weather:

Project Engineer:

Contractor:

Sub-Contractor:

Working Days: [Full] [None]

<table>
<thead>
<tr>
<th>LABOUR</th>
<th>WORK VISITED BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Duty</td>
</tr>
<tr>
<td></td>
<td>Foreman</td>
</tr>
<tr>
<td></td>
<td>Labourer</td>
</tr>
<tr>
<td></td>
<td>Operator</td>
</tr>
<tr>
<td></td>
<td>Driver</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EQUIPMENT</th>
<th>SERVICE OR TEE LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPSS 127 #</td>
<td>Make/Model</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MATERIAL DELIVERED TO JOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

NOTE: Quantities subject to final confirmation
### Contract Items Completed Today

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Location/Stations</th>
<th>Day’s Total</th>
<th>Total To Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

### Remarks

In addition to the requirements in the latest version of the Field Services Manual, note the following on a daily basis:

1. Soil conditions
2. Traffic set up and any subsequent changes to traffic set up and work limit locations
3. Number of photos taken and general details of what they show
4. Indicate any changed conditions, utility conflict or where they are found not to be shown on plan
5. Field instructions or change directives issued
6. Material testing done and results
7. Reference documents attached to this report such as material tickets, test results and the outcome (i.e. pass/fail)
8. Note observations related to non-compliance with contract or specifications and deficiencies
9. Note observations of significant tasks

For main line installation, record the following survey chainages:

<table>
<thead>
<tr>
<th>Excavation</th>
<th>Station</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe Placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backfill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Time detour signs and barricades checked: ___ AM ___ PM
Contractor’s Time In: _______________ Time Out: _______________

---

Contractor’s Signature: ___________________________ Inspector’s Signature: ___________________________

---

NOTE: Quantities subject to final confirmation

Copy to: Consultant, Contract Administrator, Contractor, Office File

Form TS100 – 12/15

INSPECTOR’S DAILY REPORT STORM SEWER / SANITARY SEWER / WATERMAIN
**INSPECTOR’S DAILY REPORT**
**ROAD / SIDEWALK**

**Engineering & Construction Services**

**Complete all boxes or indicate N/A – add remarks to second page**
**One report for each street location – indicate separate work forces for general and each sub-contractor**

<table>
<thead>
<tr>
<th>Report No:</th>
<th>Inspector:</th>
<th>Date:</th>
<th>Contract No:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Location:</th>
<th>Project Engineer:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Contractor:</th>
<th>Sub-Contractor:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Working Days:</th>
<th>(check one only)</th>
<th>Inspector</th>
<th>Time In:</th>
<th>Inspector</th>
<th>Time Out:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full □ None □</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

**LABOUR**

**WORK VISITED BY**

<table>
<thead>
<tr>
<th>Number</th>
<th>Duty</th>
<th>Hours</th>
<th>Total Hours</th>
<th>Title</th>
<th>Name</th>
<th>Time In</th>
<th>Time Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreperson</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Labourer</td>
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<tr>
<td></td>
<td>Operator</td>
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<tr>
<td></td>
<td>Driver</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formsetter</td>
<td></td>
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</tr>
</tbody>
</table>

**EQUIPMENT**

**MATERIALS DELIVERED TO JOB – attach all tickets**

<table>
<thead>
<tr>
<th>OPSS 127#</th>
<th>Make/Model</th>
<th>Hours</th>
<th>Total Hours</th>
<th>Description</th>
<th>Quantity</th>
<th>Pay or Non Pay item</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**TESTS TAKEN**

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Material Type – Indicate number of tests taken, attach field results and indicate pass or fail and remedial actions taken in remarks section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete</td>
<td>☐ Air Content ☐ Slump ☐ Cylinders ☐ Other</td>
</tr>
<tr>
<td>Asphalt</td>
<td>☐ Temperature ☐ Extraction &amp; Sieve ☐ Compaction ☐ Other</td>
</tr>
<tr>
<td>Granular</td>
<td>☐ Sieve Analysis ☐ Compaction ☐ Proctor ☐ Other</td>
</tr>
</tbody>
</table>

**NOTE:** Quantities subject to final confirmation

Copy to: Consultant, Contract Administrator, Contractor, Office File
In addition to the requirements in the latest version of the Field Services Manual (FSM), note the following daily:
1) Soil conditions
2) Traffic set up and any subsequent changes to traffic set up and work limit locations
3) Number of photos taken and general details of what they show
4) Indicate any changed conditions, utility conflict or where they are found not to be shown on plan
5) Field instructions or change directives issued
6) Material testing done and results
7) Reference documents attached to this report such as material tickets, test results and the outcome (i.e. pass/fail)
8) Note observations related to non-compliance with contract or specifications and deficiencies
9) Note observations of significant tasks
10) Do not duplicate information recorded elsewhere on this form
11) Indicate reasons for non-working days and when working days are charged, but contractor is not working
12) Note communications, such as phone calls, emails, instructions given/received, meetings and reasons for visitors on site.
13) Refer to Appendix B: Inspection Tasks of the FSM for milestone activities and report and note any issues as applicable
# REPORT OF CHANGES IN WORK COMPLETED

**Engineering & Construction Services**

**Date:** [Date]  
**Location:** [Location]

**Contractor:** [Contractor]  
**Sub-Contractor:** [Sub-Contractor]

**Description of Work:**

---

## LABOUR

<table>
<thead>
<tr>
<th>Number</th>
<th>Duty</th>
<th>Hours</th>
<th>Total Hours</th>
<th>Number</th>
<th>Duty</th>
<th>Hours</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreperson</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Labourer</td>
<td></td>
<td></td>
<td></td>
<td>Operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operator</td>
<td></td>
<td></td>
<td></td>
<td>Driver</td>
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<td></td>
</tr>
</tbody>
</table>

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## EQUIPMENT

<table>
<thead>
<tr>
<th>OPSS 127 #</th>
<th>Make/Model</th>
<th>Hours / Days Worked</th>
<th>Days Standby</th>
<th>Owned or Rented</th>
<th>Total Time</th>
</tr>
</thead>
</table>

---

## MATERIALS SUPPLIED BY CONTRACTOR

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Delivery Slip</th>
<th>Description</th>
<th>Quantity</th>
<th>Delivery Slip</th>
</tr>
</thead>
</table>

---

## REMARKS

---

**Contractor’s Signature**  
**Inspector’s Signature**

---

**Note:** Quantities subject to final confirmation

---

**Copy to:** Consultant, Contract Administrator, Contractor, Office File
## Weekly Report

### Construction Section

**Contract No.:**

**Description:**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Description</th>
<th>Qty.</th>
<th>Unit</th>
<th>Mon.</th>
<th>Tue.</th>
<th>Wed.</th>
<th>Thurs.</th>
<th>Fri.</th>
<th>Sat.</th>
<th>Sun.</th>
<th>Week Total</th>
<th>Prev. Total</th>
<th>Total to Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Field office for the Engineer</td>
<td>1</td>
<td>lump sum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Traffic control and Staging including traffic control persons, signs, flashers, delineators, barricades, etc.</td>
<td>1</td>
<td>lump sum</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Clean out existing catchbasins and sumps</td>
<td>4</td>
<td>each</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>General excavation (Provisional)</td>
<td>80</td>
<td>m³</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cold grind asphalt pavement up to 50mm deep (Provisional)</td>
<td>400</td>
<td>m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cold grind asphalt pavement up to 100mm deep</td>
<td>1,750</td>
<td>m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Concrete/asphalt curbs, curbs &amp; gutters, all types</td>
<td>390</td>
<td>m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Concrete sidewalk, all thicknesses</td>
<td>480</td>
<td>m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Temporary Asphalt sidewalk, all thicknesses</td>
<td>60</td>
<td>m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Asphalt driveways, all thicknesses</td>
<td>370</td>
<td>m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11</td>
<td>Major crack repair in asphalt using HL8 - 300 mm wide, 75 mm deep</td>
<td>100</td>
<td>m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Rout and seal joints and minor cracks</td>
<td>100</td>
<td>m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Hot mix asphalt HL-3 MOD with PGAC 58-28</td>
<td>220</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Hot mix asphalt HL-8 (20% RAP) with PGAC 58-28</td>
<td>300</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Hot mix asphalt HL-8 (20% RAP) with PGAC 58-28 - hand laid</td>
<td>60</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Hot mix asphalt HL-3 FINE with PGAC 58-28 - hand laid 50 mm compacted thickness</td>
<td>370</td>
<td>m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>19 mm recycled concrete for foundation, backfilling and other applications</td>
<td>60</td>
<td>t</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
The following minor changes in the work have been ordered and authorized:

**DESCRIPTION OF INSTRUCTIONS**

**REASON FOR FIELD INSTRUCTION:**

**REFERENCE DRAWING SHEETS AND SECTION(S) OR DETAIL(S)**

**REFERENCE SPECIFICATION SECTION(S) / PARAGRAPHS**

The intent of this Field Instruction is to authorize minor variations to the contract documents, not involving a change in contract price or contract times, and which are compatible with the design concept of the completed project.

This Field Instruction is binding upon OWNER and also on CONTRACTOR who will perform the work promptly. If OWNER or CONTRACTOR believes an adjustment to the contract price or contract times is necessary, the party may make a claim therefore in accordance with the General Conditions.

<table>
<thead>
<tr>
<th>Field Instruction No.: FI-</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor:</td>
<td></td>
</tr>
<tr>
<td>Subcontractor:</td>
<td></td>
</tr>
<tr>
<td>Contract Administrator:</td>
<td></td>
</tr>
<tr>
<td>Location:</td>
<td></td>
</tr>
<tr>
<td>Inspector:</td>
<td></td>
</tr>
<tr>
<td>Project No.:</td>
<td></td>
</tr>
<tr>
<td>Drawing(s):</td>
<td></td>
</tr>
<tr>
<td>Other Document(s):</td>
<td></td>
</tr>
</tbody>
</table>

Issued by Inspector:  
By:_________________________ 
Authorized Representative  
Date:______________________

Contractor Receipt Acknowledgement:  
By:_________________________  
Title:_______________________  
Date:_______________________
# REQUEST FOR QUOTATION

**NO.:** REQ-

<table>
<thead>
<tr>
<th>Report No.</th>
<th>Inspector:</th>
<th>Date:</th>
<th>Contract No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**TO:**

**PROJECT:**

**FROM:**

**SPEC. SECTION:**

**DESCRIPTION:**

**DATE QUOTATION IS REQUIRED:**

## To Be Completed By Initiator of Request:

1. **Scope of work (Include List of Attachments):**

   

2. **Reason(s) for Modification:**
   - Owner
   - Unforeseen Conditions (site, weather, etc.)
   - Other

   

3. **Approval of Request:**

   

   **Contract Administrator:** ___________________________ Date: __________

## To Be Completed by Contractor:

4. **Total Cost of Modification (Attach detailed Breakdown):** $ ____________________________

5. **Will a Modification to the Contract Time Be Requested:**
   - Yes
   - No

   **NOTE:** If Yes, Form A Must be attached

6. **Attachment Identification (List):**

   

   

7. **Quotation In Effect Until (Date):**

   

   

   **Authorized Signature:**

   **Contractor** ___________________________ **Date** __________

---

Copy to: Consultant, Contract Administrator, Contractor, Office File

Form TS109 – 12/15
REQUEST FOR QUOTATION
## Inspector's Daily Report

### Additional Remarks

<table>
<thead>
<tr>
<th>Report No:</th>
<th>Inspector:</th>
<th>Date:</th>
<th>Contract No:</th>
</tr>
</thead>
</table>

### Remarks

- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

**Inspector's Signature**

**Report Checked By:**

**Project Engineer/Supervisor**

---

**NOTE:** Quantities subject to final confirmation

**Copy to:** Consultant, Contract Administrator, Contractor, Office File

---

Form TS110 – 12/15

Inspector's Daily Report Additional Remarks
# Field Inspection of Materials and Equipment

**DATE:**

**ATTACHMENT TO DAILY LOG NO:**  
**SHEET:**  
**OF**

**DAY:**

**PROJECT NAME:**  
**CONTRACT NO.:**

**CONTRACTOR:**

**FURNISHED BY:**  
☐ CONTRACTOR  ☐ OWNER

**INSPECTED BY:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Plan</th>
<th>Sheet</th>
<th>of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material or Equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer or Source</th>
<th>Jobber or Dealer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Address</td>
</tr>
<tr>
<td>City</td>
<td>State</td>
</tr>
<tr>
<td>City</td>
<td>State</td>
</tr>
</tbody>
</table>

**Proposed Use**  
**Proposed Location**

Dimensions and other physical characteristics determined by measurement, weight, visual inspection, and routine field tests:

<table>
<thead>
<tr>
<th>Have required tests been run?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Are copies of material/equipment compliance certificates attached?**  
☐ Yes  ☐ No  ☐ List:

**Materials complies with specifications**  
☐ Yes  ☐ No

Specific location and explanation should be given if test results for inspections show non-compliance and the material is incorporated in the work.

**Remarks:**

**Date Report Submitted:**

**Reviewed By:**  
**Date:**
<table>
<thead>
<tr>
<th>Item</th>
<th>Location</th>
<th>Description</th>
<th>Cost</th>
<th>Accepted By</th>
<th>Date</th>
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<tbody>
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</tbody>
</table>

**Total**: $
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>CONTRACT/NUMBER</th>
<th>TEMPORARY SURFACE TREATMENT BY CONTRACTOR</th>
<th>PAVEMENT SURFACE (Type and Condition)</th>
<th>TYPE OF SOIL (Wet or Dry)</th>
<th>PAVEMENT BASE (Thickness and Condition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A PAVEMENT SURFACE (Type and Condition)</td>
<td>A SURFACE</td>
<td>mm</td>
<td>C. PERMANENT REPAIRS INCLUDED IN CONTRACT</td>
<td>B. STONE BASE</td>
<td>mm</td>
</tr>
<tr>
<td>B STONE BASE</td>
<td>mm</td>
<td></td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C PERMANENT REPAIRS INCLUDED IN CONTRACT</td>
<td>SURFACE</td>
<td>mm</td>
<td></td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td>STONE BASE</td>
<td>mm</td>
<td></td>
<td>mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. MEASUREMENT OF CUT REPAIRS (To be listed on back of report)</td>
<td></td>
<td></td>
<td>D. MEASUREMENT OF OVER-BREAK (To be listed on back of report)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. MEASUREMENT OF OVER-BREAK (To be listed on back of report)</td>
<td></td>
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</tr>
</tbody>
</table>

Submit in Duplicate
**Disinfection Test**

**Proposal Number:** ___________________________  **Contractor:** ___________________________

**Disinfection Criteria**

<table>
<thead>
<tr>
<th>Type of Installation:</th>
<th>□ Watermain</th>
<th>□ By-pass</th>
<th>□ Rubber Service Hose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe Diameter:</td>
<td>mm</td>
<td>Length: m</td>
<td>Pipe Material: PVC CI</td>
</tr>
<tr>
<td>Disinfection Method:</td>
<td>□ Continuous Feed</td>
<td>□ Slug</td>
<td>Concentration: mg/L</td>
</tr>
<tr>
<td>Contact Time:</td>
<td>□ 24 hrs</td>
<td>□ 3 hrs</td>
<td>□ 16 hrs</td>
</tr>
<tr>
<td>□ Backflow Prevention:</td>
<td>□ Live side monitoring:</td>
<td>□ Pressure gauges install</td>
<td>Disinfectant to be used:</td>
</tr>
<tr>
<td>Discharge to:</td>
<td>□ Storm</td>
<td>□ Sanitary</td>
<td>□ Combined</td>
</tr>
<tr>
<td></td>
<td>□ Sanitary</td>
<td>□ Combined</td>
<td>□ Other</td>
</tr>
<tr>
<td>Location of source water:</td>
<td>Source provided by:</td>
<td>□ Watermain Hydrant</td>
<td>□ By-pass</td>
</tr>
</tbody>
</table>

**Disinfection Site Map:**

---

Note: If this sketch area is not used with submission any attached sketch must include all pertinent information

---

**Identify the following:**
- Line valves and status: (V-1, V-2, V-3, etc) indicate open/close example: (V1-O, V2-C).
- Chlorine Application (A)
- Live side monitoring (LM) example: LM-1, LM-2
- Flushing (F) example: F-1, F-2
- Sampling (S) example: S-1, S-2
- Pressure monitoring (P) example P-1, P-2
- Discharge points (DP) example DP-1, DP-2

**Contractor:** ___________________________  **Date:** ___________________________

**Approved by Contract Administrator:** ___________________________  **Date:** ___________________________
**Proposal No:** __________  **Street:** __________  **Section:** __________  

**City Representative:** __________  **Contractor Representative:** __________

**Drawing Attached:** Yes [ ]  No [ ]  

**Disinfectant Used:** __________  

**Date of Chlorination:** __________  

**Type of Chlorination:** W/M / By-pass / Service Hose

---

**Chain of Custody #**

---

**Confirm status/number of system check:**

- a) Inline valves
- b) Backflow prevention (if applicable)
- c) LS/DS monitoring
- d) Application point
- e) Sampling points
- f) Flushing/Discharge points

---

**Disinfection check list:**

- a) Charge pipe and check for leaks
- b) Confirm and record turbidity at all points prior to disinfection (See Table 1)
- c) Confirm pressure monitoring system is in place
- d) Confirm and record chlorine residual during application and after contact time (See Table 1)
- e) Confirm and record turbidity < 1 mg/L and chlorine residual < 1.0 mg/L at all points (See Table 2) after flushing

---

**Sampling Chain of custody No.** __________  

**Sampling Date:** __________  

**Time:** __________

- a) Confirm sampling is 16/ 24 hours after flushing: Yes [ ]  No [ ]
- b) Samples taken by: MOE Lab [ ]  City Lab [ ]  Private lab name: __________
- c) Technician Name: __________

---

### Table 1: Chlorine Concentration/Turbidity Confirmation

<table>
<thead>
<tr>
<th>Location ID</th>
<th>Date</th>
<th>Turbidity Recordings</th>
<th>Chlorine Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>NTU</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### Table 2: Flushing/Sampling Record

<table>
<thead>
<tr>
<th>Location ID</th>
<th>Date</th>
<th>Turbidity Recordings</th>
<th>Chlorine Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>NTU</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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### Monitoring Pressures and Live Side Residual Chlorine During Chlorination

<table>
<thead>
<tr>
<th>Location ID</th>
<th>Date</th>
<th>Time</th>
<th>Live Side Pressure (psi/kpa)</th>
<th>Dead Side Pressure (psi/kpa)</th>
<th>Live Side Residual Chlorine (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

---

**Verification:**

**On Behalf of Disinfector:** __________  

**On Behalf of City:** __________

---

**Copy to:** Consultant, Contract Administrator, Contractor, Office File

---

**Form TS115 – 11/15**

**DISINFECTION TEST**
<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Chain of custody No.</td>
<td></td>
</tr>
<tr>
<td>b) Proposal No.</td>
<td></td>
</tr>
<tr>
<td>c) Results submitted to:</td>
<td></td>
</tr>
<tr>
<td>d) Results received by: Email, Fax, Phone</td>
<td></td>
</tr>
<tr>
<td>e) Results:</td>
<td>Pass, Fail</td>
</tr>
<tr>
<td>f) Action taken if failed</td>
<td></td>
</tr>
<tr>
<td>g) Results attached:</td>
<td>Yes, No</td>
</tr>
<tr>
<td>h) Date of watermain/by-pass put into service:</td>
<td></td>
</tr>
</tbody>
</table>

**Retest**

<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Chain of custody No.</td>
<td></td>
</tr>
<tr>
<td>b) Proposal No.</td>
<td></td>
</tr>
<tr>
<td>c) Results submitted to:</td>
<td></td>
</tr>
<tr>
<td>d) Results received By: Email, Fax, Phone</td>
<td></td>
</tr>
<tr>
<td>e) Results:</td>
<td>Pass, Fail</td>
</tr>
<tr>
<td>f) Action taken if failed</td>
<td></td>
</tr>
<tr>
<td>g) Results attached:</td>
<td>Yes, No</td>
</tr>
<tr>
<td>h) Date of watermain/by-pass put into service:</td>
<td></td>
</tr>
</tbody>
</table>
# HYDROSTATIC LEAK TEST RECORD

## (FOR BURIED WATER & WASTEWATER PRESSURE PIPING)

**Date of Test:**

<table>
<thead>
<tr>
<th>Test No.</th>
<th>Retest:</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

**Project:**

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Project No.:</th>
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<tbody>
<tr>
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</table>

**Inspector:**

<table>
<thead>
<tr>
<th>(Print Name)</th>
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<tbody>
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</table>

**Pipeline Identification:**

<table>
<thead>
<tr>
<th>Location of Test:</th>
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</tbody>
</table>

**Test From:**

<table>
<thead>
<tr>
<th>(Station)</th>
<th>To:</th>
<th>(Station)</th>
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<tbody>
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</table>

**Test Fluid:**

<table>
<thead>
<tr>
<th>Test Specification:</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

For ____________ metres, pipe diameter of ____________ makeup water = ________________ litres

( length) (mm)

**First Test:** [ ] **Subsequent Test:** [ ]

**Allowable Leakage (L) Test Computation:**

Refer to OPSS 441.07.24.03 which states the allowable leakage of 0.082 litres per millimetre of pipe diameter per kilometre of pipe for a 2-hour test period.

## Remarks:

<table>
<thead>
<tr>
<th>Remarks:</th>
</tr>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Contractor Certification:</th>
<th>Inspector:</th>
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<table>
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<th>Signature</th>
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<table>
<thead>
<tr>
<th>Title</th>
<th>Title</th>
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</tbody>
</table>
DAILY OBSERVATION REPORT TEMPLATE - Major Infrastructure Projects

| CONTRACT NAME: | CONSULTANT: |
| CITY PROJECT: | PROJECT NO.: |
| CONTRACTOR: | COMPLETED BY: |
| DATE: | TIME IN: |
| REPORT NO.: | TIME OUT: |

**OBSERVATIONS**

**Tailgate Safety Meeting (Contractor)**
- **Health and Safety Issues:**
- **CONTRACTOR's SITE SUPERVISOR:**
- **WORK AREA:** (List here or below)

**Topic:**

**Attendees:**

**Weather:**
- [ ] Clear
- [ ] Snow
- [ ] Overcast
- [ ] Foggy
- [ ] Rain
- [ ] Cold

**Temperature Range:**

**Notes:**

**Time Recorded:**

**Site Conditions:**
- [ ] Clear
- [ ] Dusty
- [ ] Muddy
- [ ] Snow covered

**Soil Conditions:**

**Changed Conditions?**

**Special Requirements**

**YES**

**NO**

**Report Attached**

**Surveys/Site Monitoring:**

**Testing and Commissioning:**

**Working Days to-date:**

**Inclement Weather Challenges Noted?**

**YES**

**NO**

<table>
<thead>
<tr>
<th>Work Observed /Activity/ Noted Concerns</th>
<th>Spec/ Drawing Reference</th>
<th>Location /Area</th>
<th>Qty/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
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</tbody>
</table>

**CONTRACTOR RESOURCES**

<table>
<thead>
<tr>
<th>Personnel</th>
<th>No.</th>
<th>Hr</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
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</table>

**Equipment**

<table>
<thead>
<tr>
<th>No.</th>
<th>Hr</th>
<th>Activity</th>
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<tbody>
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</tbody>
</table>

**LIST PERSONNEL OR APPEND DAILY SIGN-IN SHEET FROM CONTRACTOR OR FACILITY**

<table>
<thead>
<tr>
<th>Subcontractors</th>
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</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
<th>Activity</th>
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<tbody>
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</table>

<table>
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<tr>
<th>Manufacturer Representatives</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
## COMMUNICATION

**Items/Concerns Discussed:**

1. 
2. 
3. 

**Requested Revisions or Interpretations, Field Instructions, Change Directives, and Change Orders:**

1. 
2. 
3. 

**Nonconforming Work Reported to Contractor today:**

1. 
2. 
3. 

**Issues that may lead to Delays in project delivery:**

1. 
2. 
3. 

**Visitors and Purpose of Visit:**

1. 
2. 

**Attachments and Other Inspection/Observation Reports:**

1. 
2. 
3. 

**REMARKS:**

---

**Acknowledgement Signatures:**

**INSPECTOR:**

(Print Name)  
Date:

**REVIEWED BY:**

(Title)  (Print Name)  
Date:

**CITY PROJECT MANAGER:**

(Optional)  (Print Name)  
Date:

**Copies:**

- CITY  
- CONSULTANT  
- FILE  
- OTHER
### DAILY PHOTOGRAPHS (number to suit)

<table>
<thead>
<tr>
<th>Description</th>
<th>Insert photograph and description of works.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Insert photograph and description of works.</td>
</tr>
<tr>
<td>Description</td>
<td>Insert photograph and description of works.</td>
</tr>
<tr>
<td>Description</td>
<td>Insert photograph and description of works.</td>
</tr>
</tbody>
</table>
# Daily Observation Report Checklist – Major Infrastructure Projects

The site inspector should maintain adequate data and records in a daily observation report related to the daily status and progress of the construction work. The report must include the following information in the table below as a minimum:

<table>
<thead>
<tr>
<th>Items (see attached template):</th>
<th>Please Check:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Name</td>
<td></td>
</tr>
<tr>
<td>Consultant Name</td>
<td></td>
</tr>
<tr>
<td>City Project Name</td>
<td></td>
</tr>
<tr>
<td>Project Number</td>
<td></td>
</tr>
<tr>
<td>Contractor Name</td>
<td></td>
</tr>
<tr>
<td>Completed By Name</td>
<td></td>
</tr>
<tr>
<td>Day and Date</td>
<td></td>
</tr>
<tr>
<td>Time In</td>
<td></td>
</tr>
<tr>
<td>Time Out</td>
<td></td>
</tr>
<tr>
<td>Report Number</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td></td>
</tr>
<tr>
<td>- Health and Safety Issues</td>
<td></td>
</tr>
<tr>
<td>- Tailgate Safety Meeting (Contractor)</td>
<td></td>
</tr>
<tr>
<td>- Weather/Temperature</td>
<td></td>
</tr>
<tr>
<td>- Contractor Site Supervisor Name</td>
<td></td>
</tr>
<tr>
<td>- Work Area</td>
<td></td>
</tr>
<tr>
<td>- Site Conditions</td>
<td></td>
</tr>
<tr>
<td>- Number of Working Days to-date</td>
<td></td>
</tr>
<tr>
<td>- Inclement Weather Challenges Noted?</td>
<td></td>
</tr>
<tr>
<td>- Work Observed/Activity/Noted Concerns</td>
<td></td>
</tr>
<tr>
<td>- Surveys or any site monitoring, such as for vibration being done</td>
<td></td>
</tr>
<tr>
<td>- Changed conditions</td>
<td></td>
</tr>
<tr>
<td>- Location of Work</td>
<td></td>
</tr>
<tr>
<td>- Soil conditions</td>
<td></td>
</tr>
<tr>
<td>- Testing or Commissioning</td>
<td></td>
</tr>
<tr>
<td>- Progress of work and how it relates to the schedule</td>
<td></td>
</tr>
<tr>
<td>Items (see attached template):</td>
<td>Please Check:</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>List of Contractor Resources</strong></td>
<td></td>
</tr>
<tr>
<td>- List Resources or Append Daily Sign-in Sheet from Contractor or Facility</td>
<td></td>
</tr>
<tr>
<td>- Personnel on-site including numbers</td>
<td></td>
</tr>
<tr>
<td>- Activity/Purpose</td>
<td></td>
</tr>
<tr>
<td>- Subcontractors and Equipment Manufacturer’s on site</td>
<td></td>
</tr>
<tr>
<td>- Material delivered to site</td>
<td></td>
</tr>
<tr>
<td>- Equipment on site and use</td>
<td></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
</tr>
<tr>
<td>- Items/Concerns Discussed</td>
<td></td>
</tr>
<tr>
<td>- Requested Revisions or Interpretations, field instructions, change directives or change orders issued or any other changed conditions</td>
<td></td>
</tr>
<tr>
<td>- Nonconforming Work Reported to Contractor (on this date)</td>
<td></td>
</tr>
<tr>
<td>- Issues that may lead to Delays in Project Delivery</td>
<td></td>
</tr>
<tr>
<td>- Visitors and Purpose of Visit</td>
<td></td>
</tr>
<tr>
<td>- Attachments and Other Inspections/Observation Reports</td>
<td></td>
</tr>
<tr>
<td><strong>Acknowledgement Signatures</strong></td>
<td></td>
</tr>
<tr>
<td>- Inspector</td>
<td></td>
</tr>
<tr>
<td>- Reviewed By</td>
<td></td>
</tr>
<tr>
<td>- City Project Manager (Optional)</td>
<td></td>
</tr>
<tr>
<td>- Copies to City, Consultant and Project File</td>
<td></td>
</tr>
<tr>
<td><strong>Daily Photographs</strong></td>
<td></td>
</tr>
<tr>
<td>- Insert photograph</td>
<td></td>
</tr>
<tr>
<td>- Include description of photograph, date, time and other details</td>
<td></td>
</tr>
</tbody>
</table>
The following worksheet is required to validate changes to the critical path schedule associated with quotations for contemplated changes to the project work scope.

Contractor is required to show specific time impacts to each activity affected by the proposed change, along with the total float associated with each specific activity both before the proposed change.

The Owner or Owner’s Representative will re-calculate the schedule with the proposed time impacts to all specific activities affected to determine what impact to the overall critical path as a means to evaluate any change to contract completion.

<table>
<thead>
<tr>
<th>Activity ID</th>
<th>Activity Description</th>
<th>Original Duration (days)</th>
<th>Total Float (days)</th>
<th>Time Extension (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
### Utility Construction Site Visit Report

**Engineering & Construction Services**

**Copy to:** Construction File Form TS 119 – 11/15

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time Arrived:</th>
<th>Time Departed:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RACS Permit #:</th>
<th>Weather:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Location:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Utility Company:</th>
<th>Inspector:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Contractor:</th>
</tr>
</thead>
</table>

### Checklist:

1. Permit on-site:  
   - Yes  
   - No  
   - N/A

2. Drawings on-site:  
   - Yes  
   - No  
   - N/A

3. Information sign in place:  
   - Yes  
   - No

4. Alignment as per permit:  
   - Yes  
   - No

5. Pedestrian / vehicle access maintained:  
   - Yes  
   - No  
   - N/A

6. Traffic control in place:  
   - Yes  
   - No  
   - N/A

7. Pay-duty police on-site:  
   - Yes  
   - No  
   - N/A

8. Depth of cover as per permit:  
   - Yes  
   - No

9. Conformance with permit conditions:  
   - Yes  
   - No

10. Conformance with work restrictions:  
    - Yes  
    - No

11. Temporary restoration satisfactory  
    - Yes  
    - No  
    - N/A

12. Photographs taken  
    - Yes  
    - No  
    - Qty:____

13. Work progress  
    - ____% Complete

### Notes:

*Include explanation for any boxes checked No or N/A above*

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###UTILITY PRE-CONSTRUCTION MEETING SUMMARY

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
<th>Meeting Location:</th>
<th>On-Site</th>
<th>Other (specify):</th>
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<tbody>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>RACS Permit #:</th>
<th>Stream:</th>
<th>Short</th>
<th>Full</th>
<th>District:</th>
<th>TEY</th>
<th>EY</th>
<th>NY</th>
<th>SC</th>
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<tbody>
<tr>
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<td></td>
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<td></td>
<td></td>
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</table>

Site Location and Type of Installation:

<table>
<thead>
<tr>
<th>Start Date:</th>
<th>Anticipated Completion Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inspector: | Number: |

Utility Company: | Contact Name: | Number: |

Contractor: | Contact Name: | Number: | 24hr Emergency: |

Attendees (name, company, number):

Notifications Distributed: | RODARS: | Y | N | N/A | Residents: | Y | N | N/A | BIA: | Y | N | N/A |
|-------------------------|--------|----|----|-----|-----------|----|----|-----|-----|----|----|-----|

Traffic Restrictions / Working Hours:

Pay-Duty Police Required: | No | Yes (specify details): |

Staging of Work / Installation Method / Restoration:

Other Discussion (where applicable, discussion should include pedestrian access and safety, tree protection, equipment storage, materials stockpiling, protection of open excavations, etc.):

Additional Information: | None | On Reverse | Attached (no. of pages): |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Full-Stream Line Change Process

1. Contractor contacts utility company and City Inspector to attend the site.

2. Utility Company determines whether it is best to request a line change or to daylight the potential conflict to see if there is truly a problem.

3. If a line change is required, Utility Company consults with the City Inspector in the field about the best course of action then prepares redlined drawing. Drawing should show the conflict that caused the change, basic offsets/clearances, and a note if the work location is moving from the boulevard to the roadway or vice versa.

4. Utility company emails the redlined drawing, along with the information indicated on the Redline Submission Form, to Third Party & Utility Review (alongo@toronto.ca and utilrev@toronto.ca) and copied to the Inspector.
   - The subject line of the email shall be: **Line Change - City Permit # - Street Name**
   - A picture of the redline may be taken in the field - as long as the quality is sufficient that all information is legible.
   - The information from the Redline Submission Form may be contained in the body of the email rather than attaching a separate form.

5. Utility Company proactively pursues email sign-off from other companies whose infrastructure may be encroached upon by the change and forwards them to the Reviewer.

6. Reviewer begins review of line change without delay under the assumption that Utility Company is concurrently pursuing any required sign-offs.

7. Upon receipt of the required information, the Reviewer provides a response within 24 hours, copying the Inspector and Transportation Services.

8. If the change is acceptable, the Reviewer stamps the PDF drawing electronically and emails it to the Utility Company, copying the Inspector, Transportation Services, and City Mapping.

9. If the work location is moving from the boulevard to the roadway or vice versa, work cannot proceed until a revised permit is issued by Transportation Services. If the work location remains on the same area of the ROW, then work may proceed immediately upon receipt of the acceptance email from the Reviewer.
Full Stream Line Change – Red Line Submission Form

**Project Information:**
Utility Company Name:
Contractor Name:
Utility Company Project Name:
Utility Company Project Number:
City Permit Number:
City Inspector Name:

**Line Change Information:**
Specify and highlight if work is moving from the boulevard to the roadway or vice versa:
Pages of permit drawing affected by line change:
Description and rationale for line change:
### Date:

### Inspector (print full name):

### Location:

### Description of Work Performed:

#### Personal Protective Equipment

Appropriate PPE being used:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
</table>

#### Site Office / Trailer

1. First-aid kit properly equipped and maintained:
   - Yes
   - No
   - N/A
2. Eye-wash kit or station supplied and maintained:
   - Yes
   - No
   - N/A
3. Copy of current OHS Act and Regs supplied:
   - Yes
   - No
   - N/A
4. Adequate lighting:
   - Yes
   - No
   - N/A
5. Adequate heating and air-conditioning:
   - Yes
   - No
   - N/A
6. Supply of fresh drinking water:
   - Yes
   - No
   - N/A
7. Sanitary system including toilet for sole use:
   - Yes
   - No
   - N/A
8. Fire extinguisher supplied and maintained:
   - Yes
   - No
   - N/A
9. Safe access / egress:
   - Yes
   - No
   - N/A
10. Copies of MSDS sheets supplied:
    - Yes
    - No
    - N/A
11. Smoke alarm supplied and working:
    - Yes
    - No
    - N/A
12. Carbon monoxide detector supplied and working:
    - Yes
    - No
    - N/A
13. Safety board that meets requirements in OHS Act:
    - Yes
    - No
    - N/A
14. Burn Kit:
    - Yes
    - No
    - N/A

#### Construction

Traffic control as per contract requirements:

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
</tr>
</thead>
</table>

#### Notes:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________
Inspector’s Signature

________________________________________
Supervisor/Coordinator’s Signature
### Record of Damaged Services

<table>
<thead>
<tr>
<th>Location: Address and Station</th>
<th>Date and Time</th>
<th>Service: Size, Material and Condition</th>
<th>Amount of Machine and hand digging to locate</th>
<th>Sketch of location: Stake out &amp; Machine direction of digging and photos of the site</th>
<th>Inspector’s comments: Who was at fault?</th>
<th>Signature of inspector and contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Completed by:</th>
<th>Date of Report:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(print name and position)</td>
<td></td>
</tr>
</tbody>
</table>
Change Order Checklist

The following items form part of a complete change order package. Whenever possible, all items listed that are available must be part of the package provided for financial approvals. This checklist is to form page 2 of the package.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Change Order Cover Page (A54)</td>
</tr>
<tr>
<td>2</td>
<td>This Checklist</td>
</tr>
<tr>
<td>3</td>
<td>Briefing Note for all COs higher than Engineer’s authority limit</td>
</tr>
<tr>
<td>4</td>
<td>Contract Change Summary</td>
</tr>
<tr>
<td>5</td>
<td>Signed Change Directive (A53)</td>
</tr>
<tr>
<td></td>
<td>Copy of Inspector's Daily Report for the dates that extra work started and was completed. (TS100 or TS101)</td>
</tr>
<tr>
<td></td>
<td>Report of Extra Work Completed (TS102)</td>
</tr>
<tr>
<td></td>
<td>Time and Material Summary Sheet, if applicable (A82)</td>
</tr>
<tr>
<td></td>
<td>Copy of Time and Material Payroll Burden Form, if applicable (A81)</td>
</tr>
<tr>
<td></td>
<td>Request for Quotation (TS118)</td>
</tr>
<tr>
<td></td>
<td>All correspondence relating to the negotiation of the final price (i.e. original proposals, emails, etc.)</td>
</tr>
<tr>
<td></td>
<td>Contractor's Invoice</td>
</tr>
<tr>
<td></td>
<td>Contractor's Documentation, including but not limited to:</td>
</tr>
<tr>
<td></td>
<td>- Time and Material Summary Sheet, if applicable</td>
</tr>
<tr>
<td></td>
<td>- Weigh Tickets</td>
</tr>
<tr>
<td></td>
<td>- Material Tickets</td>
</tr>
<tr>
<td></td>
<td>- Material Invoices (Highlight material used in EWO)</td>
</tr>
<tr>
<td></td>
<td>- Dump Tickets</td>
</tr>
<tr>
<td></td>
<td>- Pay Duty Officer Chits, if applicable</td>
</tr>
<tr>
<td></td>
<td>- Submittal Drawings, if applicable</td>
</tr>
<tr>
<td></td>
<td>Drawings and/or Specifications Used</td>
</tr>
<tr>
<td></td>
<td>Photos of pre, during and post construction conditions</td>
</tr>
<tr>
<td></td>
<td>Arithmetic checks of Contractor's invoices</td>
</tr>
<tr>
<td></td>
<td>Copy of Local Union Rates, if T&amp;M</td>
</tr>
<tr>
<td></td>
<td>Copy of Contractor's Equipment List, if T&amp;M</td>
</tr>
</tbody>
</table>

Checklist Prepared By ________________________________
## Contract Change Summary

**Contract #**

**Date:** May 4, 2015

**Contract No.: #**********

**File No.: #**********

**PO No.: #**********

**Contractor:** XXXXXXX

**Project:** XXXXXXX

### Date of Commencement (yyyy.mm.dd):

4-May-15

### Tendered Contract Length:

26 weeks

### Original Completion Date (yyyy.mm.dd):

30-Oct-15

### Revised Completion Date (yyyy.mm.dd):

30-Oct-15

### Original PO Amount ($):

4,413,250.00

### A. Contingency Allowance ($):

370,000.00

### B. PO Amendment ($):

-

### C. Cumulative Contingency Amount (A + B) ($):

370,000.00

### D. Total CD and CO Amount ($):

81,693.87

### E. Total Overruns and Underruns ($):

-324,592.96

### Remaining Contingency Allowance (C - D - E) ($):

612,899.09

## Approved Change Directive and Change Orders

<table>
<thead>
<tr>
<th>CD #</th>
<th>CO#</th>
<th>Description</th>
<th>Claim Amount</th>
<th>Amount Paid To Date</th>
<th>Outstanding Amount</th>
<th>Date Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CO-01</td>
<td>XXXXX</td>
<td>$19,817.09</td>
<td>$19,817.09</td>
<td>$0.00</td>
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<tr>
<td>2</td>
<td>CO-02</td>
<td>XXXXX</td>
<td>$3,364.41</td>
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<td>3</td>
<td>CO-03</td>
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<td>$7,974.90</td>
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<td>$0.00</td>
<td>19-May-15</td>
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<tr>
<td>4</td>
<td>CO-04</td>
<td>XXXXX</td>
<td>$2,870.47</td>
<td>$2,870.47</td>
<td>$0.00</td>
<td>04-Jun-15</td>
</tr>
</tbody>
</table>
## Contract Change Summary
### Contract 15ECS-TI-15SP

<table>
<thead>
<tr>
<th>CD #</th>
<th>CO#</th>
<th>Description</th>
<th>Claim Amount</th>
<th>Amount Paid To Date</th>
<th>Outstanding Amount</th>
<th>Date Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>CO-05</td>
<td>XXXXX</td>
<td>$3,043.00</td>
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<td>$0.00</td>
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<tr>
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<td>$12,489.00</td>
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<td>7</td>
<td>CO-07</td>
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<td>Total Change Orders</td>
<td>$81,693.87</td>
<td>$81,693.87</td>
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**Contract Item Overruns and Underruns (Underrun items are shown as negative values to reflect unspent funding that is available)**

<table>
<thead>
<tr>
<th>Item#</th>
<th>Item#</th>
<th>Description</th>
<th>Claim Amount</th>
<th>Amount Paid To Date</th>
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<tbody>
<tr>
<td>16</td>
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<td>104</td>
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<td>-$31,582.20</td>
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</table>
## Contract Change Summary
**Contract 15ECS-TI-15SP**

<table>
<thead>
<tr>
<th>CD #</th>
<th>CO#</th>
<th>Description</th>
<th>Claim Amount</th>
<th>Amount Paid To Date</th>
<th>Outstanding Amount</th>
<th>Date Approved</th>
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</thead>
<tbody>
<tr>
<td>Item#32</td>
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<tr>
<td>Item#33</td>
<td>-</td>
<td>Item#32-</td>
<td>-$47,250.00</td>
<td>-$47,250.00</td>
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<td>Item#35</td>
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<td>Item#32-</td>
<td>-$25,665.50</td>
<td>-$25,665.50</td>
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<tr>
<td>Item#36</td>
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<td>-$37,400.00</td>
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<tr>
<td>Item#39</td>
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<td>Item#39-</td>
<td>-$33,951.00</td>
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<td>$0.00</td>
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<tr>
<td>Item#45</td>
<td>-</td>
<td>Item#45-</td>
<td>-$31,948.20</td>
<td>-$31,948.20</td>
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<tr>
<td>Item#47</td>
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<td>Item#47-</td>
<td>-$28,500.00</td>
<td>-$28,500.00</td>
<td>$0.00</td>
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<tr>
<td>Item#55</td>
<td>105</td>
<td>Item#55-</td>
<td>$32,277.42</td>
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<td>$0.00</td>
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<td>Item#63</td>
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<td>Item#63-</td>
<td>-$66,000.00</td>
<td>-$66,000.00</td>
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</tr>
</tbody>
</table>

**Total Change Orders and Overruns**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>-$324,592.96</td>
<td>-$324,592.96</td>
<td>$0.00</td>
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### Account PO Summaries

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<tr>
<th></th>
<th>Contingency Amounts</th>
<th>POAs</th>
<th>Total Contingency</th>
<th>Amounts Required</th>
<th>Amounts Remaining</th>
</tr>
</thead>
</table>

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*Form TS 125 - 12/15*

*CONTRACT CHANGE SUMMARY*
## Contract Change Summary
### Contract 15ECS-TI-15SP

<table>
<thead>
<tr>
<th>CD #</th>
<th>CO#</th>
<th>Description</th>
<th>Claim Amount</th>
<th>Amount Paid To Date</th>
<th>Outstanding Amount</th>
<th>Date Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTP####</td>
<td></td>
<td>Transportation</td>
<td>$300,000.00</td>
<td>$300,000.00</td>
<td>-$184,306.82</td>
<td>$484,306.82</td>
</tr>
<tr>
<td>CPW#####</td>
<td></td>
<td>Toronto Water</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>-$5,318.50</td>
<td>$25,318.50</td>
</tr>
<tr>
<td>CTP####</td>
<td></td>
<td>Pedestrian Safety</td>
<td>$30,000.00</td>
<td>$30,000.00</td>
<td>$3,043.00</td>
<td>$26,957.00</td>
</tr>
<tr>
<td>CTP####</td>
<td></td>
<td>Traffic Signal</td>
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<td>$5,000.00</td>
<td>-$66,000.00</td>
<td>$71,000.00</td>
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<tr>
<td>CTP####</td>
<td></td>
<td>Neighbourhood Improvement</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
<td>$9,683.23</td>
<td>$5,316.77</td>
</tr>
</tbody>
</table>

Total Contract Purchase Order Required: $370,000.00

$370,000.00 - $242,899.09 = $612,899.09
DATE:

CONSULTANT* PERFORMANCE EVALUATION FORM

*Consultant refers to Contracted Professional Services or Consulting Services Provider

NAME OF CONSULTANT:

PURCHASE ORDER #: PO value $ (Incl. all taxes):

RFP/RFQ #: NAME OF CITY PROJECT MANAGER:

PROJECT NAME AND DESCRIPTION:

---

Check applicable type of Consulting Services Provided (one only):

- [ ] STUDIES or ENVIRONMENTAL ASSESSMENT
- [ ] PRELIMINARY & DETAILED DESIGN SERVICES
- [ ] SERVICES DURING CONSTRUCTION / COMMISSIONING
- [ ] POST CONSTRUCTION SERVICES
- [ ] OTHER

---

**PART 1**

OVERALL QUALITY OF WORK PROVIDED ON THE PROJECT

(Assessment of the general performance on the project measured by the results or achievements of objectives, quality of end-products (documents) and general satisfaction of the process throughout the project)

<table>
<thead>
<tr>
<th>RATING</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (P)</td>
<td></td>
</tr>
<tr>
<td>Satisfactory (S)</td>
<td></td>
</tr>
<tr>
<td>Excellent (E)</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Objectives of the Terms of Reference in call document fulfilled at the end of the project

(i.e. satisfactorily met the requirements as specified in the Terms of Reference)

2. Services delivered “on-time”

(based on schedule as defined in the RFP and consultant’s Proposal, or agreed upon project schedule or agreed to revisions to project schedule)

2. Services delivered “on-budget”

(based on consultant’s Cost of Services Proposal, or agreed to revisions to project budget for scope changes)

3. Quality and competency of technical assessments and evaluations

(i.e. technical knowledge and application in a process, approvals / regulations, etc)

4. Key Deliverables

*Please indicate below key deliverables for this phase of the project:

Deliverable #1:

- [ ] Reports/Technical Memorandums
- [ ] Tender Documents
- [ ] Other (Specify):

  - [ ] Design Documents
  - [ ] As Built Drawings

- [ ] Overall quality of document
  
  (presentation, writing style, graphics, clarity, overall appearance, follows standards)

- [ ] Document contents
  
  (completeness, technical accuracy, thoroughness, etc)

- [ ] Document structure
  
  (flow of information, technical appendices, drawing groupings for technical disciplines)

- [ ] QA completed prior to each submission or re submission
**Deliverable # 2:**
- Reports/Technical Memorandums
- Tender Documents
- Other (Specify):
- Design Documents
- As Built Drawings

- Overall quality of document
  (presentation, writing style, graphics, clarity, overall appearance, follows standards)
- Document contents
  (completeness, technical accuracy, thoroughness, etc)
- Document structure
  (flow of information, technical appendices, drawing groupings for technical disciplines)
- QA completed prior to each submission or re submission

**Deliverable # 3:**
- Reports/Technical Memorandums
- Tender Documents
- Other (Specify):
- Design Documents
- As Built Drawings

- Overall quality of document
  (presentation, writing style, graphics, clarity, overall appearance, follows standards)
- Document contents
  (completeness, technical accuracy, thoroughness, etc)
- Document structure
  (flow of information, technical appendices, drawing groupings for technical disciplines)
- QA completed prior to each submission or re submission

**Deliverable # 4:**
- Reports/Technical Memorandums
- Tender Documents
- Other (Specify):
- Design Documents
- As Built Drawings

- Overall quality of document
  (presentation, writing style, graphics, clarity, overall appearance, follows standards)
- Document contents
  (completeness, technical accuracy, thoroughness, etc)
- Document structure
  (flow of information, technical appendices, drawing groupings for technical disciplines)
- QA completed prior to each submission or re submission

*Note: Determine overall rating for Part 1 based on all individual Part 1 ratings.*

**OVERALL RATING FOR PART 1:**

*Note: attach backup documentation if any of the above ratings is poor*

**Commentary on Ratings for PART 1** (including comments by consultant, if applicable).
Additional comments attached?  Y  □
# PART 2

## QUALITY OF SERVICE PERFORMED ON THE PROJECT

(Assessment of the approach or "modus operandi" of the consultant measured by the manner in which services were provided)

<table>
<thead>
<tr>
<th>RATING</th>
<th>Poor (P)</th>
<th>Satisfactory (S)</th>
<th>Excellent (E)</th>
</tr>
</thead>
</table>

### 1 Communications
(timely and sufficient information on status of work, budget and schedule)

### 2 Appropriate involvement of City Staff in technical decisions / issues
(timely and sufficient information on technical issues providing opportunity for City input)

### 3 Project Management

- **(a) Overall Performance of Project Manager**
  (Availability and level of support was sufficient. Demonstrated required leadership, and took action as required to meet project requirements.)

- **(b) Management of overall schedule and budget**
  (managed project schedule and project budget appropriately. Appropriately addressed revisions to schedule and budget for services requested beyond the original scope of services and in a timely fashion)

- **(c) Management of project staff, sub-consultants & other team members, including 3rd party members (e.g. Geotechnical, DSL consultant, material testing firm)**
  (management of consultant team to satisfy project objectives & deliverables)

- **(d) Invoicing, project status reports, change management request and documentation, and related management reports submitted with sufficient detail and on timely basis**
  (in accordance with RFP requirements)

- **(e) Overall Performance of Key project staff**
  (Availability and level of support was sufficient. Demonstrated required technical expertise)

If the appraisal is for Construction Services phase, then complete also (f) to (i) below.

- **(f) Overall Quality of Construction Management of Contractor**
  (Overall level of communication with contractor, City staff, operating staff. Proactive in addressing contract issues)

- **(g) Overall quality of Office Service provided during construction**
  (timeliness and quality of review and response to contractor i.e. shop drawings, RFI, RFQ, field QA by office staff)

- **(h) Overall quality of Site Services provided during construction**
  (project control, site meetings and follow ups, contract payment recommendations, material testing, field reports, construction change management, timeliness of responding to contractor’s queries, followed Field Services Manual as a reference guide)

- **(i) Overall Quality of Testing and Commissioning Support**
  (management and QA of contractor’s Training and Commissioning plan, appropriate level of technical staff support during commissioning, appropriate level of site witnesses start up and testing prior to requesting City attendance to Commissioning activities, quality and completeness of consultant’s operation manual)

### 4 Overall quality of Design as determined during the Construction phase
(Appropriateness of Consultant design work and value of Change Orders as a result of design errors and omissions is reasonable)

### 5 Effectiveness in public / external consultation
(Appropriate and timely communication with agencies and general public)

*Note: Determine overall rating for Part 2 based on all individual Part 2 ratings.*

## OVERALL RATING FOR PART 2:

*Note: Attach backup documentation if any of the above ratings is poor.*
### PART 3

**CORPORATE PRACTICES AND SUPPORT FOR PERFORMANCE ON THE PROJECT**
(Assessment of the corporate practices and the implementation of these practices measured by the performance of the project participants)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor (P)</td>
<td>satisfactorily (S)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scope of services provided based on RFP and proposal submission (Understanding and anticipation of project requirements and circumstances affecting scope)</td>
</tr>
<tr>
<td>2</td>
<td>Corporate support to ensure success of project (Involvement of Principle-in-Charge, Quality Assurance practices, etc)</td>
</tr>
<tr>
<td>3</td>
<td>Availability of the assigned staff</td>
</tr>
<tr>
<td>4</td>
<td>Overall relationship maintained between City Staff and consultant (Understanding and responsive to reciprocal needs, mutual cooperation, etc)</td>
</tr>
</tbody>
</table>

**Note:** Determine overall rating for Part 3 based on all individual Part 3 ratings.

**OVERALL RATING FOR PART 3:**

**Note:** Attach backup documentation if any of the above ratings is poor

---

**Commentary on Ratings for PART 3** (including comments by consultant, if applicable)
Additional comments attached? Y ☐
### SUMMARY

<table>
<thead>
<tr>
<th>RATING</th>
<th>Overall Rating for PART 1</th>
<th>Overall quality of work provided on the project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall Rating for PART 2</td>
<td>Overall quality of service performed on the project</td>
</tr>
<tr>
<td></td>
<td>Overall Rating for PART 3</td>
<td>Corporate practices and support for performance on the project</td>
</tr>
</tbody>
</table>

### OVERALL PERFORMANCE RATING:

**NOTE:** For assignments involving both design and contract administration, final design rating will depend on the performance and services delivered during the construction. The City reserves the right to revisit the overall evaluation if the facility does not operate as intended, due to design deficiencies.

### Comments on Overall Performance Rating and Sign-off:

**CITY COMMENTS:**
Additional comments attached? Y □

__________________________

__________________________

__________________________

Prepared by: ____________________________ (Name and Title)

Signature: ____________________________ Date: __________________

**CONSULTANT COMMENTS:**
Additional comments attached? Y □

__________________________

__________________________

__________________________

Prepared by: ____________________________ (Name and Title)

Signature: ____________________________ Date: __________________
Consultant Comments on how the City Performed:

(E.g. definition of work scope compared to what was actually requested/Performed, City response time within timelines defined in RFP)

Additional comments attached?  Y ☐

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Prepared by: ____________________________________________________________ (Name and Title)

Signature: ________________________________ Date: _________________
QUESTION AND ANSWERS

1. WHAT IS THE PURPOSE OF PERFORMANCE EVALUATION?

Performance evaluation is a formal communication tool between the City and a consultant to manage performance on a project.

The performance evaluation data may be used to suspend poor performing consultants from bidding on City contracts for a specified period of time, with Council’s approval.

2. WHICH CONTRACTS REQUIRE PERFORMANCE EVALUATION?

Consultant performance evaluation shall be performed in all contracts where the cost of consulting services exceeds $50,000.00 (exclusive of all taxes), or in any other consulting contract where a Technical Services Manager determines that a performance evaluation would be appropriate.

It has to be specified in the Terms of Reference of call document that the consultant’s performance will be evaluated.

3. WHO EVALUATES THE PERFORMANCE?

The performance evaluation shall be conducted by the Technical Services Project Manager in consultation with Toronto Water/Transportations representatives when applicable.

4. WHAT IS THE PURPOSE OF CONSULTANT APPRAISAL FORM?

The purpose of the form is to guide the evaluator through the performance evaluation and to provide a standard way of recording evaluation data. The form can be either filled out electronically, or printed and filled out manually (User Note: The form has been locked. Contact Marijana Bulatovic if modifications are required to suit non standard projects).

5. WHEN TO EVALUATE?

There can be as many interim performance evaluations as a Technical Services Project Manager deems necessary over the course of a project to allow for improvement of performance.

However, as a minimum, the Technical Services Project Managers must complete this form when performing a final evaluation at the completion of the consultant assignment (User Note: where an assignment is broken down into several Purchase Orders, one evaluation form is to be completed for each Purchase Order).

6. WHAT IS BACKUP DOCUMENTATION?

As part of good contract management practices, the Technical Services Project Managers should document consultant performance issues on an ongoing basis in the form of letters, minutes of meetings, telephone call confirmations, emails, etc. The backup documentation should be attached to the evaluation form if any of the ratings is poor.

7. HOW TO FILE EVALUATION DATA?

The final performance evaluation has to be properly recorded in the form. The final performance evaluation form must be signed by the City evaluator and forwarded to the consultant for comments and signature.

The final form will be:
- Stored in the contract file (along with backup documentation if any of the ratings is poor), and
- Scanned (pdf format) and forwarded to SPQA (MBulato@toronto.ca).

The pdf files shall be stored in a directory accessible by Technical Services managers and directors.
<table>
<thead>
<tr>
<th>A. SAFETY &amp; COMPLIANCE - Laws &amp; Standards</th>
<th>sub-score 3.00</th>
<th>Weight 25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the contractor comply with OSHA requirements?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2. Did the contractor adhere to environmental, (non-OHSA) safety requirements, and other laws &amp; policies?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3. Did the contractor take adequate precautions with any hazardous materials and designated substances?</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. QUALITY - Compliance with Contract Standards &amp; Specifications</th>
<th>sub-score 3.00</th>
<th>Weight 25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the contractor comply with standards and specifications in the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2. Was the quality and workmanship in compliance with the contract documents?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3. Did the contractor promptly &amp; effectively correct defective work as the project progressed?</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. ORGANIZATION - Work Plan and Management</th>
<th>sub-score 3.00</th>
<th>Weight 12.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the contractor submit a satisfactory baseline schedule in compliance with the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2. Did the contractor commence the work on time?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3. Did the contractor submit schedule updates in accordance with the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>4. Did the contractor adequately staff and resource the project in compliance with the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5. Did the contractor provide adequate &amp; competent site supervision?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>6. Did the contractor effectively coordinate and manage the work of its subcontractors?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>7. Did a person with decision-making authority represent the contractor at pay/progress meetings?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8. Did the contractor submit timely, relevant requests for information (RFIs) as needed?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>9. Were shop drawings submitted according to shop drawing schedule and in compliance with the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D. EXECUTION - Work Performance</th>
<th>sub-score 3.00</th>
<th>Weight 25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the contractor complete the project on time?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2. Did the contractor follow the approved schedule and meet milestones?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3. Did the contractor provide effective quality control?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>4. Did the contractor keep the site clean and free of trash and debris in compliance with the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5. Did the contractor promptly comply with change orders, change directives, site instructions, and RFQs?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>6. Did the contractor seek authorization to perform extra or additional work?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>7. Did the contractor adequately address disputes, damages and claims with third parties to City PM's knowledge?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8. Was the quality and submission timelines of the following items acceptable?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1 Look ahead schedules or work plans</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8.2 Accurate and complete record documents (as-builts)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8.3 Complete operations and maintenance manuals and closeout documents</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8.4 Secure and/or closed applicable municipal permits</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8.5 Startup testing and commissioning reports</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8.6 Training plan and manuals</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E. ADMINISTRATION - Contractor Performance and Diligence</th>
<th>sub-score 3.00</th>
<th>Weight 12.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the contractor communicate, cooperate, collaborate with the contract administrator, project team &amp; stakeholders?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>2. Did the contractor participate in resolving project problems and display initiative to implement solutions?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3. Did the contractor demonstrate accountability for problems for which they where responsible?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>4. Did the contractor submit accurate, complete invoices in a timely manner?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5. Did the contractor provide competitive change order pricing?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>6. Did the contractor accept responsibility for the full scope and extent of the contract?</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>7. Did the contractor coordinate to minimize disruption to the public and City operations?</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Score (weighted)</th>
<th>3.00</th>
</tr>
</thead>
</table>

**NOTE:** If the contractor disagrees with this evaluation, it is to submit its objections in writing with supporting evidence within five (5) business days to the Division Manager (for Interim Reports) or to the Division Director (for Final Reports)
# City of Toronto

## Water/Sewer Service Card

<table>
<thead>
<tr>
<th>Installation</th>
<th>Inspection/Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

### Street Name

<table>
<thead>
<tr>
<th>Street No.</th>
<th>Contractor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Nearest Cross Street Name

<table>
<thead>
<tr>
<th>Install/Inspect Date</th>
<th>Contract No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes

- MARK street # and existing water/sewer assets such as water main, valves, hydrants, maintenance holes and catchbasins. TAKE a minimum number of measurements from existing water/sewer assets to exactly locate the alterations. Forward a copy of this completed form to: Manager, Watermain Asset Planning, Metro Hall 18th Floor.

Note: NSF-053 Filter Distributed (Lead Only) — [ ] Yes [ ] No

### Sketch and Measurements of Work Done

#### Mark North

- Street #

- Curb Line

- Curb Line

Water/Sewer Service Card template version # 05. Please discard all previous templates (digital and hard copy) and use the most current version.
A filter MUST be distributed if the service is lead (on the City and/or private side).

Material AND size to be recorded ONLY if replaced.

Material AND size of old or existing water service MUST be filled for both inspections and installations.

This section not required if INSPECTION only.

Material AND size of old or existing fire service - MUST be completed.

A Water Card Sample

Quick Reference Guide for Water Service Cards

- Shaded areas must be fully filled.
- Shaded areas must be filled for installation only.

Exceptions:
Info for domestic is not required for replacement of fire service IF the domestic is separate.
**Quick Reference Guide for Sewer Service Cards**

- **Installation checkbox MUST be checked.**
- **Location, date, and cross street info to be fully filled.**
- **Full name and company of individual for follow up.**
- **Material, size, depth of sewer service to be recorded.**
- **Material, size of the associated sewer main to be recorded.**

---

**A Sewer Card Sample**

**Sketch and Measurements of Work Done:**

- **Mark North**
- **567 Street #**

- **Curb Line**
- **Streetline**
- **Main Sewer**
- **MH**

**Shaded areas must be fully filled.**
City of Toronto
Water/Sewer Service Card

Street Name: John St.
Street No.: 567
Install/Inspect Date: 11/20/2007
Contractor: Servicw Inc.
Contract No.: 65443
Nearest Cross Street Name:

WATER CARD
☑ Fire ☐ Domestic ☐ Combined

NSF-053 Filter Distributed (Lead Only) ☐ Yes ☐ No

SEWER CARD

New W/S
☐ Tracer Wire ☐ Anode on W/S ☐ Anode on W/M

Old or Existing W/S
☐ Connected ☐ Yes ☐ No ☐ Did not exist

Sewer Service Purpose
☐ Sanitary ☐ Combined ☐ Storm

Sewer Service
☐ New ☐ Inspection

Sewer Service Depth [m]

W/M

W/S Depth [m]

Old Sewer Service Disconnected
☐ Yes ☐ No ☐ Did not exist

Note: MARK street # and existing water/sewer assets such as water main, valves, hydrants, maintenance holes and catchbasins. TAKE a minimum number of measurements from existing water/sewer assets to exactly locate the alterations. Forward a copy of this completed form to: Manager, Watermain Asset Planning, Metro Hall 18th Floor.

Water/Sewer Service Card template version # 05. Please discard all previous templates (digital and hard copy) and use the most current version.
Note: MARK street # and existing water/sewer assets such as water main, valves, hydrants, maintenance holes and catchbasins. TAKE a minimum number of measurements from existing water/sewer assets to exactly locate the alterations. Forward a copy of this completed form to: Manager, Watermain Asset Planning, Metro Hall 18th Floor.

Water/Sewer Service Card template version # 05. Please discard all previous templates (digital and hard copy) and use the most current version.
City of Toronto  
Water/Sewer Service Card  

- **Installation**  
- **Inspection/Repair**  

<table>
<thead>
<tr>
<th><strong>Street Name:</strong></th>
<th>John St.</th>
<th><strong>Street No.:</strong></th>
<th>123</th>
<th><strong>Contractor:</strong></th>
<th>Acme Inc.</th>
<th><strong>W/O No.:</strong></th>
<th>654321</th>
<th><strong>Contract No.:</strong></th>
<th>2013-1234</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nearest Cross Street Name:</strong></td>
<td>Wellington St.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

☐ street which service ties to W/M or sewer  
☐ street which service ties to W/M or sewer  

**Sketch and Measurements of Work Done:**

- **Mark North**
- **N**
- **123**
- **Street #**
- **Curb Line**
- **cstop**
- **Domestic**
- **5.5 m**
- **3.0 m**
- **4.5 m**
- **Valve**
- **Wellington Street**
- **John Street**
- **150 mm CI W/M**
- **Valve**

**A Water Card Sample**

---

Note: MARK street # and existing water/sewer assets such as water main, valves, hydrants, maintenance holes and catchbasins. TAKE a minimum number of measurements from existing water/sewer assets to exactly locate the alterations. Forward a copy of this completed form to: Manager, Watermain Asset Planning, Metro Hall 18th Floor.

Water/Sewer Service Card template version # 05. Please discard all previous templates (digital and hard copy) and use the most current version.
Installation

Inspection/Repair

Street Name: John St.

Nearest Cross Street Name: Wellington St.

Sketch and Measurements of Work Done:

Note: MARK street # and existing water/sewer assets such as water main, valves, hydrants, maintenance holes and catchbasins. TAKE a minimum number of measurements from existing water/sewer assets to exactly locate the alterations. Forward a copy of this completed form to: Manager, Watermain Asset Planning, Metro Hall 18th Floor.

Water/Sewer Service Card template version # 05. Please discard all previous templates (digital and hard copy) and use the most current version.
Note: MARK street # and existing water/sewer assets such as water main, valves, hydrants, maintenance holes and catchbasins. TAKE a minimum number of measurements from existing water/sewer assets to exactly locate the alterations. Forward a copy of this completed form to: Manager, Watermain Asset Planning, Metro Hall 18th Floor.

Water/Sewer Service Card template version # 05. Please discard all previous templates (digital and hard copy) and use the most current version.
Appendix B – Inspection Tasks

The inspection tasks listed under each activity are to be used as a basis for inspection. The contract administrator and inspector should work together at the start of a contract to determine critical inspection levels for construction activities and the need of adding tasks to this list.

Any inspection activity identified as a milestone requires a contract administrator or inspector on site to inspect the operation(s) at predetermined critical milestones. The inspector and contract administrator must pay particular attention by observing milestone tasks and reporting any problems with these tasks as soon as possible in writing regardless of the level of inspection specified. Milestones are indicated with an "M" beside the activity task number.

Any references to material testing and sampling should be done in accordance with Appendix C, *Materials Testing Protocol*, unless otherwise stated in the contract documents.

**Table: Inspection tasks**

<table>
<thead>
<tr>
<th>Category</th>
<th>Task</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>highway guide rail</td>
<td>HR 1</td>
<td>Guide Rail</td>
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<tr>
<td>highway guide rail</td>
<td>HR 2</td>
<td>Crash/Cushion Attenuating Terminal Barrier</td>
</tr>
<tr>
<td>landscaping</td>
<td>L 1</td>
<td>Topsoil</td>
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<tr>
<td>landscaping</td>
<td>L 2</td>
<td>Sodding</td>
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<tr>
<td>landscaping</td>
<td>L 3</td>
<td>Seeding and Mulching</td>
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<tr>
<td>resurfacing</td>
<td>RF 1</td>
<td>Hot Mix Paving Operations</td>
</tr>
<tr>
<td>resurfacing</td>
<td>RF 2</td>
<td>In-Place Full Depth Reclamation of Bituminous Pavement and Underlying Granular (Pulverizing)</td>
</tr>
<tr>
<td>Category</td>
<td>Task</td>
<td>Name</td>
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<tr>
<td>resurfacing</td>
<td>RF 3</td>
<td>Concrete Base and Pavement</td>
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<td>RF 4</td>
<td>Concrete Pavement – Full Depth Repair</td>
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<tr>
<td>road</td>
<td>R 1</td>
<td>General Inspection</td>
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<tr>
<td>road</td>
<td>R 2</td>
<td>Ditching</td>
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<td>road</td>
<td>R 3</td>
<td>Grade and Compaction</td>
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<td>road</td>
<td>R 4</td>
<td>Granular Base and Granular Sub-base</td>
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<td>R 5</td>
<td>Road Cut Permit Inspections</td>
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<td>R 6</td>
<td>Curb and Gutter</td>
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<td>Concrete Sidewalk</td>
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<td>R 8</td>
<td>Geotextile</td>
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<td>R 11</td>
<td>Pavement Marking</td>
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<td>R 12</td>
<td>General Environmental Compliance</td>
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<td>road</td>
<td>R 13</td>
<td>Control of Dust from the Work</td>
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<td>road</td>
<td>R 14</td>
<td>User of Waste Products/Materials in the Work</td>
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<tr>
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<td>R 15</td>
<td>Management and Disposal of Excess Materials</td>
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### Table: Inspection tasks (continued)

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<td>Temporary Concrete Barrier (Relocation)</td>
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<td>R 18</td>
<td>Temporary Erosion and Sedimentation Control</td>
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<td>R 19</td>
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<td>Sanitary Maintenance Holes</td>
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<td>Sanitary Sewer Installation</td>
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<td>Jack and Bore</td>
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<td>Sanitary House Laterals</td>
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<td>Gravity Sewer Testing</td>
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<td>Storm Maintenance Holes, Catchbasins and Ditch Inlets</td>
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<td>Storm Sewer Installation</td>
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<td>Storm House Laterals and Catchbasin Leads</td>
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<td>Installation of Bearings</td>
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<td>Concrete and Structural Steel Beam Erection</td>
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<td>Reinforcing Steel Placement</td>
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<td>Concrete Placement, Consolidation, Finishing and Cutting</td>
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<td>Installation of Expansion Joints</td>
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<td>S 12</td>
<td>Railing for Barrier / Parapet Wall</td>
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<td>S 13</td>
<td>High Performance Concrete (This task list is in addition to S 9)</td>
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<td>S 14</td>
<td>Bridge Deck Waterproofing</td>
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<td>S 15</td>
<td>Cofferdams, Sheet Piling, Tie Backs and Roadway Protection</td>
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**Table: Inspection tasks (continued)**

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<td>S 19</td>
<td>Structure Rehabilitation—Removal of Waterproofing System From Deck Surfaces</td>
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<td>S 20</td>
<td>Structure Rehabilitation—Concrete Removal and Surface Preparation</td>
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<td>S 21</td>
<td>Structure Rehabilitation—Concrete Overlay</td>
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<td>Structure Rehabilitation—Full Deck Removal</td>
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<td>Structure Rehabilitation—Concrete Patches</td>
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<td>Structure Rehabilitation—Silica Fume Concrete Overlay</td>
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<td>S 25</td>
<td>Structure Rehabilitation—Concrete Refacing</td>
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### Table: Inspection tasks (continued)

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<td>WM 2</td>
<td>Watermain Installation</td>
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<td>WM 3</td>
<td>Water Valves Installation</td>
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<td>Hydrant Installation</td>
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<td>WM 5</td>
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<td>WM 6</td>
<td>Installation of Temporary Services</td>
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<td>WM 7</td>
<td>Hydrostatic Testing</td>
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<td>WM 8</td>
<td>Chlorination / Disinfection Testing</td>
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<td>WM 9</td>
<td>Connections to Existing Watermains</td>
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<td>WM 10</td>
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<td>trenchless sewer rehabilitation</td>
<td>TRH 1</td>
<td>Full Length Cured-In-Place Pipe (CIPP)</td>
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<td>TRP 1</td>
<td>Horizontal Directional Drilling (HDD)</td>
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<td>Utility Construction</td>
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<td>third party and development</td>
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<td>General Inspection</td>
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<td>TTC</td>
<td>TTC 1</td>
<td>Track Allowance</td>
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# Appendix B – Inspection Tasks

## Highways guide rail – Task HR 1

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HR 1.1 M</strong></td>
<td>Check all delivered material to verify that it is being supplied as per the requirements of the contract.</td>
</tr>
<tr>
<td>HR 1.2</td>
<td>Ensure that the proper guide rail treatment is used as per the contract.</td>
</tr>
<tr>
<td>HR 1.3</td>
<td>Check that preservative treated wood posts conform to the contract requirements.</td>
</tr>
<tr>
<td>HR 1.4</td>
<td>Check guide rail is erected to the specified length and height.</td>
</tr>
<tr>
<td>HR 1.5</td>
<td>Check guide posts are the specified length.</td>
</tr>
<tr>
<td>HR 1.6</td>
<td>Check that loose material in the bottom of the post hole is tamped or removed prior to placing posts.</td>
</tr>
<tr>
<td>HR 1.7</td>
<td>Check that all posts are vertical and that the backfill is properly tamped.</td>
</tr>
<tr>
<td>HR 1.8</td>
<td>Check stretching, stapling and splicing is completed.</td>
</tr>
<tr>
<td>HR 1.9</td>
<td>Check that posts are cut off correctly, chamfered and tops treated and mounting height is correct based on edge of pavement grades.</td>
</tr>
<tr>
<td><strong>HR 1.10 M</strong></td>
<td><strong>Check that anchor blocks are constructed properly with regards to forming and placement of concrete.</strong></td>
</tr>
<tr>
<td>HR 1.11</td>
<td>Check that steel beam guide rail in the vicinity of concrete surfaces is bolted to these surfaces.</td>
</tr>
<tr>
<td>HR 1.12</td>
<td>Confirm placement of reflectorized strips.</td>
</tr>
<tr>
<td>HR 1.13</td>
<td>Check that the steel beam guide rail elements are overlapped in the directions of adjacent traffic.</td>
</tr>
</tbody>
</table>
Highway guide rail – Task HR 2

Crash/Cushion Attenuating Terminal Barrier

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR 2.1 M</td>
<td>Check all the delivered material to verify that it is being supplied as per the requirements of the contract.</td>
</tr>
<tr>
<td>HR 2.2</td>
<td>Check that all preservative treated wood is identified with certification marks authorized by the Canadian Wood Preservation Association.</td>
</tr>
<tr>
<td>HR 2.3</td>
<td>Inspect the preservative treated wood to ensure the splits and checks are within specified limits.</td>
</tr>
<tr>
<td>HR 2.4</td>
<td>Check that guide rail is erected at the proper locations.</td>
</tr>
<tr>
<td>HR 2.5</td>
<td>Check that guide posts are the specified height.</td>
</tr>
<tr>
<td>HR 2.6</td>
<td>Check that steel posts are properly installed with regards to depth, alignment and spacing.</td>
</tr>
<tr>
<td>HR 2.7</td>
<td>Check that loose material in the bottom of the post hole is tamped or removed prior to placing the posts.</td>
</tr>
<tr>
<td>HR 2.8</td>
<td>Check that all posts are vertical and that the backfill is properly tamped.</td>
</tr>
<tr>
<td>HR 2.9</td>
<td>Check that channels are installed at proper locations, elevations and are terminated as specified in the contract.</td>
</tr>
<tr>
<td>HR 2.10</td>
<td>Check that spacer channel is installed properly and all connection details for posts 1 through 6 are adhered to.</td>
</tr>
<tr>
<td>HR 2.11</td>
<td>Check that anchor cable is installed at the correct height.</td>
</tr>
<tr>
<td>HR 2.12</td>
<td>Check that guide rail is properly attached as required.</td>
</tr>
<tr>
<td>HR 2.13</td>
<td>Check that all bolts, washers and nuts are placed and affixed to all plates, angles, posts and steel rail as required.</td>
</tr>
</tbody>
</table>
## Landscaping – Task L 1

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>L 1.1 M</td>
<td>Ensure that imported topsoil conforms to the contract documents and is sampled as required.</td>
</tr>
<tr>
<td>L 1.2</td>
<td>Check that topsoil is not used for filling depressions or wasted.</td>
</tr>
<tr>
<td>L 1.3 M</td>
<td>Check that topsoil is spread uniformly to the depth specified.</td>
</tr>
<tr>
<td>L 1.4</td>
<td>Accurately record quantities.</td>
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## Landscaping – Task L 2

**Sodding**

<table>
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<tr>
<th>Task #</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>L 2.1 M</td>
<td>Check that scarification and preparation of topsoil has been carried out and rolled where required.</td>
</tr>
<tr>
<td>L 2.2</td>
<td>Check application rate and type of fertilizer.</td>
</tr>
<tr>
<td>L 2.3</td>
<td>Check sod before placement to ensure condition is as specified.</td>
</tr>
<tr>
<td>L 2.4</td>
<td>Check placement of sod on sloped ensuring that the staking pattern is correct.</td>
</tr>
<tr>
<td>L 2.5</td>
<td>Ensure the sod edges are countersunk to match adjacent surface.</td>
</tr>
<tr>
<td>L 2.6</td>
<td>Ensure grade control plan for subdivisions is adhered to prior to sod placement.</td>
</tr>
<tr>
<td>L 2.7</td>
<td>Ensure that watering is carried out per contract requirements.</td>
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# Landscaping – Task L 3

## Seeding and Mulching

<table>
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<tr>
<th>Task #</th>
<th>Activity</th>
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<tbody>
<tr>
<td>L 3.1 M</td>
<td>Check all delivered material to verify that it is being supplied per requirements of the contract.</td>
</tr>
<tr>
<td>L 3.2</td>
<td>Check that material supplied by the contractor bears a label indicating that specified information.</td>
</tr>
<tr>
<td>L 3.3 M</td>
<td>Check specified preparation of soil prior to seeding and mulching.</td>
</tr>
<tr>
<td>L 3.4</td>
<td>Ensure seeding and mulching operation is completed at temperatures or time of year allowed by specification or shown in the contract documents.</td>
</tr>
<tr>
<td>L 3.5</td>
<td>Check for growth of plant material or erosion of seeded areas or both.</td>
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## Resurfacing – Task RF 1

### Hot Mix Paving Operations

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<tr>
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<tbody>
<tr>
<td></td>
<td><strong>Pre-paving</strong></td>
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<tr>
<td>RF 1.1 M</td>
<td>Ensure compliance with all pre-pave meeting requirements and that arrangement have been made for continuous ticket collection if paid by weight.</td>
</tr>
<tr>
<td>RF 1.2</td>
<td>Ensure that the mix design has been approved.</td>
</tr>
<tr>
<td>RF 1.3 M</td>
<td>Ensure that the material delivered is as per specified material.</td>
</tr>
<tr>
<td>RF 1.4 M</td>
<td>Obtain random testing locations on all lifts of asphalt and arrange for testing as per Appendix C.</td>
</tr>
<tr>
<td>RF 1.5 M</td>
<td>Ensure that grade of surface to be paved has been properly prepared.</td>
</tr>
<tr>
<td>RF 1.6</td>
<td>Ensure that butt joints have been properly constructed.</td>
</tr>
<tr>
<td>RF 1.7 M</td>
<td>Ensure tack coat is applied to all required areas.</td>
</tr>
<tr>
<td>RF 1.8</td>
<td>Ensure adherence to City procedures with respect to towing and removal of vehicles.</td>
</tr>
<tr>
<td>RF 1.9 M</td>
<td>Ensure traffic control is in place as per traffic control plan and contract documents.</td>
</tr>
<tr>
<td>RF 1.10 M</td>
<td>Ensure that compaction is carried out as specified in the contract.</td>
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<tr>
<td></td>
<td><strong>Placing</strong></td>
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<tr>
<td>RF 1.11 M</td>
<td>Visually inspect mix placed for dragging, segregation and other visual defects prior to paving with another lift or stage changes or both.</td>
</tr>
<tr>
<td>RF 1.12</td>
<td>Check paving is carried out full width to essentially the same station, with ramping as specified in the contract prior to shutdown each day, including edge ramping.</td>
</tr>
<tr>
<td>RF 1.13 M</td>
<td>Check that proper sequence of paving operation, that is intersections, tapers, ramps, bridge decks and all staging plans.</td>
</tr>
<tr>
<td>RF 1.14</td>
<td>Ensure hand tamping around catch basins.</td>
</tr>
<tr>
<td>RF 1.15 M</td>
<td>Check placement of hot mixes including alignment and distribution.</td>
</tr>
<tr>
<td>RF 1.16 M</td>
<td>Check that air temperature at the surface of the road is above the minimum specified.</td>
</tr>
<tr>
<td>RF 1.17 M</td>
<td>Check that temperature of mix delivered to the site is as specified.</td>
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## Resurfacing – Task RF 1

### Hot Mix Paving Operations (continued)

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<tbody>
<tr>
<td>RF 1.18</td>
<td>Ensure specified distance between pavers is maintained when paving in echelon and proper rolling patterns are used.</td>
</tr>
<tr>
<td>RF 1.19 M</td>
<td>Check that all required samples are taken and tested.</td>
</tr>
<tr>
<td>RF 1.20</td>
<td>Check equipment does not impact or damage areas beyond the road structure, such as curbs, adjustment chamber.</td>
</tr>
<tr>
<td>RF 1.21</td>
<td>Check for proper reinstatement of sample locations if required.</td>
</tr>
<tr>
<td>RF 1.22</td>
<td>Ensure that access ramps are in as required—one-half metre with paper if required.</td>
</tr>
<tr>
<td>RF 1.23 M</td>
<td>Prior to placement of subsequent lifts, ensure that the temperature of the previous mat is acceptable and compacted.</td>
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# Resurfacing – Task RF 2

## In-place Full Depth Reclamation of Bituminous and Underlying Granular (Pulverizing)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
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<tbody>
<tr>
<td>RF 2.1</td>
<td>Check that the in-place materials are processed to the depths, widths and gradation as specified in the contract.</td>
</tr>
<tr>
<td>RF 2.2</td>
<td>Check that the composition of the blended material is visually uniform and is as specified in the contract.</td>
</tr>
<tr>
<td>RF 2.3</td>
<td>Check that oversized or harmful material has been removed as specified in the contract.</td>
</tr>
<tr>
<td>RF 2.4 M</td>
<td>Check that operational constraints are carried out as specified in the contract.</td>
</tr>
<tr>
<td>RF 2.5 M</td>
<td>Ensure that surface grading and compaction is as specified in the contract.</td>
</tr>
</tbody>
</table>
## Resurfacing – Task RF 3

### Concrete Base and Pavement

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF 3.1 M</td>
<td>Check that all the delivered material is supplied from the approved list and properly stored.</td>
</tr>
<tr>
<td>RF 3.2 M</td>
<td>Check for proper alignment, grade and base preparation.</td>
</tr>
<tr>
<td>RF 3.3</td>
<td>Check material supplied by the contractor is sampled as required as per the field services manual and the contract requirements.</td>
</tr>
<tr>
<td>RF 3.4</td>
<td>Check the concrete placement, consolidation, finishing and curing operations are in accordance with task S 9.</td>
</tr>
<tr>
<td>RF 3.5</td>
<td>Check that the spacer wires are cut on the load transfer devices prior to placing concrete.</td>
</tr>
<tr>
<td>RF 3.6</td>
<td>Check that the dowel bars and tie bars are placed and remain in the specified location. Check load transfer devices are placed on the proper skew, staked in place and are visibly marked for joint cutting. Load transfer devices should be checked following paving operations to ensure they have not moved.</td>
</tr>
<tr>
<td>RF 3.7</td>
<td>When fixed form pavers are used, check that hand held vibrators are used properly to supplement consolidation.</td>
</tr>
<tr>
<td>RF 3.8 M</td>
<td>Check specified finishing and texturing procedures are adhered to.</td>
</tr>
<tr>
<td>RF 3.9</td>
<td>Check timing of form removal is as specified and any honeycombed areas are properly repaired.</td>
</tr>
<tr>
<td>RF 3.10 M</td>
<td>Check that the joints are correct type and cut or formed at the proper location.</td>
</tr>
<tr>
<td>RF 3.11</td>
<td>Check that the initial saw cut is made to the full depth of the joint. Ensure this initial saw cut is done within the constraints specified in the contract, without damaging the concrete surface.</td>
</tr>
<tr>
<td>RF 3.12</td>
<td>Inspect hardened concrete surface for cracks outside of the joints.</td>
</tr>
<tr>
<td>RF 3.13 M</td>
<td>Check that traffic is not permitted on the concrete pavement until the designed compressive strength is achieved.</td>
</tr>
<tr>
<td>RF 3.14</td>
<td>Check that quality assurance cores are obtained and delivered to the designated laboratory if required.</td>
</tr>
<tr>
<td>RF 3.15</td>
<td>Check profile traces and ensure high points are ground down and depressions are filled in.</td>
</tr>
</tbody>
</table>
### Resurfacing – Task RF 4

**Concrete Pavement – Full Depth Repair**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF 4.1 M</td>
<td>Check that removal limits shown in the contract drawings or permits are appropriate to existing field conditions prior to work commencing and document locations of repair.</td>
</tr>
<tr>
<td>RF 4.2</td>
<td>Check that the saw cuts are full depth.</td>
</tr>
<tr>
<td>RF 4.3</td>
<td>Check that the concrete removal does not damage the sub-base or adjacent concrete surfaces.</td>
</tr>
<tr>
<td>RF 4.4</td>
<td>Check that the dowels, tie bars and load transfer devices are placed as specified in the contract.</td>
</tr>
<tr>
<td>RF 4.5 M</td>
<td>Check concrete placement, consolidation, finishing and curing procedures are in accordance with task S 9 unless specified otherwise elsewhere in the contract.</td>
</tr>
<tr>
<td>RF 4.6</td>
<td>Check that the dowel bars and tie bars are completely surrounded by epoxy when placed in drilled holes in concrete.</td>
</tr>
</tbody>
</table>
## Appendix B – Inspection Tasks

### Road – Task R 1

#### General Inspection

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
</table>
| R 1.1   | Ensure permits on-site or in field office for examination by others:  
- Ministry of Labour notice of project  
- noise exemptions  
- TRCA approvals  
- railway board orders  
- oil pipelines  
- certificates of approval  
- Transportation Services cut permits including all documents required by the contract such as Traffic Control Plans and utility stake outs |
| R 1.2   | Attend progress meetings and prepare list of concerns that are not resolved on a day-to-day basis, also:  
- safety issues including traffic control plan, utility stake outs, type of shoring, notice of project  
- environmental issues  
- quality assurance  
- productivity or lack thereof  
- potential extra work orders or claims  
- potential contract item overruns and under runs  
- schedule and progress of work  
- complaints from the public  
- sub grade conditions and type  
- Any material ticket collection problems |
| R 1.3   | Contract administrator ensures that RoDARS restriction notice is prepared for all stages of the contract, send a copy to dispatch centre |
| R 1.4 M | **Contact material testing consultants for services required such as plant pickup, concrete cylinder, asphalt, and granular material pickup.** |
| R 1.5   | Interpret test results of material testing consultants and advise contract administrator and contractor of any not meeting specifications for further action. Note in daily report that contractor was notified. |
| R 1.6   | Ensure that the materials testing consultant completes temperature, air, slump tests and casts concrete cylinder specimens for testing as per American Concrete Institute (ACI) certification. |
### Road – Task R 1

#### General Inspection (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 1.7</td>
<td>Ensure excavating methods and equipment is not damaging existing utilities, and if so, advise accordingly.</td>
</tr>
<tr>
<td>R 1.8</td>
<td>Ensure traffic control is as specified as per the contract requirements. Any deficiencies should be reported and noted. Ensure excavations are properly secured, for example, fencing.</td>
</tr>
<tr>
<td>R 1.9</td>
<td>On a daily basis ensure that all material storage is done as per the contract requirements.</td>
</tr>
<tr>
<td>R 1.10</td>
<td>Ensure contractor has a “Competent” supervisor on-site at all times directing work of his own forces and sub-contractors. Call contract administrator to notify Ministry of Labour if necessary to determine “Competency” as defined in OHSA.</td>
</tr>
<tr>
<td>R 1.11</td>
<td>Document day-to-day activities on contract by:</td>
</tr>
<tr>
<td></td>
<td>• personal diary</td>
</tr>
<tr>
<td></td>
<td>• vehicle maintenance log (if operating departmental vehicle)</td>
</tr>
<tr>
<td></td>
<td>• field book</td>
</tr>
<tr>
<td></td>
<td>• daily inspector’s report</td>
</tr>
<tr>
<td></td>
<td>• daily quantity sheets</td>
</tr>
<tr>
<td></td>
<td>• weekly quantity sheets</td>
</tr>
<tr>
<td></td>
<td>• daily summary of weighed materials sheet</td>
</tr>
<tr>
<td></td>
<td>• daily summary of work completed on a cost-plus basis sheet</td>
</tr>
</tbody>
</table>
### General Inspection (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 1.12 M</td>
<td>Document the following activities on a day-to-day basis:</td>
</tr>
</tbody>
</table>

**Contractor, sub-contractor and supplier forces (including breakdown of classification), equipment (detail as per OPS 127) and material delivered on site.**

- traffic control, that is what lanes are closed and for what distance, staging, presence of paid duty officer(s)
- weather conditions
- general progress of work and quantities for each item completed
- claims by contractor or complaints received by contractor or from the public
- verbal instructions given to contractor should in writing preferable through a field instruction
- any events that could adversely affect productivity
- any changes to plans or adherence to specifications
- spills that occur and any follow up notification
- claims or potential claims such as traffic accidents or slip and falls occurring in the work zone
- sub-exavation quantities
- dealings with adjacent property owners and public
- concerns relayed by contract administrator and status
- environmental controls are in-place and working, that is hay bales, silt fence and so forth
- material testing completed, field results and reasons why a required test was not done
- trench widths, shoring type used and sub grade conditions, such as soil type and whether ground water is present.
- location of utilities encountered that vary from plan location.
- non-contract compliance issues and follow up action taken such as discussion with contractor and contract administrator
- all labour and equipment in the daily report forms are to be tracked, including sizes model numbers and owned and leased equipment
- visitors to site, reasons for the visit and any discussions.
- any other items to be recorded as required in the standard daily report and other report forms
- working days, extension of time days
- extra work to be tracked and reconciled on a daily basis using OPS 127 equipment rates and obtaining receipts of all material and rented equipment on site
- consultant testing services on-site
**Road – Task R 1**

**General Inspection (continued)**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 1.13</td>
<td>Check temporary restoration to ensure compliance with contract documents and record area with a sketch.</td>
</tr>
<tr>
<td>R 1.14</td>
<td>Inspector prepares weekly reports that are used for the preparation of the month-end quantities for progress certification by contract administrator. All calculations by municipal construction inspectors and assistant inspectors should be double-checked before submission by the inspection unit.</td>
</tr>
<tr>
<td>R 1.15</td>
<td>Tracking contract completion for milestones including substantial completion—97 percent of dollar value work completed and opened for intended use—is done by the contract administrator.</td>
</tr>
<tr>
<td>R 1.16</td>
<td>Co-ordinate sign replacement, signals, crosswalk locations and pavement markings with Transportation Services. Ensure advisory signs in place and removed when construction completed.</td>
</tr>
<tr>
<td>R 1.17</td>
<td>Front-line person enforcing terms and conditions of internal contracts and third party to developer design-build contracts.</td>
</tr>
<tr>
<td>R 1.18</td>
<td>Training function of assistant inspectors (co-op students) in contract administration and aspects of inspection.</td>
</tr>
<tr>
<td>R 1.19</td>
<td>Ensure tickets for weighed materials are periodically verified for auditing purposes by approved scale facilities and ensure payment adjustment factors for different aggregate combinations are used as per the Field Services Manual.</td>
</tr>
<tr>
<td>R 1.20</td>
<td>Checks grades of excavated work, formwork and as-built work using simple levels, straight edge and if necessary, mobilizes construction survey crew for additional help. This includes checking key elevations at high points and low points as well as any other problem areas.</td>
</tr>
<tr>
<td>R 1.21</td>
<td>Co-ordinates minor bridge and structural repairs with appropriate person from structures section to ensure adherence to specifications. Informs inspector or supervisor of any damage to existing structures and for inspection at road/bridge interface.</td>
</tr>
<tr>
<td>R 1.22</td>
<td>Prepare deficiency list for contractor and ensure all items are cleaned up prior to demobilization. Review deficiencies at all progress meetings to prepare and submit a monthly list.</td>
</tr>
<tr>
<td>R 1.23</td>
<td>Track material testing consultant services on-site and document visits monthly for processing of invoices by contract administrator.</td>
</tr>
</tbody>
</table>
### Road – Task R 2

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 2.1 M</td>
<td>Check that ditch grading tolerances are correctly applied and all slopes conform to acceptance envelope as per the grade check requirements. (R 2). Check for positive flow.</td>
</tr>
<tr>
<td>R 2.2</td>
<td>Check that suitable material excavated from ditches is utilized in fill areas.</td>
</tr>
<tr>
<td>R 2.3</td>
<td>Check that unsuitable material is managed as specified in the contract.</td>
</tr>
<tr>
<td>R 2.4 M</td>
<td>Check that appropriate measures are taken to prevent erosion of ditches.</td>
</tr>
<tr>
<td>R 2.5</td>
<td>Check for adequate drainage from fields tiles.</td>
</tr>
</tbody>
</table>
## Road – Task R 3

### Grade and Compaction

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R 3.1 M</strong></td>
<td>A monitoring checking frequency of 100 percent is required to be recorded to verify that the grade and cross sections are within the specified tolerances. The monitoring frequency may be reduced with the approval of the contract administrator. If grade checks continually fail, notify the contract administrator.</td>
</tr>
</tbody>
</table>
| **R 3.2 M** | Before testing:  
1. Ensure that the area is evenly graded and compacted, that is no area was missed by compaction equipment. Sample and test material to ensure correct moisture content and proctor density for accurate testing results.  
2. Ensure that all visible soft or loose areas are repaired.  
After testing:  
1. If compaction fails, the contractor will not be permitted to pour concrete or place asphalt until granulars are re-compacted and re-tests pass.  
2. If compaction results continually fail, notify the contract administrator. |
### Road – Task R 4

**Granular Base and Granular Sub-base**

<table>
<thead>
<tr>
<th>Task #</th>
<th>✓</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 4.1</td>
<td></td>
<td>Check that quality assurance samples are obtained for testing as specified in the contract documents. Conduct visual inspection of material for contamination, including clay balls, clay coated particles or foreign material. Where contamination is observed or suspected, take appropriate action.</td>
</tr>
<tr>
<td>R 4.2</td>
<td></td>
<td>Check that subbase and base materials comply as specified in the contract documents.</td>
</tr>
<tr>
<td>R 4.3</td>
<td></td>
<td>Check contractor's compaction density readings to see that all the work falls within the specified tolerances.</td>
</tr>
<tr>
<td>R 4.4</td>
<td></td>
<td>Verify and record horizontal and vertical grading tolerances prior to the placement of the next type of material or pavement.</td>
</tr>
</tbody>
</table>
Road – Task R 5

Road Cut Permit Inspections

<table>
<thead>
<tr>
<th>Task #</th>
<th>✔</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 5.1 M</td>
<td></td>
<td>Ensure that the contractor has a road occupancy permit prior to commencing work on the right-of-way.</td>
</tr>
<tr>
<td>R 5.2</td>
<td></td>
<td>Ensure the permit has the correct address and clearly defines any special conditions.</td>
</tr>
<tr>
<td>R 5.3</td>
<td></td>
<td>Ensure the permit holder, contact name, and telephone number is accurate and clearly identified.</td>
</tr>
</tbody>
</table>
### Curb and Gutter

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 6.1 M</td>
<td>Check proper type of curb is constructed. Check for ledge.</td>
</tr>
<tr>
<td>R 6.2 M</td>
<td>Check for proper alignment, grade and granular base preparation.</td>
</tr>
<tr>
<td>R 6.3</td>
<td>Check for proper positioning of construction joints.</td>
</tr>
<tr>
<td>R 6.4 M</td>
<td>Check for proper positioning of drainage structures, frames and grates.</td>
</tr>
<tr>
<td>R 6.5</td>
<td>Inspect the concrete placement, consolidation, finishing and curing operations and saw cuts at catchbasins. All formed concrete is to be consolidated using a pencil vibrator.</td>
</tr>
<tr>
<td>R 6.6</td>
<td>Check that all required material samples are taken.</td>
</tr>
<tr>
<td>R 6.7</td>
<td>If extrusion method is being used, ensure proper percentage of air is being maintained behind slip form machine. Test for compressive strength, air entrainment, temperature and slump.</td>
</tr>
<tr>
<td>R 6.8</td>
<td>Check for proper treatments at entrances and handicap ramp locations.</td>
</tr>
</tbody>
</table>
## Road – Task R 7

### Concrete Sidewalk

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 7.1 M</td>
<td>Check for proper alignment, grade, granular base preparation and extra thickness at commercial and industrial driveways.</td>
</tr>
<tr>
<td>R 7.2 M</td>
<td>Check proper positioning of construction joints and expansion joints, including location and depth.</td>
</tr>
<tr>
<td>R 7.3</td>
<td>Check that all required material samples are taken.</td>
</tr>
<tr>
<td>R 7.4 M</td>
<td>Check that the concrete placement, consolidation finishing and curing operations are conducted according to City standards and specifications.</td>
</tr>
<tr>
<td>R 7.5 M</td>
<td>Check full depth expansion joints—contractor stamp tooled edges and construction joints:</td>
</tr>
<tr>
<td></td>
<td>• proper direction and spacing for installation of tactile walking surface indicator plates</td>
</tr>
<tr>
<td></td>
<td>• proper cross fall</td>
</tr>
<tr>
<td></td>
<td>• grade to match driveways</td>
</tr>
<tr>
<td>R 7.6 M</td>
<td>Ensure that entrances and pedestrian access ramp locations are constructed according to the latest contract drawings.</td>
</tr>
</tbody>
</table>
## Road – Task R 8

**Geotextile**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 8.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>R 8.2</td>
<td>Check that material supplied by the contractor is sampled as required and forwarded for testing.</td>
</tr>
<tr>
<td>R 8.3 M</td>
<td>Check installation area for removal of sharp objects that may puncture the geotextile and ensure that subgrade is rolled smooth.</td>
</tr>
<tr>
<td>R 8.4</td>
<td>Check that during installation the proper overlap has been maintained.</td>
</tr>
<tr>
<td>R 8.5</td>
<td>Check that the geotextile is not exposed to sunlight for more than three days.</td>
</tr>
<tr>
<td>R 8.6</td>
<td>Check that drop height for material placed onto geotextile is less than one metre to ensure geotextile is not damaged.</td>
</tr>
<tr>
<td>R 8.7</td>
<td>Check that all materials contaminated or damaged during installation are either replaced or repaired so that the geotextile will perform as intended.</td>
</tr>
</tbody>
</table>
### Road – Task R 9

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 9.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>R 9.2</td>
<td>Check that existing pavement is dry and clean before applying tack coat.</td>
</tr>
<tr>
<td>R 9.3</td>
<td>Check that proper rate of application and coverage is used.</td>
</tr>
<tr>
<td>R 9.4 M</td>
<td>Check that tack coat has cured to the desired level before placing hot mix pavement tack.</td>
</tr>
<tr>
<td>R 9.5 M</td>
<td>Check that traffic is not allowed on the tack coated area before paving.</td>
</tr>
<tr>
<td>R 9.6</td>
<td>Ensure that the contractor does not overspray beyond the pavement area.</td>
</tr>
<tr>
<td>R 9.7</td>
<td>Check that the tack coated area is cured before paving.</td>
</tr>
</tbody>
</table>
## Hot Mix Paving Operations

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 10.1 M</td>
<td>Check proper equipment is on site as per contract documents.</td>
</tr>
<tr>
<td>R 10.2</td>
<td>Inspector to walk site immediately prior to paving to ensure area to be paved is fully prepared, including matching joints cut, castings set to proper alignment and areas graded to ensure there is room for proper thickness of asphalt to be placed.</td>
</tr>
<tr>
<td>R 10.3 M</td>
<td>Ensure that the mix design has been approved.</td>
</tr>
<tr>
<td>R 10.4 M</td>
<td>Approval of trial batches or mix verification if requested by the contract administrator.</td>
</tr>
<tr>
<td>R 10.5 M</td>
<td>Ensure the delivery of specified materials and plant sample is taken.</td>
</tr>
<tr>
<td>R 10.6</td>
<td>Obtain random testing locations on all lifts of asphalt.</td>
</tr>
<tr>
<td>R 10.7 M</td>
<td>Ensure that grade of surface to be paved has been properly prepared.</td>
</tr>
<tr>
<td>R 10.8</td>
<td>Ensure that match joints have been properly constructed.</td>
</tr>
<tr>
<td>R 10.9</td>
<td>Ensure tack coat is applied to all required areas.</td>
</tr>
<tr>
<td>R 10.10</td>
<td>Ensure adherence to City procedures with respect to towing and removal of vehicles.</td>
</tr>
<tr>
<td>R 10.11</td>
<td>Send notice requiring vehicles out of pathways for flexible pavement.</td>
</tr>
<tr>
<td>R 10.12 M</td>
<td>Ensure that compaction is carried out as specified in the contract.</td>
</tr>
<tr>
<td>R 10.13</td>
<td>Contract Administrator to arrange, attend and document pre-pave meeting.</td>
</tr>
<tr>
<td>R 10.14 M</td>
<td>Ticket collection in paving operation. Inspector shall ensure that all tickets are collected at the time of delivery if paid by weight.</td>
</tr>
<tr>
<td>R 10.15</td>
<td>Visually inspect mix placed for dragging, segregation and other visual defects prior to covering with another lift or stage changes.</td>
</tr>
<tr>
<td>R 10.16</td>
<td>Check paving is carried out full width to essentially the same station, with ramping as specified in the contract.</td>
</tr>
<tr>
<td>R 10.17</td>
<td>Check for proper sequence of paving operations, for instance intersections, tapers, ramps, bridge decks and all staging plans.</td>
</tr>
</tbody>
</table>
**Road – Task R 10**

**Hot Mix Paving Operations (continued)**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 10.18 M</td>
<td>Check placement of hot mix including alignment and distribution.</td>
</tr>
<tr>
<td>R 10.19 M</td>
<td>Check that air temperature at the surface of the road is above the minimum specified.</td>
</tr>
<tr>
<td>R 10.20 M</td>
<td>Check that the temperature of mix delivered to the site is as specified.</td>
</tr>
<tr>
<td>R 10.21</td>
<td>Check that vehicles are equipped with insulated tarpaulins.</td>
</tr>
<tr>
<td>R 10.22</td>
<td>Ensure specified distance between pavers is maintained when paving in echelon.</td>
</tr>
<tr>
<td>R 10.23 M</td>
<td>Check that all required samples are taken.</td>
</tr>
<tr>
<td>R 10.24</td>
<td>Check equipment does not impact or damage areas beyond the road structure.</td>
</tr>
<tr>
<td>R 10.25</td>
<td>Check for proper reinstatement of sample locations if required.</td>
</tr>
<tr>
<td>R 10.26</td>
<td>Send notice requiring vehicles out of pathways for flexible pavement.</td>
</tr>
<tr>
<td>R 10.27</td>
<td>Ensure that access ramps are in as required.</td>
</tr>
<tr>
<td>R 10.28</td>
<td>Prior to placement of subsequent lift, ensure that the temperature of the previous mat is acceptable.</td>
</tr>
<tr>
<td>R 10.29 M</td>
<td><strong>Ensure compliance with all pre-pave meeting requirements and arrange for testing of materials and compaction for day of paving.</strong></td>
</tr>
<tr>
<td>R 10.30 M</td>
<td><strong>Ensure that compaction is carried out as specified in the contract.</strong></td>
</tr>
<tr>
<td>R 10.31</td>
<td>Check and ensure areas to be paved has been cleaned of all dirt, grime, loose broken and foreign material.</td>
</tr>
<tr>
<td>R 10.32</td>
<td>Ensure that areas to be paved have been checked prior to paving to ensure all required work such as joint filling, cut repairs, and casting adjustment, and so on, has been done.</td>
</tr>
<tr>
<td>R 10.33</td>
<td>Check that line marking sub-contractor and routing and sealing contractor has been scheduled.</td>
</tr>
<tr>
<td>R 10.34</td>
<td>Make arrangements of weight check with City facility.</td>
</tr>
</tbody>
</table>
## Road – Task R 11

### Pavement Marking

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temporary</strong></td>
<td></td>
</tr>
<tr>
<td>R 11.1</td>
<td>Check that the locations of the temporary markings are applied as per the approved staging drawings or as required by the construction operation.</td>
</tr>
<tr>
<td>R 11.2</td>
<td>Check surface is dry and free of any loose or foreign material.</td>
</tr>
<tr>
<td>R 11.3</td>
<td>Temporary Tape</td>
</tr>
<tr>
<td>1</td>
<td>Check for correct spacing and application.</td>
</tr>
<tr>
<td>2</td>
<td>Check specified tamping has been carried out.</td>
</tr>
<tr>
<td><strong>Permanent Pavement Markings</strong></td>
<td></td>
</tr>
<tr>
<td>R 11.4</td>
<td>Notify the appropriate City staff for permanent markings.</td>
</tr>
<tr>
<td>R 11.5</td>
<td>Check that air temperature, pavement temperature and surface condition requirements are met.</td>
</tr>
<tr>
<td>R 11.6</td>
<td>Check that the locations of the markings applied are as specified in the contract documents.</td>
</tr>
<tr>
<td>R 11.7</td>
<td>Check that the surface is dry and free of loose and/or foreign material.</td>
</tr>
<tr>
<td>R 11.8</td>
<td>Check that zone painting is completed on any temporary driving surface prior to opening to traffic.</td>
</tr>
<tr>
<td>R 11.9</td>
<td>Check that zone painting has a well-defined edge, free from waviness, uniformly dimensioned and shaded with no splatter or overspray.</td>
</tr>
<tr>
<td>R 11.10</td>
<td>Check that glass beads are applied uniformly prior to the paint drying.</td>
</tr>
<tr>
<td>R 11.11</td>
<td>Check that the pavement markings are applied.</td>
</tr>
</tbody>
</table>
### Road – Task R 12

#### General Environmental Compliance

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 12.1 M</td>
<td>Ensure that contractor has submitted an erosion and sediment control plan and monitor contractor’s compliance with this plan.</td>
</tr>
<tr>
<td>R 12.2</td>
<td>Check compliance with design and construction commitments.</td>
</tr>
<tr>
<td>R 12.3</td>
<td>Check that work does not cause environmental impacts that were not predicted in environmental assessment documentation.</td>
</tr>
<tr>
<td>R 12.4</td>
<td>Check compliance with technical environmental requirements and prohibitions of federal and provincial legislation, particularly with respect to environmental impacts.</td>
</tr>
<tr>
<td>R 12.5 M</td>
<td>Ensure that environmental permits or approvals are current and on site prior to commencement of work.</td>
</tr>
<tr>
<td>R 12.6 M</td>
<td>Check all excavations for evidence of contaminated material and archaeological finds and immediately report all instances to the contract administrator.</td>
</tr>
</tbody>
</table>
## Road – Task R 13

### Control of Dust from the Work

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 13.1 M</td>
<td>Ensure that dust from construction operations such as grading, concrete cutting/grinding, abrasive blast cleaning of concrete and steel, hauling operations and road sweeping does not cause a nuisance to pedestrian and vehicular traffic, adjacent residential, commercial and institutional properties.</td>
</tr>
<tr>
<td>R 13.2</td>
<td>Check that contractor ensures that workers are trained in the hazards of asbestos, personal hygiene, the user of respirators, cleaning and disposal of protective clothing and the requirements of Type 1, 2 or 3 operations under the current <em>Ontario Regulation 278 / 05</em>.</td>
</tr>
</tbody>
</table>
Road – Task R 14

Use of Waste Products / Materials in the Work

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 14.1 M</td>
<td>Check that waste and product dust suppressants meet the material and construction requirements of the contract.</td>
</tr>
<tr>
<td>R 14.2 M</td>
<td>Check that any use/placement of reclaimed/excess concrete, asphalt pavement and so on such as aggregate, embankment material, fill, slope flattening material is in compliance with the material and construction requirements of the contract.</td>
</tr>
<tr>
<td>R 14.3 M</td>
<td>Ensure submission of sulphate testing of recycled concrete material.</td>
</tr>
</tbody>
</table>
### Road – Task R 15

#### Management and Disposal of Excess Materials

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 15.1 M</td>
<td>Check that excess materials from the work are handled, stored and disposed of as specified in the contract.</td>
</tr>
<tr>
<td>R 15.2 M</td>
<td>Check that standard forms regarding the disposal of excess material is submitted prior to disposal of excess material off site.</td>
</tr>
<tr>
<td>R 15.3 M</td>
<td>Ensure that dumping tickets are collected.</td>
</tr>
<tr>
<td>R 15.4</td>
<td>Inspector must notify the contract administrator if material is suspected of being contaminated.</td>
</tr>
<tr>
<td>R 15.5 M</td>
<td>Record contaminated material taken away from site and verify that the hauler is MOECC certified.</td>
</tr>
</tbody>
</table>
### Road – Task R 16

#### General Traffic Control Overview and Local Traffic Access Patterns

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 16.1 M</td>
<td>Ensure that the contractor complies with the traffic management plan submitted by the contactor.</td>
</tr>
<tr>
<td>R 16.2</td>
<td>Record contractor’s contact person(s) responsible for traffic control.</td>
</tr>
<tr>
<td>R 16.3</td>
<td>Ensure that layout of signs is in accordance with the contract or as modified by the City.</td>
</tr>
<tr>
<td>R 16.4</td>
<td>Ensure that contractor’s initial sign placements—by station, offset and height above pavement—are placed according to Book 7 – Temporary Conditions and approved by the Transportation Services work zone coordinator, and that all revisions are clearly documented.</td>
</tr>
<tr>
<td>R 16.5 M</td>
<td>Check daily that local traffic access to residential, commercial or institutional areas is not modified or redirected unless otherwise specified in the contract and that prior and approved notification has been delivered.</td>
</tr>
<tr>
<td>R 16.6</td>
<td>Ensure that sidewalks and driveways are ramped to provide access for pedestrians and vehicles and pedestrian use other sidewalk signs.</td>
</tr>
<tr>
<td>R 16.7</td>
<td>Ensure work areas are properly fenced and delineated to provide for safe traffic flow.</td>
</tr>
<tr>
<td>R 16.8</td>
<td>Check that any modification or redirection of local traffic access to residential, commercial or institutional areas complies with the time constraints specified in the contract.</td>
</tr>
<tr>
<td>R 16.9</td>
<td>Advise daily that all signs and traffic control devices are properly maintained, and in good working order, for example, flashers, and so on.</td>
</tr>
<tr>
<td>R 16.10</td>
<td>Check for the removal of temporary signs when they are no longer required.</td>
</tr>
<tr>
<td>R 16.11</td>
<td>Check that the contractor records each stage change or sign change.</td>
</tr>
<tr>
<td>R 16.12 M</td>
<td>If an accident occurs, document all traffic control devices, signing, time of inspection and any other pertinent information including measurements, photos and police accident reports in the daily report.</td>
</tr>
<tr>
<td>R 16.13</td>
<td>Check that all lane closure protocol is adhered to as per the requirements of the contract documents.</td>
</tr>
<tr>
<td>R 16.14</td>
<td>Co-ordinate with right-of-way management unit for the inspection of the traffic control devices.</td>
</tr>
</tbody>
</table>
### Appendix B – Inspection Tasks

#### Road – Task R 17

**Traffic Control – Temporary Concrete Barrier (Relocation)**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 17.1</td>
<td>Check defects in barriers are verified before and after installation.</td>
</tr>
<tr>
<td>R 17.2</td>
<td>Ensure all units are connected properly.</td>
</tr>
<tr>
<td>R 17.3</td>
<td>Confirm placement, treatments and offsets are as shown on the contract drawings.</td>
</tr>
<tr>
<td>R 17.4</td>
<td>Ensure barriers are checked for misalignment or damage throughout the project. Ensure barriers are replaced or repaired as required.</td>
</tr>
<tr>
<td>R 17.5</td>
<td>Confirm removal or relocation is carried out as specified.</td>
</tr>
<tr>
<td>R 17.6</td>
<td>Check requirements for paid duty police officer(s) and ensure contractor adheres to requirements.</td>
</tr>
</tbody>
</table>
### Road – Task R 18

**Temporary Erosion and Sedimentation Control**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 18.1</td>
<td>Check sediment barriers, flow checks, sediment traps, turbidity curtains and cofferdams are installed and maintained where and when they are specified in the contract and in the contractor’s erosion and sedimentation control plan.</td>
</tr>
<tr>
<td>R 18.2</td>
<td>Check accumulated sediment is cleaned out from temporary erosion and sedimentation control measures as required. Check temporary erosion and sedimentation control measures for effective working condition before forecasted major rainfall events and after the storm event.</td>
</tr>
<tr>
<td>R 18.3</td>
<td>Check temporary erosion and sedimentation control measures are removed as specified and in a manner that prevents sediment escape.</td>
</tr>
<tr>
<td>R 18.4</td>
<td>Ensure compliance with time constraints on the maximum period between removal of original vegetative surface cover and placement of final specified surface cover. Check dates for seed and cover are not exceeded.</td>
</tr>
<tr>
<td>R 18.5</td>
<td>Ensure contractor installs any additional erosion and sedimentation control measures necessary because of procedures selected by the contractor or site conditions or both.</td>
</tr>
</tbody>
</table>
## Road – Task R 19
### Work in, Adjacent to, and Over Waterbodies

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>R 19.1 M</td>
<td>Ensure sedimentation and other harmful material is not permitted to enter into the watercourse or other water bodies.</td>
</tr>
<tr>
<td>R 19.2</td>
<td>Entry of equipment and construction materials into watercourses and water bodies and undertaking of any work is limited to that specified in the contract and environmental documentation, as may be authorized through environmental permits or approvals.</td>
</tr>
<tr>
<td>R 19.3 M</td>
<td>Ensure work specified in the watercourses or water bodies and on the banks is in compliance with what is specified in the contract and environmental documentation, and as may be authorized through environmental permits or approvals.</td>
</tr>
<tr>
<td>R 19.4</td>
<td>Check temporary water passage systems, temporary water body crossings, cofferdams and turbidity curtains are installed, maintained and removed in compliance with the requirements of the contract.</td>
</tr>
<tr>
<td>R 19.5</td>
<td>Ensure disturbance or damage to watercourses or water body beds, banks and bank vegetation is limited to that specified in the contract and environment documentation, and as may be authorized through environmental permits or approvals.</td>
</tr>
<tr>
<td>R 19.6 M</td>
<td>Check compliance with the time constraints specified in the contract relative to work in and adjacent to watercourses. The inspector to ensure that all other approvals have been obtained.</td>
</tr>
</tbody>
</table>
## Sanitary Sewers – Task SAS 1

### General Inspection

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 1.1 M</td>
<td>Document existing site conditions and adjacent properties by taking pre-construction photos in preparation of subsequent claims. Ensure contractors have documented and submitted a copy to the contract administrator.</td>
</tr>
<tr>
<td>SAS 1.2</td>
<td>Ensure contractor has a “competent” supervisor on-site at all times directing work of his own forces and sub-contractors.</td>
</tr>
<tr>
<td>SAS 1.3</td>
<td>Pipe class checked and condition of pipe inspected, for example, maintenance holes, saddles, and so on. All connections core drilled or pre-manufactured.</td>
</tr>
<tr>
<td>SAS 1.4</td>
<td>Document day-to-day activities on contract by:</td>
</tr>
<tr>
<td></td>
<td>• personal diary</td>
</tr>
<tr>
<td></td>
<td>• vehicle maintenance log—if operating departmental vehicle</td>
</tr>
<tr>
<td></td>
<td>• field book</td>
</tr>
<tr>
<td></td>
<td>• daily inspector’s report</td>
</tr>
<tr>
<td></td>
<td>• daily quantity sheets</td>
</tr>
<tr>
<td></td>
<td>• weekly quantity sheets</td>
</tr>
<tr>
<td></td>
<td>• daily summary of weighed materials sheet</td>
</tr>
<tr>
<td></td>
<td>• daily summary of work completed on a cost-plus basis sheet</td>
</tr>
<tr>
<td>SAS 1.5</td>
<td>Document the following activities on a day-to-day basis:</td>
</tr>
<tr>
<td></td>
<td>• contractor, sub-contractor and supplier forces including breakdown of classification, equipment detail as per OPS 127 and material delivered on site</td>
</tr>
<tr>
<td></td>
<td>• traffic control, that is what lanes are closed and for what distance, staging</td>
</tr>
<tr>
<td></td>
<td>• weather conditions</td>
</tr>
<tr>
<td></td>
<td>• general progress of work</td>
</tr>
<tr>
<td></td>
<td>• claims by contractor or complaints received by contractor</td>
</tr>
<tr>
<td></td>
<td>• verbal instructions given to contractor</td>
</tr>
<tr>
<td></td>
<td>• any events that could adversely affect productivity</td>
</tr>
<tr>
<td></td>
<td>• any changes to plans or adherence to specifications</td>
</tr>
<tr>
<td></td>
<td>• spills that occur and any follow-up notification</td>
</tr>
<tr>
<td></td>
<td>• claims that occur and any follow-up notification</td>
</tr>
<tr>
<td></td>
<td>• claims or potential claims such as traffic accidents or slip and falls occurring in the work zone</td>
</tr>
<tr>
<td></td>
<td>• sub-excavation quantities</td>
</tr>
<tr>
<td></td>
<td>• change directives, change orders or field instructions</td>
</tr>
<tr>
<td></td>
<td>• soil conditions</td>
</tr>
</tbody>
</table>
## Sanitary Sewers – Task SAS 1

### General Inspection (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
</table>
| SAS 1.5       | • trench widths  
                • type of trench shoring used                                                                                                           |
| SAS 1.6       | • ensure OHSA compliance  
                • ground conditions during excavation noted, that is areas of excessive trench collapse, presence of water and so on  
                • stations of water services and sanitary services recorded  
                • type of shoring used noted  
                • method of compaction noted  
                • grade sheets mathematically checked  
                • batter boards checked to ensure they have been set at the proper elevation  
                • bedding to spring line checked  
                • dealings with adjacent property owners and public  
                • concerns relayed by contract administrator and status  
                • material testing completed, field results and reasons why a required test was not done  
                • trench widths, shoring type used and sub grade conditions, such as soil type and whether ground water is present  
                • location of utilities encountered that vary from plan location  
                • non-contract compliance issues and follow up action taken such as discussion with contractor and contract administrator  
                • all labour and equipment in the daily report forms are to be tracked. Including sizes model numbers and owned and leased equipment  
                • visitors to site, reasons for the visit and any discussions  
                • record any other items as required in the standard daily report and other report forms |
| SAS 1.7       | Track material testing consultant services on-site and document visits daily for processing of invoices by contract administrator.         |
| SAS 1.8 M     | **Prepare deficiency list for contractor and ensure all items are cleaned up prior to demobilization.**                                  |
| SAS 1.9       | On a daily basis ensure that all material storage is done as per the contract requirements.                                                 |
### Sanitary Sewers – Task SAS 2

#### Sanitary Maintenance Holes

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 2.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>SAS 2.2 M</td>
<td>Check type, size, alignment, offsets and grades of maintenance holes.</td>
</tr>
<tr>
<td>SAS 2.3</td>
<td>If reclaimed concrete material is being used, ensure it does not contain any reclaimed asphalt pavement material.</td>
</tr>
<tr>
<td>SAS 2.4</td>
<td>Reclaimed concrete material is not to be used in conjunction with aluminium or galvanized piping or fixtures as it may cause corrosion.</td>
</tr>
<tr>
<td>SAS 2.5</td>
<td>Check that backfill materials are specified in the contract and are compacted in lifts around structures to the required densities.</td>
</tr>
<tr>
<td>SAS 2.6</td>
<td>Check that pre-cast maintenance hole sections are properly installed.</td>
</tr>
<tr>
<td>SAS 2.7</td>
<td>Check that poured-in-place maintenance holes conform to the contract standards.</td>
</tr>
<tr>
<td>SAS 2.8</td>
<td>Check correct placement of reinforcing steel where required.</td>
</tr>
<tr>
<td>SAS 2.9 M</td>
<td>Check specified compaction is obtained under pipes entering or exiting maintenance holes and concrete is placed and vibrated where cradling is required.</td>
</tr>
<tr>
<td>SAS 2.10</td>
<td>Check that maintenance holes are cleaned out. Check that honeycombed areas and lifting holes are parged, and the grates and pipe are grouted upon completion.</td>
</tr>
<tr>
<td>SAS 2.11</td>
<td>Check all proposed structures to make sure drop pipes have been properly constructed and anchored to structures.</td>
</tr>
<tr>
<td>SAS 2.12</td>
<td>Ensure that the proper adjustment rings are used to establish the final grade elevations.</td>
</tr>
<tr>
<td>SAS 2.13</td>
<td>Ensure that the pipe connections at the maintenance hole are properly constructed and watertight.</td>
</tr>
<tr>
<td>SAS 2.14</td>
<td>Ensure that benching is in place where specified.</td>
</tr>
<tr>
<td>SAS 2.15</td>
<td>Ensure that steps, ladders, and platforms are properly aligned and secured to allow for safe and easy access.</td>
</tr>
</tbody>
</table>
### Sanitary Sewer Installation

**Sanitary Sewers – Task SAS 3**

<table>
<thead>
<tr>
<th>Task #</th>
<th>✓</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 3.1 M</td>
<td>✓</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the contractor at the commencement of the contract.</td>
</tr>
<tr>
<td>SAS 3.2</td>
<td></td>
<td>Check the trench alignment, grade and width are as specified.</td>
</tr>
<tr>
<td>SAS 3.3 M</td>
<td>✓</td>
<td>Check that the pipe is installed to proper alignment and grade.</td>
</tr>
<tr>
<td>SAS 3.4</td>
<td></td>
<td>If reclaimed concrete material is being used, ensure it does not contain any reclaimed asphalt pavement material.</td>
</tr>
<tr>
<td>SAS 3.5</td>
<td></td>
<td>Reclaimed concrete material is not to be used in conjunction with aluminium or galvanized piping or fixtures as it may cause corrosion.</td>
</tr>
<tr>
<td>SAS 3.6 M</td>
<td>✓</td>
<td>Check that the specified bedding, cover and backfill materials are used, and compacted as per standard specifications.</td>
</tr>
<tr>
<td>SAS 3.7</td>
<td></td>
<td>Ensure excavations are free of water at all times and proper pumping procedures are followed.</td>
</tr>
<tr>
<td>SAS 3.8 M</td>
<td>✓</td>
<td>Check all pipes to ensure use of the correct class and size.</td>
</tr>
<tr>
<td>SAS 3.9</td>
<td></td>
<td>Inspect pipe for defects and reject those that are damaged or defective.</td>
</tr>
<tr>
<td>SAS 3.10</td>
<td></td>
<td>During progress of work, check that all pipes and connections are kept clean and free of foreign debris.</td>
</tr>
<tr>
<td>SAS 3.11</td>
<td></td>
<td>Where applicable, check that joints are lapped in directions of flow.</td>
</tr>
<tr>
<td>SAS 3.12 M</td>
<td>✓</td>
<td>Record all rock excavations.</td>
</tr>
<tr>
<td>SAS 3.13</td>
<td></td>
<td>Check that all utilities have been properly supported during construction and prior to backfilling. Ensure that utility sizes and elevations are recorded. Advise utilities in the event of damage.</td>
</tr>
<tr>
<td>SAS 3.14 M</td>
<td>✓</td>
<td>Plastic sewer pipes will be tested for deflection as per OPSS 410.</td>
</tr>
<tr>
<td>SAS 3.15</td>
<td></td>
<td>Check if bypass pumps are working, if inclement weather is forecasted. Check that bypass is as per approved submitted plans.</td>
</tr>
</tbody>
</table>
## Sanitary Sewers – Task SAS 4

### Jack and Bore

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 4.1</td>
<td>Check that sufficient indicators are set up and maintained to detect and</td>
</tr>
<tr>
<td></td>
<td>monitor any movements within and outside the tunnel.</td>
</tr>
<tr>
<td>SAS 4.2</td>
<td>Check that installation techniques employed meet the specification.</td>
</tr>
<tr>
<td>SAS 4.3 M</td>
<td>Check that the alignment and grade are maintained.</td>
</tr>
<tr>
<td>SAS 4.4 M</td>
<td>Check all the delivered material to verify that it is being supplied</td>
</tr>
<tr>
<td></td>
<td>from the approved list.</td>
</tr>
<tr>
<td>SAS 4.5</td>
<td>Maintain detailed records and report all ground movements, failures,</td>
</tr>
<tr>
<td></td>
<td>seepage zones and changes in soil conditions to the contract administrator.</td>
</tr>
</tbody>
</table>
# Sanitary Sewers – Task SAS 5

## Sanitary House Laterals

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 5.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>SAS 5.2 M</td>
<td>Check all connections at sewer mains for pipe and tee alignment, saddle stability and compaction.</td>
</tr>
<tr>
<td>SAS 5.3</td>
<td>If reclaimed concrete material is being used, ensure it does not contain any reclaimed asphalt pavement material.</td>
</tr>
<tr>
<td>SAS 5.4</td>
<td>Reclaimed concrete material is not to be used in conjunction with aluminium or galvanized piping or fixtures as it may cause corrosion.</td>
</tr>
<tr>
<td>SAS 5.5 M</td>
<td>Check that the granular bedding has been installed and compacted to the spring line of pipe. Check that granular cover and backfill are placed and compacted to specifications.</td>
</tr>
<tr>
<td>SAS 5.6 M</td>
<td>Check for proper connections to existing service pipes.</td>
</tr>
<tr>
<td>SAS 5.7</td>
<td>Check that positive flow is maintained from the connection at streetline to the new sewer.</td>
</tr>
<tr>
<td>SAS 5.8</td>
<td>Check that the proper size of the pipe is used for all house connections.</td>
</tr>
<tr>
<td>SAS 5.9</td>
<td>Record chainages and lengths of pipes installed.</td>
</tr>
<tr>
<td>SAS 5.10</td>
<td>Record swing ties—three minimum—to established features at property line.</td>
</tr>
<tr>
<td>SAS 5.11 M</td>
<td>Complete sewer service cards.</td>
</tr>
<tr>
<td>SAS 5.12</td>
<td>Record elevation at property line.</td>
</tr>
<tr>
<td>SAS 5.13</td>
<td>Check that lateral is connected to the proper sewer main, which is sanitary to sanitary.</td>
</tr>
<tr>
<td>SAS 5.14</td>
<td>Ensure that all permits are in place for the service laterals to vacant lots.</td>
</tr>
</tbody>
</table>
## Sanitary Sewers – Task SAS 6

### Gravity Sewer Testing

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS 6.1 M</td>
<td>Ensure that the contractor CCTV’s all sanitary sewers as per the requirements of the contract or development agreements or both.</td>
</tr>
<tr>
<td>SAS 6.2</td>
<td>Ensure that the contractor pressure tests all sanitary sewers, force main connections, if applicable, and house laterals as per the requirements of the contract and development agreements or both. This is especially true where MOECC separation guidelines cannot be met. Not applicable to rehabilitation projects.</td>
</tr>
<tr>
<td>SAS 6.3 M</td>
<td>Ensure that deflection testing takes place on plastic sewer pipes as per OPSS 410.</td>
</tr>
</tbody>
</table>
### Storm Sewers – Task STS 1

**General Inspection**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS 1.1</td>
<td>Follow-up with the contractor to ensure that they document the existing site conditions and adjacent properties by taking pre-construction photos in preparation of subsequent claims according to the contract documents.</td>
</tr>
<tr>
<td>STS 1.2</td>
<td>Ensure contractor has a “competent” supervisor on-site at all times directing work of his own forces and sub-contractors.</td>
</tr>
<tr>
<td>STS 1.3</td>
<td>Ensure contractor and sub-contractor’s forces have adequate safety equipment to satisfy the OSHA and the contract requirement.</td>
</tr>
<tr>
<td>STS 1.4</td>
<td>Pipe class checked and condition of pipe inspected, for example, manholes, saddles and so on. All connections core drilled or pre-manufactured.</td>
</tr>
<tr>
<td>STS 1.5</td>
<td>Document day-to-day activities on contract by:</td>
</tr>
<tr>
<td></td>
<td>• personal diary</td>
</tr>
<tr>
<td></td>
<td>• vehicle maintenance log—if operating departmental vehicle</td>
</tr>
<tr>
<td></td>
<td>• field book</td>
</tr>
<tr>
<td></td>
<td>• daily inspector’s report</td>
</tr>
<tr>
<td></td>
<td>• daily quantity sheets</td>
</tr>
<tr>
<td></td>
<td>• weekly quantity sheets</td>
</tr>
<tr>
<td></td>
<td>• daily summary of weighed materials sheet</td>
</tr>
<tr>
<td></td>
<td>• daily summary of work completed on a cost-plus basis sheet</td>
</tr>
<tr>
<td>STS 1.6</td>
<td>Document the following activities on a day-to-day basis:</td>
</tr>
<tr>
<td></td>
<td>• contractor, sub-contractor and supplier forces including breakdown of classification, equipment detail as per OPS 127 and material delivered on site</td>
</tr>
<tr>
<td></td>
<td>• traffic control, that is what lanes are closed and for what distance, staging</td>
</tr>
<tr>
<td></td>
<td>• weather conditions</td>
</tr>
<tr>
<td></td>
<td>• general progress of work</td>
</tr>
<tr>
<td></td>
<td>• claims by contractor or complaints received by contractor</td>
</tr>
<tr>
<td></td>
<td>• written instructions given to contractor</td>
</tr>
<tr>
<td></td>
<td>• any events that could adversely affect productivity</td>
</tr>
<tr>
<td></td>
<td>• any changes to plans or adherence to specifications</td>
</tr>
<tr>
<td></td>
<td>• spills that occur and any follow-up notification</td>
</tr>
<tr>
<td></td>
<td>• claims that occur and any follow-up notification</td>
</tr>
<tr>
<td></td>
<td>• claims or potential claims such as traffic accidents or slip and falls occurring in the work zone</td>
</tr>
<tr>
<td></td>
<td>• sub-excavation quantities according to the contract documents</td>
</tr>
</tbody>
</table>
**Storm Sewers – Task STS 1**

**General Inspection (continued)**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
</table>
| STS 1.6 continued | • ground conditions during excavation noted, that is areas of excessive trench collapse, presence of water, and so on  
• stations of water services and sanitary services recorded  
• type of shoring used noted  
• method of compaction noted  
  batter boards checked to ensure they have been set at the proper elevation  
• bedding to spring line checked  
• dealings with adjacent property owners and public  
• concerns relayed by contract administrator and status  
• material testing completed, field results and reasons why a required test was not done  
• trench widths, shoring type used and sub grade conditions, such as soil type and whether ground water is present  
• location of utilities encountered that vary from plan location  
• non-contract compliance issues and follow up action taken such as discussion with contractor and contract administrator  
• all labour and equipment in the daily report forms are to be tracked. Including sizes model numbers and owned and leased equipment  
• visitors to site, reasons for the visit and any discussions  
• record any other items as required in the standard daily report and other report forms |
| STS 1.7 M        | Track material testing consultant services on-site and document visits daily for processing of invoices by contract administrator.                                                                                                                                               |
| STS 1.8 M        | Prepare deficiency list for contractor and ensure all items are cleaned up prior to demobilization. This list should be prepared on a running basis and provided to the contract administrator and contractor at progress meetings or at least monthly.                                        |
| STS 1.9          | On a daily basis ensure that all material storage is done as per the contract requirements.                                                                                                                                                                                    |
## Storm Sewers – Task STS 2

### Storm Maintenance Holes, Catchbasins and Ditch Inlets

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS 2.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>STS 2.2 M</td>
<td>Check type, size, alignment, offsets and grades of maintenance holes, catchbasins and ditch inlets.</td>
</tr>
<tr>
<td>STS 2.3</td>
<td>Check that backfill materials are specified in the contract and are compacted in lifts around structures to the required densities (R 2).</td>
</tr>
<tr>
<td>SAS 2.4</td>
<td>Recycled material concrete is not to be used in conjunction with aluminium or galvanized piping or fixtures as it may cause corrosion.</td>
</tr>
<tr>
<td>STS 2.5</td>
<td>Check that pre-cast maintenance hole sections are properly installed.</td>
</tr>
<tr>
<td>STS 2.6</td>
<td>Check that poured in place maintenance holes, catchbasins and ditch inlets conform to the contract standards.</td>
</tr>
<tr>
<td>STS 2.7</td>
<td>Check correct placement of reinforcing steel where required.</td>
</tr>
<tr>
<td><strong>STS 2.8 M</strong></td>
<td><strong>Check specified compaction is obtained under pipes entering or exiting maintenance holes, catchbasins, and ditch inlets and concrete is placed and vibrated where cradling is required.</strong></td>
</tr>
<tr>
<td>STS 2.9</td>
<td>Check that maintenance holes, catchbasins and ditch inlets are cleaned out. Check that honeycombed areas and lifting holes are parged, and the grates and pipe are grouted upon completion.</td>
</tr>
<tr>
<td>STS 2.10</td>
<td>Check all proposed structures to make sure drop pipes have been properly constructed and anchored to structures.</td>
</tr>
<tr>
<td>STS 2.11</td>
<td>When installing catchbasins to combined sewers, make sure odour traps are properly installed.</td>
</tr>
<tr>
<td>STS 2.12</td>
<td>Ensure that the proper adjustment rings are used to establish the final grade elevations.</td>
</tr>
<tr>
<td>STS 2.13</td>
<td>Ensure that the pipe connections at the maintenance hole are properly constructed and water tight.</td>
</tr>
<tr>
<td>STS 2.14</td>
<td>Ensure that benching is in place where specified.</td>
</tr>
<tr>
<td>STS 2.15</td>
<td>Ensure that steps, ladders, and platforms are properly aligned and secured to allow for proper access as per contract specification.</td>
</tr>
</tbody>
</table>
### Storm Sewers – Task STS 3

#### Storm Sewer Installation

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS 3.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list that was submitted by the contractor at the commencement of the contract.</td>
</tr>
<tr>
<td>STS 3.2</td>
<td>Check the alignment, grade and width are as specified.</td>
</tr>
<tr>
<td>STS 3.3 M</td>
<td>Check that the pipe is installed to proper alignment and grade.</td>
</tr>
<tr>
<td>SAS 3.4</td>
<td>Recycled material concrete is not to be used in conjunction with aluminium or galvanized piping or fixtures as it may cause corrosion</td>
</tr>
<tr>
<td>STS 3.5 M</td>
<td>Check that the specified bedding, cover and backfill materials are used, and compacted as per standards.</td>
</tr>
<tr>
<td>STS 3.6</td>
<td>Ensure excavations are free of water at all times and proper pumping procedures are followed.</td>
</tr>
<tr>
<td>STS 3.7</td>
<td>Check all pipes to ensure use of the correct class and size.</td>
</tr>
<tr>
<td>STS 3.8</td>
<td>Inspect pipe for defects and reject those that are damages or defective.</td>
</tr>
<tr>
<td>STS 3.9</td>
<td>During progress of work, check that all pipes and connections are kept clean and free of foreign debris.</td>
</tr>
<tr>
<td>STS 3.10</td>
<td>Check that all gaskets and joints are tight as per manufacturer’s recommendations.</td>
</tr>
<tr>
<td>STS 3.11</td>
<td>Where applicable, check that joints are lapped in direction of flow.</td>
</tr>
<tr>
<td>STS 3.12</td>
<td>Check that proper equipment is used for compaction until the specified depth of cover over the pipes is achieved.</td>
</tr>
<tr>
<td>STS 3.13</td>
<td>Ensure that all pipe invert s are recorded at maintenance holes.</td>
</tr>
<tr>
<td>STS 3.14 M</td>
<td><strong>Record all rock excavations.</strong></td>
</tr>
<tr>
<td>STS 3.15</td>
<td>Check that all utilities have been properly supported during construction and prior to backfilling. Ensure that utility sizes and elevations are recorded. Advise utilities and contract administrator in the event of damage.</td>
</tr>
</tbody>
</table>
### Storm Sewers – Task STS 4

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS 4.1</td>
<td>Check for specified size of pipe, including filter material. Check that all delivered material is stored properly and verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>STS 4.2 M</td>
<td><strong>Check that pipe is installed to proper alignment and grade.</strong></td>
</tr>
<tr>
<td>STS 4.3</td>
<td>Check that granular materials comply with the specifications and are compacted as per compaction requirements.</td>
</tr>
<tr>
<td>STS 4.4</td>
<td>Check that proper connections to maintenance holes, catchbasins, and ditch inlets are grouted and have sufficient grade.</td>
</tr>
<tr>
<td>STS 4.5</td>
<td>Check that outlet and collector pipes are not crushed during backfilling operations.</td>
</tr>
</tbody>
</table>
**Storm Sewers – Task STS 5**

**Storm House Laterals and Catchbasin Leads**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS 5.1</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>STS 5.2</td>
<td>Reclaimed concrete material bedding or backfill not to be used in conjunction with galvanized materials or aluminum piping as it may cause corrosion.</td>
</tr>
<tr>
<td>STS 5.3 M</td>
<td>Check that all connection angles at sewer mains are as specified.</td>
</tr>
<tr>
<td>STS 5.4 M</td>
<td>Check that the granular bedding has been installed and compacted to the spring line of pipe. Check that granular cover and backfill are placed and compacted to specifications.</td>
</tr>
<tr>
<td>STS 5.5</td>
<td>Check for proper connections to existing service pipes.</td>
</tr>
<tr>
<td>STS 5.6 M</td>
<td>Check that the proper size of the pipe is used for all house connections.</td>
</tr>
<tr>
<td>STS 5.7</td>
<td>Record chainages and lengths of pipes installed.</td>
</tr>
<tr>
<td>STS 5.8</td>
<td>Complete sewer service cards according to Toronto Water requirements.</td>
</tr>
<tr>
<td>STS 5.9</td>
<td>Check that lateral is connected to the proper sewer main, which is storm to storm.</td>
</tr>
</tbody>
</table>
### Structural – Task S 1

**Structure Excavation**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 1.1 M</td>
<td>Check that all footing excavations conform to size, shape, line,</td>
</tr>
<tr>
<td></td>
<td>elevation, and grade as specified in the contract.</td>
</tr>
<tr>
<td>S 1.2</td>
<td>Check that the excavation is rendered stable and safe during footing</td>
</tr>
<tr>
<td></td>
<td>excavation and construction.</td>
</tr>
<tr>
<td>S 1.3</td>
<td>Check that loosened material, soft material, boulders and other</td>
</tr>
<tr>
<td></td>
<td>deleterious material at the foundation base are removed and replaced</td>
</tr>
<tr>
<td></td>
<td>with suitable compacted material or mass concrete.</td>
</tr>
<tr>
<td>S 1.4</td>
<td>Record the depth, length, width, type of material used, and how it was</td>
</tr>
<tr>
<td></td>
<td>placed, when a working slab is used by the contractor.</td>
</tr>
<tr>
<td>S 1.5</td>
<td>Check that any adjacent utility or structure is not affected or undermined</td>
</tr>
<tr>
<td></td>
<td>by the footing excavation. Record location of utilities.</td>
</tr>
<tr>
<td>S 1.6</td>
<td>Check that the founding soil is protected and preserved.</td>
</tr>
<tr>
<td>S 1.7</td>
<td>Ensure that excavated materials are handled as per the requirements of</td>
</tr>
<tr>
<td></td>
<td>the contract.</td>
</tr>
</tbody>
</table>
### Structural – Task S 2

**Piling**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 2.1 M</td>
<td>Record and verify the pile type, length of pipe, splices, driving shoes and length of cut off.</td>
</tr>
<tr>
<td>S 2.2</td>
<td>Check that all the delivered material is supplied from the approved list, and handled and stored so as to prevent damage to the piles.</td>
</tr>
<tr>
<td>S 2.3</td>
<td>Ensure Contractor lays out perimeter of footings prior to piling operations.</td>
</tr>
<tr>
<td>S 2.4</td>
<td>Check that pile driving equipment conforms to specified requirements, for example: size of hammer, horsepower, model, make and so on.</td>
</tr>
<tr>
<td>S 2.5</td>
<td>Check that the end treatments are correctly applied, that is shoes, collars, rock points and so on.</td>
</tr>
<tr>
<td>S 2.6 M</td>
<td>Check that pile installation sequence is as per submission, and that layout and orientation of piles conforms to contract requirements.</td>
</tr>
<tr>
<td>S 2.7</td>
<td>Check that vertical and batter alignment of pile meets specified requirements.</td>
</tr>
<tr>
<td>S 2.8</td>
<td>Check that welding of splicing conforms to specified requirements.</td>
</tr>
<tr>
<td>S 2.9</td>
<td>Check that pile set and refusal criteria are satisfied including any re-tapping and dynamic testing.</td>
</tr>
<tr>
<td>S 2.10</td>
<td>Maintain pile driving records.</td>
</tr>
<tr>
<td>S 2.11</td>
<td>Check that the concrete placement, consolidation, finishing and curing operations are in accordance with task S 9.</td>
</tr>
</tbody>
</table>

---

1 Tasks below are typically performed by the engineering consultant
### Structural – Task S 3

#### Structure Backfilling

<table>
<thead>
<tr>
<th>Task #</th>
<th>✓</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 3.1 M</td>
<td></td>
<td>Check that the area to be backfilled conforms to the contract documents.</td>
</tr>
<tr>
<td>S 3.2 M</td>
<td></td>
<td>Check that the structure excavation limits are verified and recorded prior to commencement of backfilling operations.</td>
</tr>
<tr>
<td>S 3.3 M</td>
<td></td>
<td>Check that the concrete has reached the required percentage of the design strength prior to backfilling.</td>
</tr>
<tr>
<td>S 3.4</td>
<td></td>
<td>Check subdrains are placed as specified in the contract.</td>
</tr>
<tr>
<td>S 3.5</td>
<td></td>
<td>Check proper procedures are used for weep holes and perforated pipe installation.</td>
</tr>
<tr>
<td>S 3.6 M</td>
<td></td>
<td>Ensure use of proper material and backfill is placed as specified in contract.</td>
</tr>
<tr>
<td>S 3.7</td>
<td></td>
<td>Check that appropriate compaction procedures and sequence is used, and that appropriate compaction equipment is used in restricted areas.</td>
</tr>
<tr>
<td>S 3.8</td>
<td></td>
<td>Check that appropriate compaction testing is being conducted.</td>
</tr>
</tbody>
</table>
### Structural – Task S 4

#### Falsework

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 4.1 M</td>
<td>Check that stamped, approved falsework drawings are on site. Check installation of falsework against stamped working drawings prior to pour. Specifically ensure member sizes and spacing, mudsill locations and associate member sizes, longitudinal and transverse bracing, max extensions on screw heads of towers, type and location of hangers and location of screed rails.</td>
</tr>
<tr>
<td>S 4.2</td>
<td>Ensure that all required revisions are approved.</td>
</tr>
<tr>
<td>S 4.3</td>
<td>Ensure that falsework is erected on a stable base.</td>
</tr>
<tr>
<td>S 4.4</td>
<td>Ensure that required certifications are obtained prior to concrete placement.</td>
</tr>
<tr>
<td>S 4.5</td>
<td>Monitor falsework several times during concrete placement operation for deflection and settlement, that is tell tails.</td>
</tr>
<tr>
<td>S 4.6 M</td>
<td><strong>Check that the required concrete strength has been reached prior to removing falsework.</strong></td>
</tr>
<tr>
<td>S 4.7</td>
<td>Ensure that the falsework is not removed prior to the grouting of the post tension ducts.</td>
</tr>
</tbody>
</table>
## Structural – Task S 5

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 5.1 M</td>
<td>Check all material, including hardware, for condition, quality, adjustment and fit.</td>
</tr>
<tr>
<td>S 5.2</td>
<td>Check dimensions of forms are as specified in the contract.</td>
</tr>
<tr>
<td>S 5.3</td>
<td>Check form release oil is applied to the forms before the installation of reinforcing steel.</td>
</tr>
<tr>
<td>S 5.4</td>
<td>Ensure proper cover to reinforcing steel is maintained during form installation.</td>
</tr>
<tr>
<td>S 5.5</td>
<td>Check forms and anchoring—several times—for alignment and possible deformation, during concrete placement.</td>
</tr>
<tr>
<td>S 5.6</td>
<td>Ensure that the mould is clean and free of all debris.</td>
</tr>
<tr>
<td>S 5.7</td>
<td>Ensure that any void box tie downs are installed as specified in the contract documents.</td>
</tr>
</tbody>
</table>
### Structural – Task S 6

#### Installation of Bearings

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 6.1 M</td>
<td><strong>Check that all the delivered material is being supplied from the approved list and properly stored.</strong></td>
</tr>
<tr>
<td>S 6.2</td>
<td>Check and record from elastomeric bearings, the size, name of manufacturer, part number and date of manufacture and also check that the bearing is not on the list of defective bearings.</td>
</tr>
<tr>
<td>S 6.3</td>
<td>When specified, randomly select and then ship the sample bearing(s) for testing as specified.</td>
</tr>
<tr>
<td>S 6.4</td>
<td>Check that surface tolerance and bedding requirements of bearing seats conform to specification.</td>
</tr>
<tr>
<td>S 6.5</td>
<td>Check that each bearing is installed at the correct location, elevation, and is properly aligned as specified.</td>
</tr>
<tr>
<td>S 6.6</td>
<td>Check removal of any shipping device or restraints from bearings as specified in the contract or shop drawings or both.</td>
</tr>
<tr>
<td>S 6.7 M</td>
<td><strong>Upon completion of the structure, visually inspect the bearings to ensure they have full and uniform bearing at top and bottom, and that bearing components are not out of position.</strong></td>
</tr>
<tr>
<td>S 6.8</td>
<td>Check the timing and procedure for jacketing and re-alignment of bearings.</td>
</tr>
<tr>
<td>S 6.9 M</td>
<td><strong>Check for defects following jacking.</strong></td>
</tr>
</tbody>
</table>
## Structural – Task S 7

**Concrete and Structural Steel Beam Erection**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 7.1 M</td>
<td>Check that the stamped approved erection drawings are on site.</td>
</tr>
<tr>
<td>S 7.2</td>
<td>Check that beams have not been damaged and are set to the specified alignment and seated properly.</td>
</tr>
<tr>
<td>S 7.3 M</td>
<td>Ensure that the contractor complies with the approved drawings and procedures.</td>
</tr>
<tr>
<td>S 7.4</td>
<td>Ensure that lifting equipment has adequate capacity and is located on a stable foundation.</td>
</tr>
<tr>
<td>S 7.5</td>
<td>Ensure that lateral bracing is in place prior to lifting beams.</td>
</tr>
</tbody>
</table>
### Structural – Task S 8

#### Reinforcing Steel Placement

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 8.1</td>
<td>Examine reinforcing steel schedule and drawings.</td>
</tr>
<tr>
<td>S 8.2</td>
<td>Check for proper site storage and handling.</td>
</tr>
<tr>
<td>S 8.3 M</td>
<td><strong>Check all the delivered material is being supplied from the approved list.</strong></td>
</tr>
<tr>
<td>S 8.4</td>
<td>Check correct grade, bar mark, size, length, and bending dimensions and provision of mill certificates.</td>
</tr>
<tr>
<td>S 8.5</td>
<td>Check condition of all types of reinforcing steel and ensure damaged bars are repaired with approved materials or replaced as specified in the contract.</td>
</tr>
<tr>
<td>S 8.6</td>
<td>Check coated tie wire is used on epoxy coated steel and stainless steel ties are used on stainless steel.</td>
</tr>
<tr>
<td>S 8.7</td>
<td>Check splicing, spacing, cover, welding, supports and tying of bars is carried out as specified in the contract.</td>
</tr>
<tr>
<td>S 8.8</td>
<td>A sample of the stainless steel rebar must be obtained and forwarded for testing, as per the contract documents.</td>
</tr>
<tr>
<td>S 8.9</td>
<td>Check that the steel is in the proper place for cover as per the drawings, prior to concrete placement. Verify adequate cover before placement of concrete.</td>
</tr>
</tbody>
</table>
### Structural – Task S 9
Concrete Placement, Consolidation, Finishing and Curing

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 9.1 M</td>
<td>Ensure that the concrete mix design and supporting documentation has been obtained and reviewed.</td>
</tr>
<tr>
<td>S 9.2 M</td>
<td>Check to ensure all materials are from approved lists and meet the requirements of the contract.</td>
</tr>
<tr>
<td>S 9.3</td>
<td>Review details of “pre-placement” meeting regularly for compliance.</td>
</tr>
<tr>
<td>S 9.4</td>
<td>Check that the thermal coupler wire or copper tubing is installed correctly.</td>
</tr>
<tr>
<td>S 9.5</td>
<td>Check transporting systems such as concrete pumps, belts, runways, and so on. Also ensure that the contractor has a back up plan if required.</td>
</tr>
<tr>
<td>S 9.6</td>
<td>Ensure that submissions for cold and hot weather concrete placement have been obtained and reviewed.</td>
</tr>
<tr>
<td>S 9.7</td>
<td>Ensure that the contractor has provided the equipment identified in the submission including back-up units.</td>
</tr>
<tr>
<td>S 9.8 M</td>
<td>Ensure concrete delivery tickets are checked for correct class and concrete batching time.</td>
</tr>
<tr>
<td>S 9.9</td>
<td>Ensure concrete is placed in specified time, that is from time on ticket.</td>
</tr>
<tr>
<td>S 9.10</td>
<td>Check correct placement operations, if applicable correct placing sequence is as specified in the contract.</td>
</tr>
<tr>
<td>S 9.11 M</td>
<td>Check that all required quality assurance testing and sampling is carried out.</td>
</tr>
<tr>
<td>S 9.12</td>
<td>Ensure that contractor has received permission to proceed with the pour.</td>
</tr>
<tr>
<td>Consolidation</td>
<td></td>
</tr>
<tr>
<td>S 9.13</td>
<td>Check vibration equipment is in good operating condition and meets specification requirements.</td>
</tr>
<tr>
<td>S 9.14 M</td>
<td>Check adequate consolidation and proper use of vibrating.</td>
</tr>
</tbody>
</table>
## Structural – Task S 9
Concrete Placement, Consolidation, Finishing and Curing (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Finishing</strong></td>
</tr>
<tr>
<td>S 9.15</td>
<td>Check deck finishing equipment is as specified in the contract.</td>
</tr>
<tr>
<td>S 9.16 M</td>
<td><strong>Ensure deck finisher dry run is conducted and check clearances.</strong></td>
</tr>
<tr>
<td>S 9.17</td>
<td>Check that finishing of plastic concrete is as specified in the contract.</td>
</tr>
<tr>
<td>S 9.18</td>
<td>Check tolerances of finishing concrete are as specified in the contract.</td>
</tr>
<tr>
<td></td>
<td><strong>Curing</strong></td>
</tr>
<tr>
<td>S 9.19 M</td>
<td>Check that specified curing is carried out.</td>
</tr>
<tr>
<td>S 9.20</td>
<td>Check that hot and cold weather protection requirements are carried out</td>
</tr>
<tr>
<td></td>
<td>as specified in the contract, including monitoring concrete temperatures</td>
</tr>
<tr>
<td></td>
<td>where applicable.</td>
</tr>
</tbody>
</table>
## Structural – Task S 10

### Installation of Expansion Joints

<table>
<thead>
<tr>
<th>Task #</th>
<th>✓</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 10.1</td>
<td></td>
<td>Check no damage occurs during handling.</td>
</tr>
<tr>
<td>S 10.2</td>
<td></td>
<td>Check all delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>S 10.3 M</td>
<td></td>
<td><strong>Check material supplied by the contractor is sampled as required.</strong></td>
</tr>
<tr>
<td>S 10.4</td>
<td></td>
<td>Check for proper storage.</td>
</tr>
<tr>
<td>S 10.5</td>
<td></td>
<td>Check field splices in steel components are located and welded as per shop drawings and are performed by a certified welder and ensure that the weld is field painted.</td>
</tr>
<tr>
<td>S 10.6</td>
<td></td>
<td>Check that the dimensions of the block-out to receive the joint assembly are in accordance with the contract drawings and standard drawings.</td>
</tr>
<tr>
<td>S 10.7</td>
<td></td>
<td>Check that the block-out to receive the joint is abrasive blast cleaned, without damaging the epoxy coated steel.</td>
</tr>
<tr>
<td>S 10.8</td>
<td></td>
<td>Check that all debris in the block-out has been removed and the area coated with a cement paste prior to placing concrete.</td>
</tr>
<tr>
<td>S 10.9 M</td>
<td></td>
<td><strong>Check that the proper gap or “j” dimension of the unit has been established prior to placing concrete, and check that the constant gap is achieved throughout the total length.</strong></td>
</tr>
<tr>
<td>S 10.10 M</td>
<td></td>
<td><strong>Ensure proper cover from expansion joint steel.</strong></td>
</tr>
<tr>
<td>S 10.11</td>
<td></td>
<td>Check that the concrete placement, consolidation, finishing and curing operations are in accordance with task S 9.</td>
</tr>
<tr>
<td>S 10.12</td>
<td></td>
<td>Check that clamping angles or channels are removed as specified in the contract.</td>
</tr>
<tr>
<td>S 10.13</td>
<td></td>
<td>Check that holes left from removal of clamping angles or channels are cleaned and grouted with approved epoxy.</td>
</tr>
<tr>
<td>S 10.14</td>
<td></td>
<td>Check for concrete blockages in the expansion joint openings.</td>
</tr>
<tr>
<td>S 10.15</td>
<td></td>
<td>Check that seal is properly installed with no damage, wrinkles or splices.</td>
</tr>
<tr>
<td>S 10.16</td>
<td></td>
<td>Check that sliding plates on sidewalk, curbs, and median have been installed properly with regards to the direction of traffic.</td>
</tr>
<tr>
<td>S 10.17</td>
<td></td>
<td>Check that formwork including Styrofoam has been removed below expansion joint assembly between deck and ballast wall before the seal is installed.</td>
</tr>
</tbody>
</table>
### Structural – Task S 10

#### Installation of Expansion Joints (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 10.18</td>
<td>Check for cracks in the concrete adjacent to the expansion joint.</td>
</tr>
<tr>
<td>S 10.19</td>
<td>Ensure that vent holes are not plugged.</td>
</tr>
<tr>
<td>S 10.20 M</td>
<td><strong>Sound the steel armour for voids. If voids are detected, ensure proper procedures are taken to fill the voids.</strong></td>
</tr>
<tr>
<td>S 10.21</td>
<td>Ensure that all required testing has been carried out.</td>
</tr>
<tr>
<td>S 10.22</td>
<td>Ensure end dam concrete has obtained the minimum strength if voids are to be filled.</td>
</tr>
<tr>
<td>S 10.23</td>
<td>Check ballast wall and deck for deterioration and bring to the attention of the project manager and contractor.</td>
</tr>
</tbody>
</table>
## Structural – Task S 11

### Barrier Walls

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S 11.1</strong></td>
<td>Check method of construction is as specified in the contract.</td>
</tr>
</tbody>
</table>
| **S 11.2** | Conventional wooden or steel form method.  
1 Check for correct alignment, grade and granular base preparation.  
2 Check for correct joint detail and spacing.  
3 Check cover on reinforcing steel.  
4 Check that the concrete placement, consolidation and finishing operations are in accordance with task S 9.  
5 Check that specified curing requirements are carried out.  
6 Check for surface tolerances and cracking.  
7 Check that railing mounts or anchorages are correctly installed, for example: location, elevation, flushness, and anchor bolt protrusion is adequate for tube rails.  
8 Check that the inside faces of formwork is clean, oiled, and in good order, to produce a smooth cast face.  
9 Check that the barrier wall forms are adequately restrained to prevent uplift and spreading.  
10 Ensure anchorages for handrail are installed in correct locations. |
| **S 11.3** | Extruded method (Not allowed on bridge decks).  
1 Check for correct alignment, grade and granular base preparation.  
2 Check location of reinforcing steel.  
3 Check that the concrete placement, consolidation and finishing operations are in accordance with task S 9.  
4 Check specified percentage of air is being maintained behind extruder.  
5 Check that specified curing requirements are met. |
|   | 6  | Check for surface tolerances and cracking. |
### Structural – Task S 12

**Railing for Barrier or Parapet Wall**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 12.1</td>
<td>Ensure that all rail and post material delivered to the site is that specified in the contract.</td>
</tr>
<tr>
<td>S 12.2</td>
<td>Ensure that material is stored properly.</td>
</tr>
<tr>
<td>S 12.3</td>
<td>Check material for damage or defects.</td>
</tr>
<tr>
<td><strong>S 12.4 M</strong></td>
<td><strong>Ensure that anchorages have been properly located.</strong></td>
</tr>
<tr>
<td>S 12.5</td>
<td>Ensure all end caps are installed properly.</td>
</tr>
<tr>
<td>S 12.6</td>
<td>Check the gap on rail mating surfaces to ensure the joint will slide.</td>
</tr>
<tr>
<td>S 12.7</td>
<td>Ensure that slide joints are located as detailed in the contract.</td>
</tr>
<tr>
<td>S 12.8</td>
<td>Ensure that rail posts are perpendicular and rails are properly aligned.</td>
</tr>
</tbody>
</table>
# Structural – Task S 13

## High Performance Concrete
(This task list is in addition to S 9)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 13.1 M</td>
<td>Ensure mix design is approved by the contract administrator.</td>
</tr>
<tr>
<td>S 13.2</td>
<td>Ensure that the number of thermocouples conform to the special provisions.</td>
</tr>
<tr>
<td></td>
<td><strong>Placement of Curing</strong></td>
</tr>
<tr>
<td>S 13.3</td>
<td>Check the thermocouples for temperature and temperature difference control are installed.</td>
</tr>
<tr>
<td>S 13.4</td>
<td>Check the concrete temperature, slump and air content are as per contract.</td>
</tr>
<tr>
<td>S 13.5</td>
<td>Check that the concrete does not segregate during placement and consolidation.</td>
</tr>
<tr>
<td>S 13.6</td>
<td>Check the moulds used for making test cylinders conform to requirements.</td>
</tr>
<tr>
<td>S 13.7</td>
<td>Check structure decks, approach slabs, curbs and sidewalks, to ensure that fog mist is applied continuously from the time of spreading until concrete is covered with burlap.</td>
</tr>
<tr>
<td>S 13.8</td>
<td>Review contractor’s temperature records daily. Calculate the thermal gradient by dividing the temperature difference between the centre of concrete and the surface of concrete by the distance between the centre and its nearest surface. If the thermal gradient is greater than 1.5° C/cm, alert the contract administrator.</td>
</tr>
<tr>
<td>S 13.9</td>
<td>Check protection is applied when temperature and/or temperature difference exceeds the limit.</td>
</tr>
<tr>
<td></td>
<td><strong>Quality Assurance</strong></td>
</tr>
<tr>
<td>S 13.10</td>
<td>Ensure that testing is carried out as per contract requirements.</td>
</tr>
<tr>
<td>S 13.11</td>
<td>Carry out crack inspection and review proposal for repairs.</td>
</tr>
<tr>
<td>S 13.12 M</td>
<td>Check permission to waterproof is not issued until cracks are treated and the deck is cured for three (3) days.</td>
</tr>
</tbody>
</table>
## Structural – Task S 14

### Bridge Deck Waterproofing

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 14.1 M</td>
<td>Check that the deck meets requirements for surface tolerance and surface finish. Contractor to verify acceptability of deck surface with waterproofing subcontractor.</td>
</tr>
<tr>
<td>S 14.2 M</td>
<td>Check that the air and concrete surface temperature are within specification requirements.</td>
</tr>
<tr>
<td>S 14.3 M</td>
<td>Verify that the deck surface, face of the curbs and barriers walls have been completely treated by abrasive blast cleaning to expose sound, laitance-free concrete and provide permission to proceed.</td>
</tr>
<tr>
<td>S 14.4</td>
<td>Check that no traffic, other than the construction equipment directly associated with the waterproofing operation, is allowed on the abrasive blast cleaned deck.</td>
</tr>
<tr>
<td>S 14.5 M</td>
<td>Check that all delivered materials are approved.</td>
</tr>
<tr>
<td>S 14.6</td>
<td>Check that tack coat is cured completely and free of any surface moisture and dirt before waterproofing membrane is applied.</td>
</tr>
<tr>
<td>S 14.7</td>
<td>Check specified temperature of waterproofing membrane at time of placing.</td>
</tr>
<tr>
<td>S 14.8</td>
<td>Check correct placement of membrane reinforcement.</td>
</tr>
<tr>
<td>S 14.9</td>
<td>Check correct placing of protection boards.</td>
</tr>
<tr>
<td>S 14.10</td>
<td>Check the deck drainage tubes are open.</td>
</tr>
<tr>
<td>S 14.11</td>
<td>Check tack coating of protection boards just prior to paving.</td>
</tr>
<tr>
<td>S 14.12</td>
<td>Ensure that the contractor takes adequate protective measures to mask concrete and prevent over-spray of tack coat materials onto adjacent concrete surfaces such as the curb face, barrier wall, abutments, columns, and so forth.</td>
</tr>
<tr>
<td>S 14.13</td>
<td>Measure and record waterproofing thickness.</td>
</tr>
<tr>
<td>S 14.14</td>
<td>Ensure that required samples are taken for testing.</td>
</tr>
</tbody>
</table>
## Structural – Task S 15
Cofferdams, Sheet Piling, Tie-backs and Roadway Protection

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 15.1 M</td>
<td>Ensure that stamped approved drawings are available on site.</td>
</tr>
<tr>
<td>S 15.2</td>
<td>Check length and condition of all material delivered to the site.</td>
</tr>
<tr>
<td>S 15.3</td>
<td>Check that the contractor’s scheme is as specified on the working drawings.</td>
</tr>
<tr>
<td>S 15.4</td>
<td>Check that the scheme is as specified in the contract for length.</td>
</tr>
<tr>
<td>S 15.5</td>
<td>Check that anchor testing is as specified in the specifications.</td>
</tr>
<tr>
<td>S 15.6</td>
<td>Check that the contractor monitors the completed scheme for movement.</td>
</tr>
</tbody>
</table>
## Structural – Task S 16

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 16.1</td>
<td>Check operation of dewatering system.</td>
</tr>
<tr>
<td>S 16.2</td>
<td>Check that the contractor is monitoring the system as specified in the contract.</td>
</tr>
<tr>
<td>S 16.3</td>
<td>Check that dewatering is not removed until the backfilling is brought up to grade.</td>
</tr>
<tr>
<td>S 16.4</td>
<td>Check that dewatering is not causing erosion of soil at the outlet and other environmental concerns, for example muddy water discharge. Check that the contractor has the standby equipment such as pumps, hoses, and so forth, on site as required in the environmental submission.</td>
</tr>
<tr>
<td>S 16.5 M</td>
<td>Check environmental special provisions are adhered to.</td>
</tr>
<tr>
<td>S 16.6 M</td>
<td>Check that discharge is being managed as per contract requirements.</td>
</tr>
<tr>
<td>S 16.7</td>
<td>Check that groundwater drawdown levels are as designed on the drawings.</td>
</tr>
<tr>
<td>S 16.8</td>
<td>Check that the contractor’s dewatering scheme is not causing loss of materials under adjacent founding elements or backfill.</td>
</tr>
<tr>
<td>S 16.9</td>
<td>Monitor pump inlet to ensure pump is not submerged in mud.</td>
</tr>
</tbody>
</table>
### Structural – Task S 17

#### Caisson Foundations

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 17.1</td>
<td>Check type, length, and condition of caisson liners.</td>
</tr>
<tr>
<td>S 17.2</td>
<td>Check that installation equipment is as specified in the contract.</td>
</tr>
<tr>
<td>S 17.3</td>
<td>Check that penetration and cut off are in accordance with design data.</td>
</tr>
<tr>
<td>S 17.4 M</td>
<td><strong>Check that caissons are cleaned out prior to placing reinforcing steel and concrete.</strong></td>
</tr>
<tr>
<td>S 17.5</td>
<td>Ensure that reinforcing cages are placed correctly.</td>
</tr>
<tr>
<td>S 17.6</td>
<td>Check that the concrete placement, consolidation, finishing, and curing operations are performed in accordance with task S 9.</td>
</tr>
<tr>
<td>S 17.7</td>
<td>Check that vertical and batter alignment of caisson are as specified in the contract.</td>
</tr>
</tbody>
</table>
## Structural – Task S 18

### Tremie Concrete

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 18.1</td>
<td>Check placement operation is as specified.</td>
</tr>
<tr>
<td>S 18.2</td>
<td>Check the concrete placement, consolidation, finishing and curing operations are in accordance with contract.</td>
</tr>
<tr>
<td>S 18.3</td>
<td>Check elevation at which the placement is terminated.</td>
</tr>
<tr>
<td>S 18.4</td>
<td>Check that dewatering is not carried out prior to when it is specified in the contract.</td>
</tr>
<tr>
<td>S 18.5 M</td>
<td><strong>Check proper removals, cleaning and soundness of top surface prior to placing additional concrete.</strong></td>
</tr>
<tr>
<td>S 18.6</td>
<td>Ensure that formed enclosure meets water tightness specified in the contractor’s submission, when placement is required next to a watercourse.</td>
</tr>
</tbody>
</table>
### Structural – Task S 19

**Structure Rehabilitation – Removal of Waterproofing System from Deck Surface**

*Note: For deck to be subsequently rehabilitated by patch or waterproofing and paving.*

<table>
<thead>
<tr>
<th>Task #</th>
<th>✓</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 19.1</td>
<td></td>
<td>Check that all old waterproofing membrane is completely removed from the concrete surface without any damage to the existing surface of the deck.</td>
</tr>
<tr>
<td>S 19.2</td>
<td></td>
<td>Identify all repairs and remedial works have been carried out prior to waterproofing.</td>
</tr>
<tr>
<td>S 19.3</td>
<td></td>
<td>Check that all repairs and remedial work to the concrete deck has been completed.</td>
</tr>
</tbody>
</table>
Structural – Task S 20
Structure Rehabilitation – Concrete Removal and Surface Preparation

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 20.1</td>
<td>Establish concrete removal areas on deck surface, sidewalk, curb face,</td>
</tr>
<tr>
<td></td>
<td>barrier, and walls by visual and other specified means hammer sound</td>
</tr>
<tr>
<td></td>
<td>chain drag and mark out removal areas. Check that areas identified in</td>
</tr>
<tr>
<td></td>
<td>the original deck condition survey are considered. When repair areas</td>
</tr>
<tr>
<td></td>
<td>differ from the intended quantity notify the contract administrator.</td>
</tr>
<tr>
<td>S 20.2 M</td>
<td>Check that concrete removal is being done correctly and as specified in</td>
</tr>
<tr>
<td></td>
<td>the contract, that is hammer size, locations of removals, staging of</td>
</tr>
<tr>
<td></td>
<td>removal, and strength of adjacent patches.</td>
</tr>
<tr>
<td>S 20.3 M</td>
<td>Check surface preparation is as specified in the contract.</td>
</tr>
<tr>
<td>S 20.4</td>
<td>Check that the correct depth of scarification is achieved and weight of</td>
</tr>
<tr>
<td></td>
<td>equipment does not exceed limit specified.</td>
</tr>
<tr>
<td>S 20.5</td>
<td>Ensure that exposed rebar has been sand blasted and treated with the</td>
</tr>
<tr>
<td></td>
<td>specified chemicals to stop corrosion if required according to contract</td>
</tr>
<tr>
<td></td>
<td>documents.</td>
</tr>
<tr>
<td>S 20.6</td>
<td>Saw cut perimeter of repair areas.</td>
</tr>
<tr>
<td>S 20.7</td>
<td>Ensure all remaining concrete is sound.</td>
</tr>
</tbody>
</table>
## Structural – Task S 21

### Structure Rehabilitation – Concrete Overlay

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submission</strong></td>
<td></td>
</tr>
<tr>
<td>S 21.1 M</td>
<td>Obtain contractor’s submission and verify that the concrete mix design meets the requirements of the special provision for air void system in the hardened concrete and minimum specified seven day compressive strength.</td>
</tr>
<tr>
<td>S 21.2</td>
<td>Obtain documentation certifying that the super plasticizer meets the following:</td>
</tr>
<tr>
<td></td>
<td>• conforms to ASTM C 494 standard specification for chemical admixtures for concrete and Committee C 17 on fibre reinforced cement products requirements</td>
</tr>
<tr>
<td></td>
<td>• no chlorides were added during the manufacturer of the super plasticizer</td>
</tr>
<tr>
<td></td>
<td>• it is compatible with the cementing materials and all other admixtures used in the concrete</td>
</tr>
<tr>
<td>S 21.3</td>
<td>Check that all supporting test data is not more then 12 months old from the data the concrete mix design was submitted.</td>
</tr>
<tr>
<td><strong>Trial Run</strong></td>
<td></td>
</tr>
<tr>
<td>S 21.4</td>
<td>Check that the screed rails have been installed outside the area to be waterproofed.</td>
</tr>
<tr>
<td>S 21.5</td>
<td>Check that the contractor’s trial run has been completed before each placing operation to ensure that the minimum thickness of the overlay can be achieved.</td>
</tr>
<tr>
<td>S 21.6</td>
<td>Check that the contractor has verified that the screed rails and finishing machine have been set to ensure that the thickness of the overlay meets the requirements of the contract documents before proceeding with the placement of the overlay.</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
<td></td>
</tr>
<tr>
<td>S 21.7</td>
<td>Check that all full depth patches have been repaired prior to placing the overlay, unless otherwise specified in the contract documents.</td>
</tr>
<tr>
<td>S 21.8</td>
<td>Check that concrete for all partial depth removal areas in the deck are placed at the same time as the overlay.</td>
</tr>
<tr>
<td>S 21.9</td>
<td>Check that overlay is not placed adjacent to any new concrete less than 48 hours old. If the ambient air temperature falls below 10°C within the first 48 hours after placement of concrete, the 48 hour time requirement is extended to 96 hours.</td>
</tr>
<tr>
<td>Task #</td>
<td>Activity</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>S 21.10 M</td>
<td>Check the temperature of the air and existing concrete surface to receive the overlay, to ensure it meets contract requirements prior to and during concrete operations.</td>
</tr>
<tr>
<td>S 21.11</td>
<td>Check equipment and runways for the concrete transporting equipment to ensure they are not supported by reinforcing steel.</td>
</tr>
<tr>
<td>S 21.12</td>
<td>Check that only the finishing machine and buggies used to place concrete are allowed on the abrasive blast cleaned portions of the deck. No other vehicles or equipment, including concrete ready mix trucks shall be permitted.</td>
</tr>
<tr>
<td>S 21.13</td>
<td>Check that heavy vehicles such as concrete ready mix trucks or dump trucks are not permitted on the deck where concrete removal has taken place.</td>
</tr>
<tr>
<td>S 21.14</td>
<td>Check that removal of all dust and loose material is carried by oil-free compressed air.</td>
</tr>
<tr>
<td>S 21.15</td>
<td>Check that the prepared surface is maintained in a wet condition for six hours prior to placing concrete.</td>
</tr>
<tr>
<td>S 21.16</td>
<td>Check that excess water is removed by oil-free compressed air immediately prior to application of bonding grout.</td>
</tr>
<tr>
<td>S 21.17</td>
<td>Check that areas of reinforcing steel and prepared concrete surface are protected from oil leaks and dropping grout or concrete from placing equipment.</td>
</tr>
<tr>
<td>S 21.18</td>
<td>Check that all vertical and horizontal surfaces against which the overlay will be placed receive a thorough, even coating of bonding grout, with no excess left in place.</td>
</tr>
<tr>
<td>S 21.19</td>
<td>Check that the application of bonding grout is such that the brushed material does not become dry before it is covered with overlay concrete. Ensure that bonding grout, which is not used within 30 minutes after mixing, is discarded.</td>
</tr>
<tr>
<td>S 21.20</td>
<td>Check that concrete placement, consolidation, finishing and curing procedures are in accordance with the contract documents.</td>
</tr>
<tr>
<td>S 21.21</td>
<td>Check that the overlay is cured with burlap and water regardless of ambient temperature. Check that the burlap is maintained in a continuously wet condition throughout the curing period by means of a soaker hose. The soaker hoses shall be placed on the burlap prior to placing the moisture barrier.</td>
</tr>
<tr>
<td>S 21.22</td>
<td>Check that the burlap is prevented from freezing during cold weather.</td>
</tr>
</tbody>
</table>
### Structural – Task S 21

**Structure Rehabilitation – Concrete Overlay (continued)**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 21.23</td>
<td>Check that the construction joints are placed as specified in the contract documents.</td>
</tr>
<tr>
<td>S 21.24</td>
<td>Check that the tensile bond strength testing if carried out as per the contract requirements.</td>
</tr>
<tr>
<td>S 21.25</td>
<td>Check that the core holes have been filled according to the contract requirements.</td>
</tr>
<tr>
<td><strong>Quality Assurance</strong></td>
<td></td>
</tr>
<tr>
<td>S 21.26</td>
<td>Obtain and review tensile bond strength test results.</td>
</tr>
<tr>
<td>S 21.27</td>
<td>Check overlay for any areas of debonding, honeycombed areas or cracks.</td>
</tr>
<tr>
<td>S 21.28</td>
<td>Obtain and verify contractor’s crack inspection report and review Contractor’s crack treatment proposal is applicable.</td>
</tr>
<tr>
<td>S 21.29</td>
<td>Check that permission to waterproof is not issued until cracks are treated, if applicable, and the deck is air cured for three days.</td>
</tr>
</tbody>
</table>
## Structural – Task S 22

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 22.1 M</td>
<td>Check that concrete removal is being carried out as per contract documents and contractor’s stamped approved working drawings.</td>
</tr>
<tr>
<td>S 22.2</td>
<td>Check any required cutting and bending of existing reinforcing steel as specified in the contract.</td>
</tr>
<tr>
<td>S 22.3</td>
<td>Check the contractor exercises care when working around components, which are to be left in place to ensure they are not damaged or loosened and the hammers don’t come in contact in a manner that will cause debonding in the adjacent concrete areas not being repaired.</td>
</tr>
<tr>
<td>S 22.4 M</td>
<td>Inspect existing structural steel components for damage resulting from the removal operation. Inspect other main load carrying elements like precast girders or concrete and timber beams.</td>
</tr>
<tr>
<td>S 22.5</td>
<td>Record all details and dimensions in areas that are in conflict with the existing structure drawings.</td>
</tr>
</tbody>
</table>
Structural – Task S 23
Structure Rehabilitation – Concrete Patches

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 23.1 M</td>
<td>Ensure that the concrete mix design is submitted and reviewed.</td>
</tr>
<tr>
<td>S 23.2</td>
<td>For form and pump placement method, obtain and review the contractor’s proposal at least one week prior to commencement of the work. Ensure that proposal includes methodology and equipment to be used for this construction contract and that it is signed and sealed by a professional engineer.</td>
</tr>
<tr>
<td>S 23.3</td>
<td>For form and pump placement method, check that the pump is a positive displacement type pump and that it is capable of delivering adequate volumes of concrete to maintain a continuous placement.</td>
</tr>
<tr>
<td>S 23.4 M</td>
<td><strong>Placement</strong></td>
</tr>
<tr>
<td>S 23.4 M</td>
<td>Check the temperature of the air and existing concrete surface to receive the overlay, to ensure it meets contract requirements prior to and during concrete operation.</td>
</tr>
<tr>
<td>S 23.5</td>
<td>Check equipment and runaways for the concrete transporting equipment to ensure they are not supported by reinforcing steel.</td>
</tr>
<tr>
<td>S 23.6</td>
<td>Check removal of all dust and loose material is carried out by oil-free compressed air.</td>
</tr>
<tr>
<td>S 23.7</td>
<td>Check that the prepared surface is maintained in a wet condition for one hour prior to placing concrete.</td>
</tr>
<tr>
<td>S 23.8</td>
<td>Check excess water is removed by oil-free compressed air immediately prior to application of bonding grout.</td>
</tr>
<tr>
<td>S 23.9</td>
<td>Check concrete placement, consolidation, finishing and curing procedures are in accordance with task S 9 unless specified otherwise elsewhere in the contract.</td>
</tr>
<tr>
<td>S 23.10</td>
<td>Check that thermocouple wires have been installed in the concrete for cold weather protection as specified in the special provision.</td>
</tr>
<tr>
<td>S 23.11</td>
<td>Review Contractor’s temperature records daily for cold weather protection, if applicable.</td>
</tr>
<tr>
<td>S 23.12</td>
<td>Check that prior to season shut down, all patches are completed in all areas of concrete removal.</td>
</tr>
<tr>
<td>S 23.13</td>
<td>Check that no construction vehicles, equipment or traffic, with the exception of saw cutting equipment be permitted on the finished surface of the patches until the curing period has elapsed and the specified compressive strength has been attained.</td>
</tr>
</tbody>
</table>
### Structural – Task S 23

#### Structure Rehabilitation – Concrete Patches (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 23.14</td>
<td>Define the lots and determine core locations for air void system and tensile bond strength test.</td>
</tr>
<tr>
<td>S 23.15</td>
<td>Check that the tensile bond strength testing is carried out as per the contract requirement.</td>
</tr>
<tr>
<td>S 23.16</td>
<td>Check that the core holes have been filled according to the contact requirements.</td>
</tr>
<tr>
<td></td>
<td><strong>Quality Assurance</strong></td>
</tr>
<tr>
<td>S 23.17</td>
<td>Obtain and review tensile bond strength test results.</td>
</tr>
<tr>
<td>S 23.18</td>
<td>Check patches for any areas of debonding, honeycombed areas or cracks.</td>
</tr>
<tr>
<td>S 23.19</td>
<td>Obtain and verify contractor’s crack inspection report, review Contractor’s crack treatment proposal if applicable.</td>
</tr>
<tr>
<td>S 23.20</td>
<td>Check permission to waterproof is not issued until the cracks are treated, if applicable, and the patches in the deck are cured for three (3) days.</td>
</tr>
</tbody>
</table>
**Structural – Task S 24**

Structure Rehabilitation – Silica Fume Concrete Overlay

This task list is in addition to S 9 and S 21, and should be used in conjunction with S 9 and S 21.

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Submission</strong></td>
<td></td>
</tr>
<tr>
<td>S 24.1</td>
<td>Verify that the concrete mix and materials meet the requirements of the special provision for rapid chloride permeability at 28 days.</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
<td></td>
</tr>
<tr>
<td>S 24.2</td>
<td>Perform pre-pour dry run to verify grades or screed elevations, concrete cover and operation of mist fogger.</td>
</tr>
<tr>
<td>S 24.3</td>
<td>Check that the concrete placement, consolidation, finishing and curing operations are in accordance with tasks S 9 and S 21.</td>
</tr>
<tr>
<td>S 24.4</td>
<td>Constantly monitor and record temperatures.</td>
</tr>
<tr>
<td>S 24.5</td>
<td>Check that fog mist is applied continuously from the time of screeding until concrete is covered with burlap.</td>
</tr>
<tr>
<td>S 24.6</td>
<td>Ensure wet curing for seven days in accordance with contract specifications.</td>
</tr>
<tr>
<td>S 24.7</td>
<td>Define the lots and determine core locations for air void system, tensile bond strength and rapid chloride permeability test.</td>
</tr>
<tr>
<td><strong>Quality Assurance</strong></td>
<td></td>
</tr>
<tr>
<td>S 24.8 M</td>
<td>Check that the quality assurance operations are carried out.</td>
</tr>
</tbody>
</table>
### Structural – Task S 25

**Structure Rehabilitation – Concrete Refacing**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Welded Steel Wire Fabric (if applicable)</strong></td>
<td></td>
</tr>
<tr>
<td>S 25.1</td>
<td>Check that the welded steel wire fabric is welded galvanized steel and conforms to ASTM A185-01 standard specification for steel welded wire reinforcement, plain, for concrete.</td>
</tr>
<tr>
<td>S 25.2</td>
<td>Check that the anchors for the attachment of the wire fabric to the concrete surface are galvanized in conformance with ASTM A123 / A123M-08 standard specification for zinc (hot-dip galvanized) coatings on iron and steel products.</td>
</tr>
<tr>
<td>S 25.3</td>
<td>Check that the wire fabric is installed after the concrete surface and exposed reinforcing steel in the repair area have been abrasive blast cleaned—ensure proper cover over wire mesh.</td>
</tr>
<tr>
<td>S 25.4</td>
<td>Check that the wire fabric is installed in accordance with the special provision in the locations shown on contract drawings using spacers and anchors. Ensure proper cover is maintained.</td>
</tr>
<tr>
<td>S 25.5</td>
<td>Check that the wire fabric is kept clean of any contamination.</td>
</tr>
<tr>
<td>S 25.6</td>
<td>Ensure forms are installed correctly and have adequate support prevent deformation.</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
<td></td>
</tr>
<tr>
<td>S 25.7</td>
<td>Check that submissions, concrete placement, finishing, curing, and quality assurance procedures are carried out as specified in the contract.</td>
</tr>
<tr>
<td><strong>Curing</strong></td>
<td></td>
</tr>
<tr>
<td>S 25.8 M</td>
<td>Check that burlap and water is applied immediately to the top of all exposed concrete surfaces, within two to four metres from the finishing operation.</td>
</tr>
<tr>
<td>S 25.9</td>
<td>Check that burlap is kept continuously wet by means of soaker hose placed along the top of the component being refaced. Check that the soaker is placed immediately after the concrete has set without causing fines to wash out.</td>
</tr>
<tr>
<td>S 25.10</td>
<td>Check that the forms are removed within 16 to 24 hours of concrete placement and that the concrete is cured as specified in the special provision.</td>
</tr>
</tbody>
</table>
### Structural – Task S 26

#### Structural Steel Coating

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 26.1 M</td>
<td>Check all the delivered material, for example, abrasives and coatings, to verify that it is being supplied as per the requirements and specifications.</td>
</tr>
<tr>
<td>S 26.2</td>
<td>Check material supplied by the contractor is sampled as required.</td>
</tr>
<tr>
<td>S 26.3</td>
<td>Check all requirements and manufacturers product data sheets are met.</td>
</tr>
<tr>
<td>S 26.4</td>
<td>Check individual coating products used in the coating system come from the same manufacturer and are compatible.</td>
</tr>
<tr>
<td>S 26.5</td>
<td>Check approvals for access, such as scaffolding and stain towers. Review shop drawings signed by a professional engineer.</td>
</tr>
<tr>
<td>S 26.6</td>
<td>Check environmental operations including enclosure systems, negative pressure, management and disposal of spent blast medium and removed coating material are as specified in contract or contractor’s approved proposal or both.</td>
</tr>
<tr>
<td>S 26.7 M</td>
<td>Check that surface preparation is carried out as specified in the contract and meet the specified The Society for Protective Coatings (SSPC) standard.</td>
</tr>
<tr>
<td>S 26.8</td>
<td>Obtain sample of spent blast medium if specified in the contract. Delivery to contract administrator for laboratory testing.</td>
</tr>
<tr>
<td>S 26.9 M</td>
<td>Check that coating of structural steel follows cleaning within the time as specified in the contract.</td>
</tr>
<tr>
<td>S 26.10</td>
<td>Check air temperature and dew point restrictions.</td>
</tr>
<tr>
<td>S 26.11</td>
<td>Check that the coat application is carried out as specified in the contract.</td>
</tr>
<tr>
<td>S 26.12 M</td>
<td>Ensure that all applicable tests are performed, for example steel profile, paint thickness, temperature, dew point, and so forth.</td>
</tr>
<tr>
<td>S 26.13</td>
<td>Check that all blast abrasive, dust and other debris are removed from the steel surface and each coating surface prior to the application of the subsequent coat.</td>
</tr>
<tr>
<td>S 26.14</td>
<td>Ensure that the clean steel profile and paint thickness are recorded in diaries.</td>
</tr>
<tr>
<td>S 26.15</td>
<td>Check condition of galvanized components during installation. Ensure repairs as specified in the contract.</td>
</tr>
<tr>
<td>S 26.16 M</td>
<td>Ensure that the consultant or sub-consultant inspecting the structural steel coating holds the appropriate certifications.</td>
</tr>
</tbody>
</table>
## Traffic – Task T 1

### Underground Ducts and Bases

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T 1.1 M</strong></td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>T 1.2</td>
<td>Check that excavation for the duct or duct banks conforms to the specified dimensions.</td>
</tr>
<tr>
<td>T 1.3</td>
<td>Check that wobble joints are installed as specified in the contract.</td>
</tr>
<tr>
<td>T 1.4</td>
<td>Check that the correct size and number of ducts are being installed.</td>
</tr>
<tr>
<td><strong>T 1.5 M</strong></td>
<td>Check that backfill materials are as specified in the contract and is compacted as required.</td>
</tr>
<tr>
<td>T 1.6</td>
<td>Where Electrical Non-Metallic Tubing (EMT) is used, check that it has been installed in accordance with the contract documents.</td>
</tr>
<tr>
<td>T 1.7</td>
<td>Check that marker tape and cable bricks have been installed as specified in the contract.</td>
</tr>
<tr>
<td>T 1.8</td>
<td>Check that all unused ducts have fish wire installed, and are plugged.</td>
</tr>
<tr>
<td><strong>T 1.9 M</strong></td>
<td>Check that ducts for underpass luminaries consist of non-metallic liquid tight conduit and connectors.</td>
</tr>
</tbody>
</table>
## Traffic – Task T 2

### Electrical Chambers

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>T 2.1 M</strong></td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>T 2.2</td>
<td>Check type, alignment, offsets and grade of maintenance holes and hand holes.</td>
</tr>
<tr>
<td>T 2.3</td>
<td>Check that the correct number of sleeves and openings are installed. Ensure correct positioning and installation of ladder rungs, pulling irons, duct sleeves, drainage pipe and frames and covers.</td>
</tr>
<tr>
<td>T 2.4</td>
<td>Check that drainage installation has been completed as specified in the contract.</td>
</tr>
<tr>
<td><strong>T 2.5 M</strong></td>
<td>Check that backfill materials are as specified in the contract and are compacted as required.</td>
</tr>
<tr>
<td>T 2.6</td>
<td>Check that rigid and flexible ducts entering maintenance holes are installed with standard end bells places flush with the face of the inside wall of the unit.</td>
</tr>
<tr>
<td><strong>T 2.7 M</strong></td>
<td>Check that frames and covers of electrical chambers are connected to the system ground or are intrinsically safe as per contract requirements.</td>
</tr>
</tbody>
</table>
## Traffic – Task T 3

### Electrical Chambers

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>T 3.1 M</td>
<td>Check all the delivered material to verify that it is being supplied from the approved list of shop drawings.</td>
</tr>
<tr>
<td>T 3.2</td>
<td>Check that the contractor augers that holes to the specified dimensions for footings.</td>
</tr>
<tr>
<td>T 3.3</td>
<td>At locations requiring excavation for bases, check excavation limits and ensure proper backfilling and compaction procedures.</td>
</tr>
<tr>
<td>T 3.4</td>
<td>Visually check all poles for dents, cracks, scratches and any other obvious imperfections.</td>
</tr>
<tr>
<td>T 3.5</td>
<td>Check that the contractor properly stores, erects and supports the poles in accordance with the manufacturer’s recommendations.</td>
</tr>
<tr>
<td>T 3.6</td>
<td>Check that pole orientation is as specified in the contract.</td>
</tr>
<tr>
<td>T 3.7</td>
<td>Check that the orientation and elevation of the frangible base is as specified in the contract.</td>
</tr>
<tr>
<td>T 3.8 M</td>
<td><strong>Check that pole foundations and poles are installed to the correct elevation, station and offset, as specified in the contract.</strong></td>
</tr>
<tr>
<td>T 3.9</td>
<td>Check that the local grading around the pole foundations is completed as specified in the contract.</td>
</tr>
</tbody>
</table>
Watermains – Task WM 1

General Inspection

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 1.1</td>
<td>Check that utility locates and mark-ups and traffic control plans are received.</td>
</tr>
<tr>
<td>WM 1.2</td>
<td>Check that hydrant “Out-of-Service” bags are used when a hydrant is temporarily out of service.</td>
</tr>
<tr>
<td>WM 1.3</td>
<td>Job inspected prior to saw cutting—ideally—to ensure no survey error or apparent conflicts with design.</td>
</tr>
<tr>
<td>WM 1.4</td>
<td>Check condition of road surface outside trench.</td>
</tr>
<tr>
<td>WM 1.5</td>
<td>Pipe class checked and condition of pipe inspected.</td>
</tr>
<tr>
<td>WM 1.6</td>
<td>Valves, fittings, saddles, and so on are checked.</td>
</tr>
<tr>
<td>WM 1.7</td>
<td>Construction proceeding as per standard drawings and specifications.</td>
</tr>
<tr>
<td>WM 1.8</td>
<td>Ground conditions during excavation noted, that is areas of excessive trench collapse, presence of water, undermining of asphalt and so on.</td>
</tr>
<tr>
<td>WM 1.9</td>
<td>Cover to top of pipe checked during construction.</td>
</tr>
<tr>
<td>WM 1.10</td>
<td>Stations of water services and sanitary services recorded.</td>
</tr>
<tr>
<td>WM 1.11</td>
<td>Trench width recorded.</td>
</tr>
<tr>
<td>WM 1.12</td>
<td>Type of shoring used noted.</td>
</tr>
<tr>
<td>WM 1.13</td>
<td>Site checked daily to ensure safety and ensure proper traffic control in place.</td>
</tr>
<tr>
<td>WM 1.14</td>
<td>Pictures taken of key tasks, unusual circumstances, extra work, typical anode and bend, tee, connection placements, changed conditions new operations, shoring, traffic control, and so forth.</td>
</tr>
<tr>
<td>WM 1.15</td>
<td>Deficiency inspection to be completed immediately as the work progresses and maintained on a running basis to be provided to the contract administrator and the contractor at least monthly and upon completion of construction.</td>
</tr>
<tr>
<td>WM 1.16</td>
<td>On a daily basis ensure that all material storage is done as per the contract requirements.</td>
</tr>
</tbody>
</table>
## Watermains – Task WM 2

**Watermain Installation**

<table>
<thead>
<tr>
<th>Task #</th>
<th>✓</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 2.1 M</td>
<td></td>
<td>Check all the delivered material to verify that it is being supplied from the approved list.</td>
</tr>
<tr>
<td>WM 2.2</td>
<td></td>
<td>Ensure that pipe, fittings and other appurtenances are free of defects and are handled and stored as per requirements of contract.</td>
</tr>
<tr>
<td>WM 2.3</td>
<td></td>
<td>Review location requirements for placement of nozzles with contractor for hydrostatic testing, leakage testing and disinfection.</td>
</tr>
<tr>
<td>WM 2.4 M</td>
<td></td>
<td>Check that the alignment and grade are properly set.</td>
</tr>
<tr>
<td>WM 2.5</td>
<td></td>
<td>Ensure that all pipe fittings and other appurtenances are kept clean and free of debris, and pipes are provided with caps.</td>
</tr>
<tr>
<td>WM 2.6</td>
<td></td>
<td>Check that excavations are free of water at all times.</td>
</tr>
<tr>
<td>WM 2.7</td>
<td></td>
<td>Record soil conditions if varies from geotechnical report.</td>
</tr>
<tr>
<td>WM 2.8 M</td>
<td></td>
<td>Check that trench designed depths and widths are adhered to.</td>
</tr>
<tr>
<td>WM 2.9</td>
<td></td>
<td>Check that specified bedding is used and placed as per contract documents.</td>
</tr>
<tr>
<td>WM 2.10</td>
<td></td>
<td>Check that watermain and/or where installation is used for shallow/buried bridge is placed to depth as specified in the contract.</td>
</tr>
<tr>
<td>WM 2.11</td>
<td></td>
<td>Check all pipes to ensure correct type, class and size.</td>
</tr>
<tr>
<td>WM 2.12</td>
<td></td>
<td>Ensure that a watertight nightcap is provided at the end of each day and during any lengthy work stoppages.</td>
</tr>
<tr>
<td>WM 2.13</td>
<td></td>
<td>Check that all pipe ends are lubricated with material recommended by the pipe manufacturer prior to installation.</td>
</tr>
<tr>
<td>WM 2.14</td>
<td></td>
<td>Check that fabricated bends are used when changes in line or grade are required.</td>
</tr>
<tr>
<td>WM 2.15</td>
<td></td>
<td>Check that any connections, caps and bends are provided with thrust blocks or restraining rings as per the requirements of the contract.</td>
</tr>
<tr>
<td>WM 2.16</td>
<td></td>
<td>Check that trench backfill materials are as specified in the contract and required compaction is obtained.</td>
</tr>
<tr>
<td>WM 2.17</td>
<td></td>
<td>Check that backfill is brought up evenly on both sides of the pipe at the same time.</td>
</tr>
<tr>
<td>WM 2.18</td>
<td></td>
<td>Check that oversize particles are removed.</td>
</tr>
</tbody>
</table>
## Watermains – Task WM 2

### Watermain Installation (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 2.19</td>
<td>Check that appropriate equipment is used for compaction until the specified depth in the contract documents of cover over the pipe is achieved.</td>
</tr>
<tr>
<td>WM 2.20 M</td>
<td>Check that hydrostatic and disinfection testing is completed and results are satisfactory before watermain is put back into service.</td>
</tr>
<tr>
<td>WM 2.21</td>
<td>Ensure that top of pipe elevations are obtained and recorded.</td>
</tr>
<tr>
<td>WM 2.22 M</td>
<td>Check that locations of bends, ties, connections and so on are recorded.</td>
</tr>
<tr>
<td>WM 2.23</td>
<td>Ensure that the length of restrained pipe, on each side of the point of force, is as per contract.</td>
</tr>
<tr>
<td>WM 2.24</td>
<td>If applicable, check that the pipe installation sequence is as per the approved shop drawings.</td>
</tr>
<tr>
<td>WM 2.25</td>
<td>Ensure that the bituminous lined diaper and grout are installed on all joints of concrete watermain pipe as per contract.</td>
</tr>
<tr>
<td>WM 2.26</td>
<td>Ensure that anodes are installed on metallic pipe and appurtenances per the requirements of the contract and record size and location.</td>
</tr>
<tr>
<td>WM 2.27</td>
<td>Ensure that test stations are installed on all metallic watermain installations per contract.</td>
</tr>
<tr>
<td>WM 2.28 M</td>
<td>Ensure that tracing wire is properly installed and tested for conductivity, continuity and traceability for non-metallic pipe.</td>
</tr>
<tr>
<td>WM 2.29</td>
<td>Document the work done in a manner similar to sanitary and storm sewer construction.</td>
</tr>
</tbody>
</table>
## Water Valves Installation

### Task WM 3

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 3.1</td>
<td>Check that all valves are supplied as specified from the approved list.</td>
</tr>
<tr>
<td>WM 3.2</td>
<td>Check that the bedding for valves is in accordance with pipe bedding specifications, unless otherwise specified.</td>
</tr>
<tr>
<td>WM 3.3</td>
<td>Ensure that damages to the factory applied protective coatings are corrected accordingly.</td>
</tr>
<tr>
<td>WM 3.4</td>
<td>Ensure that concrete supports are provided for valves when required.</td>
</tr>
</tbody>
</table>
| **WM 3.5 M** | **Ensure that the direction of operation on all valves is clockwise, as specified (right hand opening) for transmission mains.**  
For distribution watermains direction to open valves is: **Open Clockwise**  
In districts Etobicoke/York (former City of York, east of the Humber River), North York, Toronto/East York all valves supplied to these areas of the City will open by operating in a clockwise direction and the operating nut supplied will be painted in red. **Open Counter Clockwise**  
In districts Etobicoke/York (former City of Etobicoke, west of the Humber River), and Scarborough all valves supplied to these areas of the City will open by operating in a counter clockwise direction and the operating nut supplied will be painted in black. |
| WM 3.6  | Ensure that specified large valves have a hand wheel as well as the operating nut. |
| WM 3.7  | Ensure that all valve boxes are installed plumb with well compacted backfill. |
| WM 3.8  | Ensure that valve chambers are the type and size specified in the contract. |
| WM 3.9  | Ensure that valve chambers with concrete floors have sumps as per the contract. |
| WM 3.10 | Ensure that frames and covers for the valve chambers conform to the contract documents. |
| WM 3.11 | Ensure that valve chamber frames and covers are centered over the valve nut with the cover adjusted to match grade. For large valve chambers with one or more valves, ensure that a sleeve is provided in the roof of the chamber immediately over the operating nut. Ensure that the valve box is installed over the centre of the sleeve. |
## Watermains – Task WM 3

### Water Valves Installation (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 3.12</td>
<td>Ensure that lifting hooks and lifting holes are provided, used and parged on pre-cast valve chamber sections.</td>
</tr>
<tr>
<td>WM 3.13</td>
<td>Ensure that pre-cast valve chamber sections are sealed as per the contract.</td>
</tr>
<tr>
<td>WM 3.14</td>
<td>Ensure that valve restraints are in place before pressure testing is conducted.</td>
</tr>
<tr>
<td>WM 3.15</td>
<td>Valve tied down before pressure testing. Make sure tracer wire is brought up to chamber.</td>
</tr>
</tbody>
</table>
## Watermains – Task WM 4

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 4.1 M</td>
<td>Check all hydrants to verify that they are supplied from the approved list.</td>
</tr>
<tr>
<td>WM 4.2</td>
<td>Check that the bedding for the hydrants is in accordance with the contract documents.</td>
</tr>
<tr>
<td>WM 4.3 M</td>
<td>Check that hydrants are placed to the depth and location specified in the contract.</td>
</tr>
<tr>
<td>WM 4.4</td>
<td>Check that hydrants are plumb. Ensure that the larger outlet nozzle is facing the roadway.</td>
</tr>
<tr>
<td>WM 4.5 M</td>
<td>Check that the breakaway flange and coupling are at the proper elevation above the finished grade and that extensions are installed properly.</td>
</tr>
<tr>
<td>WM 4.6</td>
<td>Check that the restraining rings and the concrete thrust block are installed at the boot of the hydrant.</td>
</tr>
<tr>
<td>WM 4.7</td>
<td>Check that the restraining rings and concrete block is installed under the isolating valve and that the valve box over the valve is plumb and does not rest on the valve, but on the concrete block.</td>
</tr>
<tr>
<td>WM 4.8</td>
<td>Check that the operating nut on the hydrant opens counter clockwise.</td>
</tr>
<tr>
<td>WM 4.9 M</td>
<td>Check that the upper barrel of the hydrant has a factory coat of yellow paint for City hydrants, and red for private hydrants.</td>
</tr>
<tr>
<td>WM 4.10</td>
<td>Check that anodes for cathodic protection and tracing wire are installed as per the contract.</td>
</tr>
</tbody>
</table>
## Watermain – Task WM 5

### Water Service Installation

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 5.1 M</td>
<td>Check all delivered material to verify that it is being supplied as specified from the approved list.</td>
</tr>
<tr>
<td>WM 5.2 M</td>
<td>Check all pipes for correct type, size and class.</td>
</tr>
<tr>
<td>WM 5.3</td>
<td>Check that specified bedding is used and places as per contract.</td>
</tr>
<tr>
<td>WM 5.4</td>
<td>Check that the depth of cover on all services is per the contract.</td>
</tr>
<tr>
<td>WM 5.5</td>
<td>Ensure that saddles are sized to provide even support around the full circumference of the pipe. Ensure that the recommended torque is applied.</td>
</tr>
<tr>
<td>WM 5.6</td>
<td>Check that all service connections are installed as per contract requirements.</td>
</tr>
<tr>
<td>WM 5.7</td>
<td>Check that a horizontal gooseneck is provided on specified services and is placed on the tightening side of the corporation stop.</td>
</tr>
<tr>
<td>WM 5.8</td>
<td>Check that the appropriate cutting tool and tapping machine are utilized. Check coupons for cutter performance.</td>
</tr>
<tr>
<td>WM 5.9</td>
<td>Check that curb stops are provided on all specified services at or near the property line.</td>
</tr>
<tr>
<td>WM 5.10</td>
<td>Check that curb boxes and rods are installed plumb over the curb stops.</td>
</tr>
<tr>
<td>WM 5.11</td>
<td>Ensure that curb stop is properly supported.</td>
</tr>
<tr>
<td>WM 5.12</td>
<td>Ensure proper staggering between multiple services.</td>
</tr>
<tr>
<td>WM 5.13</td>
<td>Ensure that tracing wire is installed when required.</td>
</tr>
<tr>
<td>WM 5.14</td>
<td>Record swing ties to establish features at property line and complete water service card.</td>
</tr>
<tr>
<td>WM 5.15</td>
<td>Ensure water service card is completed.</td>
</tr>
<tr>
<td>WM 5.16</td>
<td>Ensure water service is disinfected if diameter is 100 millimetres or greater and results recorded in the inspectors daily report.</td>
</tr>
<tr>
<td>WM 5.17</td>
<td>Ensure that wet tap is cleaned with disinfectant to minimize contamination.</td>
</tr>
</tbody>
</table>
## Watermains – Task WM 6

### Installation of By-pass Services

<table>
<thead>
<tr>
<th>Task #</th>
<th>✔️</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 6.1</td>
<td></td>
<td>Arrange a meeting with the contractor and City forces to coordinate the installation of by-pass services.</td>
</tr>
<tr>
<td>WM 6.2</td>
<td></td>
<td>Ensure that the by-pass hoses are installed and protected according to the contract.</td>
</tr>
<tr>
<td>WM 6.3</td>
<td></td>
<td>Provide daily monitoring of the temporary service installations and notify contractor of damages or leaks.</td>
</tr>
</tbody>
</table>
Hydrostatic Testing

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 7.1 M</td>
<td>Maintain presence on site for the duration of the test.</td>
</tr>
<tr>
<td>WM 7.2 M</td>
<td>The watermain section to be tested shall be isolated by the contractor with the proper backflow prevention devices.</td>
</tr>
<tr>
<td>WM 7.3</td>
<td>Ensure adequate cover is provided over the watermain prior to testing.</td>
</tr>
<tr>
<td>WM 7.4</td>
<td>The watermain shall be filled by the contractor and flushed to remove any debris.</td>
</tr>
<tr>
<td>WM 7.5</td>
<td>Once the watermain has been properly flushed, check that the contractor increases the pressure to the testing level and air is expelled through hydrants and high points.</td>
</tr>
<tr>
<td>WM 7.6</td>
<td>Record the segment length and ensure that the testing pressure is maintained for the time, and within the specified pressure loss.</td>
</tr>
<tr>
<td>WM 7.7</td>
<td>Ensure that a leakage test is conducted during the first hour of the hydrostatic test, and that the volume of make-up water is within the tolerances specified in the contract.</td>
</tr>
</tbody>
</table>
## Chlorination and Disinfection Testing

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 8.1</td>
<td>Once the watermain has been successfully tested for leakage, coordinate chlorination/disinfection test with the contractor.</td>
</tr>
<tr>
<td>WM 8.2</td>
<td>Ensure that the chlorination/disinfection plan has been prepared and submitted by the contractor and approved by the contract administrator. Inspector to receive a copy.</td>
</tr>
<tr>
<td>WM 8.3 M</td>
<td>Ensure that no compressed air testing is permitted.</td>
</tr>
<tr>
<td>WM 8.4 M</td>
<td>Ensure only Toronto Water operates the live system and not the contractor.</td>
</tr>
<tr>
<td>WM 8.5 M</td>
<td>Ensure that disinfection tests are successfully performed by the contractor.</td>
</tr>
<tr>
<td>WM 8.6</td>
<td>Ensure that the contractor provides proper access to nozzles for disinfection.</td>
</tr>
<tr>
<td>WM 8.7 M</td>
<td>Record disinfection test information in daily report.</td>
</tr>
</tbody>
</table>
## Watermains – Task WM 9

### Connections to Existing Watermains

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 9.1 M</td>
<td>Ensure that the contractor does not operate in-service valves and hydrants.</td>
</tr>
<tr>
<td>WM 9.2</td>
<td>Ensure that the contractor undertakes the proper swabbing to disinfect short filler lengths of pipe when making connections.</td>
</tr>
</tbody>
</table>
## Watermains – Task WM 10

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM 10.1</td>
<td>Ensure that the contractor has a hydrant permit to take water for capital works projects such as for by-passes.</td>
</tr>
</tbody>
</table>
### Trenchless Rehabilitation – Task TRH 1

**Full Length Cured-in-Place Pipe (CIPP)**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRH 1.1</td>
<td>Check all delivered material is supplied as specified.</td>
</tr>
<tr>
<td>TRH 1.2</td>
<td>Ensure pre-cleaning, post-cleaning, and post-lining CCTV inspection are conducted as specified.</td>
</tr>
<tr>
<td>TRH 1.3 M</td>
<td>Check liner material such as felt type, size and thickness are as specified.</td>
</tr>
<tr>
<td>TRH 1.4</td>
<td>Check resin and catalyst are as specified.</td>
</tr>
<tr>
<td>TRH 1.5</td>
<td>Check liner is free of debris such as cuts and tears.</td>
</tr>
<tr>
<td>TRH 1.6</td>
<td>Confirm specialized application equipment and processes are implemented as required.</td>
</tr>
<tr>
<td>TRH 1.7</td>
<td>Ensure wet out forms are completed by contractor.</td>
</tr>
<tr>
<td>TRH 1.8</td>
<td>Ensure inversion forms are completed by contractor.</td>
</tr>
<tr>
<td>TRH 1.9</td>
<td>Ensure installation is conducted as specified in contract documents.</td>
</tr>
<tr>
<td>TRH 1.10</td>
<td>Ensure curing forms are completed by contractor.</td>
</tr>
<tr>
<td>TRH 1.11</td>
<td>Ensure cooling down steps is observed.</td>
</tr>
<tr>
<td>TRH 1.12</td>
<td>Check lateral reinstatements are conducted.</td>
</tr>
<tr>
<td>TRH 1.13</td>
<td>Ensure lateral statement forms are completed by contractor.</td>
</tr>
<tr>
<td>TRH 1.14 M</td>
<td>Ensure liner testing for physical and chemical properties is conducted.</td>
</tr>
<tr>
<td>TRH 1.15</td>
<td>Check damaged areas and defects are repaired.</td>
</tr>
<tr>
<td>TRH 1.16</td>
<td>Check liner sealing and finishing to face of maintenance holes is as specified.</td>
</tr>
<tr>
<td>TRH 1.17</td>
<td>Confirm active infiltration is stopped before lining begins.</td>
</tr>
<tr>
<td>TRH 1.18 M</td>
<td>Ensure post inspection of any defects in the liner if required.</td>
</tr>
<tr>
<td>TRH 1.19</td>
<td>Check liner is free of defects such as cuts and tears before installation.</td>
</tr>
<tr>
<td>TRH 1.20</td>
<td>Monitor by pass, as specified.</td>
</tr>
<tr>
<td>TRH 1.21</td>
<td>Ensure public is notified in advance.</td>
</tr>
</tbody>
</table>
### Trenchless Replacement – Task TRP 1

#### Horizontal Directional Drilling (HDD)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRP 1.1 M</td>
<td>Check all delivered material is supplied.</td>
</tr>
<tr>
<td>TRP 1.2 M</td>
<td>Check pipe material, size and class.</td>
</tr>
<tr>
<td>TRP 1.3</td>
<td>Confirm rig classification and capabilities.</td>
</tr>
<tr>
<td>TRP 1.4 M</td>
<td>Check all plans, sub-surface investigation and utility surveys, geotechnical reports and design calculations.</td>
</tr>
<tr>
<td>TRP 1.5</td>
<td>Ensure butt fusion and testing of pipe segments is conducted.</td>
</tr>
<tr>
<td>TRP 1.6</td>
<td>Ensure bore tracking equipment, walkover tracking systems, and non-walkover tracking systems are utilized.</td>
</tr>
<tr>
<td>TRP 1.7</td>
<td>Check drilling fluids and additives, delivery, recovery, containment systems, and storage.</td>
</tr>
<tr>
<td>TRP 1.8 M</td>
<td>Check alignment and grade.</td>
</tr>
<tr>
<td>TRP 1.9</td>
<td>Confirm preparatory work for drilling pilot holes, reaming pilot holes, pulling to cleaning pipe ends, and handling and disposal of drilling mud and cuttings.</td>
</tr>
<tr>
<td>TRP 1.10</td>
<td>Check post inspection of pipe for any defects.</td>
</tr>
<tr>
<td>TRP 1.11 M</td>
<td>Ensure testing and acceptance.</td>
</tr>
<tr>
<td>TRP 1.12 M</td>
<td>Ensure all applicable forms and as-constructed drawings are provided by contractor to the City.</td>
</tr>
<tr>
<td>Task #</td>
<td>Activity</td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>UT 1.1</td>
<td>Check that a project information sign is placed at each end of the project. The sign should be visible to passing vehicular and pedestrian traffic, including the name of the utility company, the name of the contractor —where applicable—and a contact number.</td>
</tr>
<tr>
<td>UT 1.2</td>
<td>Ensure that pedestrian and vehicular access is being maintained in an efficient manner, unless restrictions have been approved by the Transportation Services division or the affected resident(s) or both.</td>
</tr>
<tr>
<td>UT 1.3</td>
<td>Check site for general cleanliness and housekeeping.</td>
</tr>
<tr>
<td>UT 1.4</td>
<td>Check that a copy of the permit is on-site. The expiry date on the permit should be checked to ensure that it is still valid and that the work is being carried out in the location noted on the permit.</td>
</tr>
<tr>
<td>UT 1.5</td>
<td>Check that a copy of the drawing is on-site, where applicable.</td>
</tr>
<tr>
<td>UT 1.6</td>
<td>Ensure that utility infrastructure is being installed in the correct alignment. The alignment should be as indicated on the drawing or sketch on the permit.</td>
</tr>
<tr>
<td>UT 1.7</td>
<td>Check that traffic control is in place and that traffic control plan is available on site.</td>
</tr>
<tr>
<td>UT 1.8</td>
<td>Check that pay-duty police are on-site, where applicable.</td>
</tr>
<tr>
<td>UT 1.9</td>
<td>Check that any adjacent utility or structure is not affected or undermined by the excavation.</td>
</tr>
<tr>
<td>UT 1.10</td>
<td>Ensure that utility infrastructure is being installed at the correct depth. The depth should be as indicated on the drawing or sketch on the permit. The inspector should measure the depth and note that depth of cover is as per the permit on the Utility Construction Site Visit Report. (see Appendix A, Forms).</td>
</tr>
<tr>
<td>UT 1.11</td>
<td>Ensure that the work is being carried out in conformance with the conditions and work restrictions listed on the front or back of the permit.</td>
</tr>
<tr>
<td>UT 1.12</td>
<td>Check that any restoration being performed by the utility company meets City’s standards.</td>
</tr>
<tr>
<td>UT 1.13</td>
<td>Ensure that any photographs that are taken are noted on the Utility Construction Site Visit Report.</td>
</tr>
<tr>
<td>UT 1.14</td>
<td>Complete the Utility Construction Site Visit Report and ensure that all major conditions noted on the permit are addressed on the report and inspections conducted according to the development and third party / utility inspection duration table.</td>
</tr>
</tbody>
</table>
**Third Party and Development – Task TPD 1**

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Guidelines</strong></td>
<td>Inspector to ensure all permit and any other requirements under agreement are followed and that all standards and specifications are adhered to by the proponent or permit holder and they ensure compliance by their contractors. The inspector is to assist with coordination issues, interpretation of permit and specification requirement but to refer any questions regarding discrepancies in these documents to the case manager for final resolution. All new operations are to be reviewed and discussed prior to the work commencing with the proponent or their consultant. In addition, these operations are to be observed at an early stage and with comments on any concerns regarding non-compliance to permits provided in writing and in a timely fashion to mitigate deficiencies and rework. The case manager is to be copied on unresolved issues of non-compliance and must approve all field changes. The inspector is to be proactive, and not accept responsibility of the proponent, consultant or contractor. They are to minimize direct discussions with contractor. Document performance problems and relay information to case manager. Use inspection task lists in the <em>Field Services Manual</em> (see Appendix B, <em>Inspection Tasks</em>), especially milestone tasks, as a guideline when performing inspections.</td>
</tr>
</tbody>
</table>
| **TPD 1.1** | *Pre-construction and progress meetings*  
It is the responsibility of the proponent to notify the City's inspector to attend the meeting for issues that are related to the City's infrastructure. The inspector is responsible for informing the case manager about any site issues that will be discussed at the site meeting which may require the case manager's direct attendance. If the permit mentions that the specifications and the *Field Services Manual* are to be followed, the inspector is to follow-up to ensure the proponent and their consultant has a copy. Ensure that any submittal requirements and other important issues are reviewed at meetings. |
### Third Party and Development – Task TPD 1

#### General Inspection (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPD 1.2</td>
<td><strong>Field changes</strong></td>
</tr>
<tr>
<td></td>
<td>Field changes due to any conflict on site are to be proposed by the</td>
</tr>
<tr>
<td></td>
<td>proponent's consultant, and not the contractor. Contractors should be</td>
</tr>
<tr>
<td></td>
<td>directed to contact the proponent and their consultants, and the not the</td>
</tr>
<tr>
<td></td>
<td>City's site inspector and the case manager. However, the inspector is to</td>
</tr>
<tr>
<td></td>
<td>investigate and report to the case manager on the validity of the</td>
</tr>
<tr>
<td></td>
<td>proposed change.</td>
</tr>
<tr>
<td>TPD 1.3</td>
<td><strong>Installation of sewers and watermains</strong></td>
</tr>
<tr>
<td></td>
<td>Spot check for routine installation. Check that proponent or their</td>
</tr>
<tr>
<td></td>
<td>consultant or both, are providing inspection, survey layout, material</td>
</tr>
<tr>
<td></td>
<td>testing and documentation in accordance with the terms of the permit,</td>
</tr>
<tr>
<td></td>
<td>specifications and any agreements.</td>
</tr>
<tr>
<td></td>
<td>Sewers; inspection is required of the bedding of pressure pipes and</td>
</tr>
<tr>
<td></td>
<td>sewers with water tight joints to ensure compliance with MOECC</td>
</tr>
<tr>
<td></td>
<td>Procedure F-6-1 *Procedures to Govern the Separation of Sewers and</td>
</tr>
<tr>
<td></td>
<td>Watermains*. Inspection also required to ensure backfilling is completed</td>
</tr>
<tr>
<td></td>
<td>according to the specifications and agreement.</td>
</tr>
<tr>
<td></td>
<td>Refer to and spot check other milestone inspection tasks in the *Field</td>
</tr>
<tr>
<td></td>
<td>Services Manual* (see Appendix B, Inspection Tasks) pertaining to</td>
</tr>
<tr>
<td></td>
<td>watermains and sewers.</td>
</tr>
<tr>
<td>TPD 1.4</td>
<td><strong>Connection of new mains to existing mains</strong></td>
</tr>
<tr>
<td></td>
<td>Near the end of the operation or before backfilling, ensure full-time</td>
</tr>
<tr>
<td></td>
<td>attendance by the consultant and as-built information is recorded and</td>
</tr>
<tr>
<td></td>
<td>submitted. Discuss connection work prior to the work being done with</td>
</tr>
<tr>
<td></td>
<td>all parties involved. Ensure a photograph is taken and submitted of all</td>
</tr>
<tr>
<td></td>
<td>connections.</td>
</tr>
<tr>
<td>TPD 1.5</td>
<td><strong>Disinfection of watermain</strong></td>
</tr>
<tr>
<td></td>
<td>Ensure proper documentation is completed and submitted, attendance by</td>
</tr>
<tr>
<td></td>
<td>proponent or their consultant prior to work commencing, and that they</td>
</tr>
<tr>
<td></td>
<td>are on site to ensure compliance with the disinfection procedure and</td>
</tr>
<tr>
<td></td>
<td>chain of custody for sampling. Assist and provide guidance to proponent</td>
</tr>
<tr>
<td></td>
<td>to help ensure that the procedure is followed correctly.</td>
</tr>
<tr>
<td></td>
<td>Coordinate valve turn-on and turn-off. Report any unresolved problems</td>
</tr>
<tr>
<td></td>
<td>to case manager.</td>
</tr>
</tbody>
</table>
## Third Party and Development – Task TPD 1

### General Inspection (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPD 1.5</td>
<td><strong>Note:</strong> Toronto Water has requested Third Party Utility Review to be responsible to review and accept the forms prior to submission to Toronto Water. This has been added as a section to the General Information document in regards to Third Party Utility Review role in the Ministry of Environment and Climate Change (MOECC) watermain disinfection procedure under Section &quot;6.5.2- Procedure for Disinfecting Watermains&quot;.</td>
</tr>
<tr>
<td>TPD 1.6</td>
<td>Spot check construction of above-ground works such as roads, curbs, sidewalks, hard boulevard works, tree pits, pavers, and any other streetscape features and construction of soft boulevard works such as street tree planting, sodding, and so forth for compliance with specifications, permits and agreements.                                                                                     Spot check formwork and other preparation work to ensure survey layout used. Check high, low points and cross fall for compliance with specifications and approved plans.                                                                                     Review testing requirements and areas of past problems or concerns with proponent and consultant prior to work commencing. Follow up with spot checks after observing and confirming compliance as early as possible in the operation.                                                                                     Ensure that proponent or their consultant has checked the pedestrian crossings ramps slopes to prior to pouring of concrete to ensure that they meet the City’s standards and ensuring that sidewalk identification stamps and raised tactile plates are placed at ramps at all pedestrian crossings to meet the new Ontario Regulation 191/11 <em>Integrated Accessibility Standards</em>. Refer to Appendix B, <em>Inspection Tasks</em> of the <em>Field Services Manual</em> and spot check on any other milestone tasks with regards to road, curb and sidewalk construction, and so forth.</td>
</tr>
<tr>
<td>TPD 1.7</td>
<td><em>Connection of new roads to existing roads</em></td>
</tr>
<tr>
<td></td>
<td>Spot check during construction and review with proponent prior to final paving so that any deficiencies may be corrected prior to completion of the final paving.</td>
</tr>
</tbody>
</table>
### Third Party and Development – Task TPD 1

#### General Inspection (continued)

<table>
<thead>
<tr>
<th>Task #</th>
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</tr>
</thead>
</table>
| TPD 1.8 | Acceptance and assumption inspections  
Duration of inspection with proponent, permit holder, consultant, case manager, Transporation Services and Toronto Water representatives as required. |
| TPD 1.9 | Emergencies—breaks, spills, damage to City infrastructure, and so forth.  
Ensure consultant is notified and has a representative on site to document and photograph emergencies. Operating divisions and utility companies are to be notified along with notifying the case manager.  
Once they are on site, they are to stay until relieved by representatives from the affected operating division with permission from their supervisor. |
| TPD 1.10 | Ensure that any photographs taken, verbal discussions held and e-mail messages sent are noted on the Utility Construction Site Visit Report. |
## TTC Projects – Task TTC 1

### Track Allowance

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTC 1.1</td>
<td>Ensure notifications have been distributed and perimeter information signs have been placed as required</td>
</tr>
<tr>
<td>TTC 1.2</td>
<td>Review specifications and all contract documents and confirm that survey layout has been completed</td>
</tr>
<tr>
<td>TTC 1.3 M</td>
<td><strong>Inspector, Contract Administrator along with representatives from TTC are to walk site before and immediately after closure is in place to review limits of work and mark out with contractor and TTC representatives as required, such as civil, electrical items and other items. Mark out limits where changes to thickness and elevations of concrete is required due to use of wooden ties for special work. Document results.</strong></td>
</tr>
<tr>
<td>TTC 1.4 M</td>
<td>Ensure traffic control is as per contract and approved traffic control plans and document in daily reports and photograph all the closure points and approaches to show signage placed. Ensure pedestrian barricades have been set up around perimeter as per contract documents.</td>
</tr>
<tr>
<td>TTC 1.5</td>
<td>Ensure contractor has signed off with TTC that overhead power lines have been de-energized and limits known prior to work commencing. Copies of sign off form to be placed in site office.</td>
</tr>
<tr>
<td>TTC 1.6 M</td>
<td>Ensure and document that all utility stake outs are complete, up to date and written copies provided prior to excavation commencing.</td>
</tr>
<tr>
<td>TTC 1.7 M</td>
<td>Check and document depth of excavation and type of material encountered.</td>
</tr>
<tr>
<td>TTC 1.8 M</td>
<td>Ensure and document that contractor is undertaking vibration monitoring during TTC track removal as per contract documents.</td>
</tr>
<tr>
<td>TTC 1.9</td>
<td>Check formwork is installed as per plans and specifications prior to concrete being placed especially the formwork for the margins.</td>
</tr>
<tr>
<td>TTC 1.10 M</td>
<td>Ensure all conduits and drains pipes are installed prior to placement of each lift of concrete being placed and document locations and quantities for as-constructed drawings.</td>
</tr>
<tr>
<td>TTC 1.11</td>
<td>Refer to task manual for work items involving excavation and placement of granular and concrete.</td>
</tr>
<tr>
<td>TTC 1.12</td>
<td>Ensure that the vibrating screed with correct profile and hand vibrators are used when placing concrete.</td>
</tr>
</tbody>
</table>
## TTC Projects – Task TTC 1

### Track Allowance (continued)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTC 1.13</td>
<td>Check template used for rail groove in concrete TTC track allowance meets specifications.</td>
</tr>
<tr>
<td>TTC 1.14</td>
<td>Check and ensure finished profile of surface concrete between rails meets specifications.</td>
</tr>
<tr>
<td>TTC 1.15</td>
<td>Ensure joints are placed in concrete and that bond breaker and curing compound is placed as per specifications.</td>
</tr>
<tr>
<td>TTC 1.16 M</td>
<td>Compare the actual concrete used with the theoretical concrete required, document and adjust payment as per contract and specifications.</td>
</tr>
<tr>
<td>TTC 1.17 M</td>
<td>Observe, document and ensure compliance with contract documents all material testing performed on site.</td>
</tr>
<tr>
<td>TTC 1.18 M</td>
<td>Check to ensure that approved concrete mix design is used including fibre reinforced concrete.</td>
</tr>
</tbody>
</table>
### Appendix C - Materials Testing Protocol

<table>
<thead>
<tr>
<th>Material</th>
<th>On-site Visual Inspection and Other Actions by Inspector</th>
<th>Frequency of Visual Inspection</th>
<th>field QA Test and Other Actions</th>
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<th>Laboratory QA Test and Other Actions</th>
<th>Min. Laboratory Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inspector's Administration and Material Inspection Duties on Site:</td>
<td>1</td>
<td>QA Consultant's Testing and Reporting Duties on Site, (or as mentioned in QA Consultant's Contract Documents):</td>
<td>1</td>
<td>QA Consultant's Administration, Testing and Reporting Duties, (or as mentioned in QA Consultant's Contract Documents):</td>
<td>1</td>
</tr>
</tbody>
</table>

#### General Administration and Material Management Duties for Inspector, QA Consultants and Project Engineers/Managers

- Visually inspect the quality of materials delivered to site and check the quality of work in preparing the materials
- Order field testing from QA consultant according to the minimum material testing frequencies or as required
- Collect concrete, HM asphalt, aggregates and other materials delivery tickets from truck drivers and record where the materials are placed
- Document field observations, visual inspection findings and record field test results in Inspector's Daily Field Report or other field records
- Inform the general contractor if the materials delivered to site have failed to meet contract specification and request the general contractor and material suppliers to rectify the problems
- Recommend rejecting the material, including the entire truck load of the material, with no payment to the rejected material to the general contractor if field test results show the materials have failed to meet specification
- Recommend payment adjustment to Project Engineer/Manager if deficiencies on volume, weight and thickness occurred

#### QA Consultant's Administration, Testing and Reporting Duties, (or as mentioned in QA Consultant's Contract Documents):

- Report attendance to Inspector upon arrival on site
- Perform field tests and prepare samples as directed by inspector
- Based on the field test results, advise Inspector if the concrete, HM asphalt, aggregates and other materials meet contract specification or not
- Submit preliminary field test results on site in writing to inspector immediately after testing
- Submit final field test results to Project Engineer/Manager in writing within 7 working days of each field test
- When applicable, QA consultant compile all field and laboratory test results of all the materials tested in the contract, arrange them according to construction locations (station numbers) and prepare a QA report summarizing the quality of all materials used, the in-situ densities and core thicknesses achieved in the contract

#### City's QA consultant and City Project Engineer/Manager request changes to concrete and HM asphalt mix designs and aggregate production to meet contract requirement from material suppliers if necessary

- QA consultant review contractor's Form A or Form B concrete mix designs for all concrete types specified in contract with City Project Engineer/Manager
- QA consultant review contractor's HM asphalt mix designs for all HM asphalt types specified in contract with City Project Engineer/Manager
- QA consultant review contractor's aggregate (crushed limestone and recycled concrete) QC data with Project Engineer/Manager to check if the QC data meet with specification

#### City's QA consultant and City Project Engineer/Manager request changes to concrete and HM asphalt mix designs and aggregate production to meet contract requirement from material suppliers if necessary

- Submit all laboratory test results in writing to Project Engineer/Manager within 7 working days of each laboratory test

#### Inspector's Administration and Material Inspection Duties on Site:

- Recommend rejecting the material, including the entire truck load of the material, with no payment to the rejected material to the general contractor if field test results show the materials have failed to meet specification
- Recommend payment adjustment to Project Engineer/Manager if deficiencies on volume, weight and thickness occurred
- If the failed materials have been placed before remedial actions can take effect, identify and document where the failed materials were placed
- Instruct the general contractor to remove the areas where defective materials were placed
<table>
<thead>
<tr>
<th>Material</th>
<th>On-site Visual Inspection and Other Actions by Inspector</th>
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<th>Min. Laboratory Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Record observation and report in writing to Project Engineer/Manager on whether corrective actions to defective materials had taken place or not</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Appendix C - Materials Testing Protocol

<table>
<thead>
<tr>
<th>Material</th>
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<th>Min. Field Testing Frequency</th>
<th>Laboratory QA Test and Other Actions</th>
<th>Min. Laboratory Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project Engineer/Manager and Inspector follow up the defective material issues with general contractor and material suppliers</td>
<td>-</td>
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<tr>
<td></td>
<td>Based on the field and laboratory test results, Inspector and Project Engineer/Manager instruct the general contractor to perform corrective actions. Apply price adjustment to defective materials/works according to contract specification where warranted</td>
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<tr>
<td></td>
<td>Monitor the work performed by QA consultants:</td>
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<tr>
<td></td>
<td>* Record attendance of QA consultants (time arrived and time left the site)</td>
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</tr>
<tr>
<td></td>
<td>* Document what work (sampling, testing and inspection) QA consultants have performed on site</td>
<td>-</td>
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<tr>
<td></td>
<td>Make sure QA consultants submit their preliminary field test reports to Inspector after finishing testing</td>
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<tr>
<td></td>
<td>Check if QA consultants are complying with industry standards and specifications in testing and sampling materials</td>
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<td></td>
<td>Reject test results or samples that had failed to meet standards and specifications and order retest and re-sampling if necessary</td>
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<td></td>
<td>Check if QA consultants are certified by CCIL / CSA or other equivalent testing regulating bodies and are knowledgeable in testing and sampling construction materials</td>
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<tr>
<td></td>
<td>Check if QA technicians are careful in testing, preparing samples and storing samples on site</td>
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<tr>
<td></td>
<td>Inspector and Project Engineer/Manager follow up performance deficiencies with QA consultant's project lead if necessary</td>
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</tbody>
</table>

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## Frequency of Visual Inspection and Other Actions by Inspector

<table>
<thead>
<tr>
<th>Material</th>
<th>On-site Visual Inspection and Other Actions by Inspector</th>
<th>Frequency of Visual Inspection</th>
<th>Field QA Test and Other Actions</th>
<th>Min. Field Testing Frequency</th>
<th>Laboratory QA Test and Other Actions</th>
<th>Min. Laboratory Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready Mixed Concrete</td>
<td>Document if concrete truck drivers are adding water, superplasticizer or air entrainment agent to the load on site without prior authorization from the general contractor and Project Engineer/Manager</td>
<td>Typically the first load of the day and every second load until consistency is attained. Random checking thereafter</td>
<td>1 Perform air entrainment tests</td>
<td>Refer to TS 1350 Table B: Frequency of Field Sampling and Testing of Concrete</td>
<td>1 Trial batching at concrete supply plant, conduct air and slump tests on site, perform 7-day and other strength compressive strength tests according to the mix types 30 working days prior to placing concrete</td>
<td>One trial batch per concrete mix design per contract, or as required</td>
</tr>
<tr>
<td></td>
<td>Visually check the plasticity of fresh concrete at point of discharge</td>
<td>Typically the first load of the day and every second load until consistency is attained. Random checking thereafter</td>
<td>2 Perform slump tests</td>
<td>Refer to TS 1350 Table B: Frequency of Field Sampling and Testing of Concrete</td>
<td>2 Perform 24-hour, 7-day and 28-day compressive strength tests, or other strength tests for normal and early strength concrete as specified in contract</td>
<td>All samples taken</td>
</tr>
<tr>
<td></td>
<td>Order on-site slump tests, air tests and concrete cylinder sampling from City's QA consultant in accordance with the minimum testing frequencies or as required</td>
<td>Refer to QA minimum testing frequencies</td>
<td>3 Cast concrete cylinder samples for laboratory compressive strength tests</td>
<td>Refer to TS 1350 Table B: Frequency of Field Sampling and Testing of Concrete</td>
<td>3 Determine the unit weight of concrete sample</td>
<td>One test per mix design per contract</td>
</tr>
<tr>
<td></td>
<td>Collect concrete delivery tickets, review and document details of tickets</td>
<td>See below</td>
<td>Record in all test reports the air temperature of the site during testing</td>
<td>Every test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the delivery time of the load (time when the concrete was batched - to the time the concrete was unloaded) if it falls to meet the TS 1350</td>
<td>Typically the first load of the day and every second load until consistency is attained. Random checking thereafter</td>
<td>Record temperature of plastic concrete at point of discharge</td>
<td>Every air and slump test and every time concrete cylinders are casted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>On-site Visual Inspection and Other Actions by Inspector</td>
<td>Frequency of Visual Inspection</td>
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<td>Min. Laboratory Testing Frequency</td>
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</tr>
<tr>
<td>Ready Mixed Concrete …continued</td>
<td>Check if the load is produced from concrete plant(s) that was specified in the contract, or the plants were agreed upon in the pre-construction meeting or in any pre-concrete placement meeting</td>
<td>Typically the first load of the day and every second load until consistency is attained. Random checking thereafter</td>
<td>Determine thickness of concrete road bases, sidewalks or other structures by coring if the slab/structure is paid by area or length in contract</td>
<td>Every 60 m lineal length of structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verify and document the actual volume of each pour and compare with the theoretical volume if the work is paid by volume</td>
<td>Random check all areas where concrete is placed</td>
<td>Conduct concrete in-situ properties and quality assurance check by coring samples on site</td>
<td>As directed by Inspector and/or Project Engineer / Manager</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Check and verify the thickness of concrete structure if the concrete is paid by area or length in contract</td>
<td>Random check all areas where concrete is placed</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Check the conditions of the granular base or subgrade before concrete is discharged</td>
<td>See below</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
| | - Check and document the state of compaction of the granular base (if any) and subgrade  
- Recommend the general contractor to recompact granular base / subgrade where necessary  
- Request QA consultant to perform compaction test if necessary | Random check all location where fresh concrete is discharged to | | | |
| | - Check and document the moisture condition of the granular base (if any) and subgrade  
- Recommend wetting the granular base / subgrade to the general contractor if subgrade plastic sheeting is not specified to be used in contract | Random check all location where fresh concrete is discharged to | | | |

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<th>Min. Laboratory Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready Mixed Concrete</td>
<td>5. Check and document the concrete protection and curing measures applied to fresh concrete on site</td>
<td>Random check all concrete structures</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>6. Check if the protections to wet concrete against adverse weather conditions such as wind, precipitation and extreme temperatures are adequate or not</td>
<td>Random check all structures where concrete is placed</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>6. Check if curing compounds or other curing materials / measures are applied to fresh concrete on site</td>
<td>Random check all structures where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Check and document if vibration is adequately applied to fill voids and hard-to-reach areas</td>
<td>Random check all structures where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Ensure the proper size and type of vibrators are used</td>
<td>Random check all structures where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Avoid under or over vibration</td>
<td>Random check all structures where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Check and document deficiencies found during finishing of fresh concrete</td>
<td>See below</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check if excessive handwork is applied to fresh concrete</td>
<td>Random check all areas where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check if water is added in finishing the concrete</td>
<td>Random check all areas where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check if areas with stone segregation are found on concrete surface</td>
<td>Random check all areas where concrete is placed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Check if hot weather concrete protection is adequate or not</td>
<td>Random check all areas where concrete is placed</td>
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<td>Material</td>
<td>On-site Visual Inspection and Other Actions by Inspector</td>
<td>Frequency of Visual Inspection</td>
<td>field QA Test and Other Actions</td>
<td>Min. Field Testing Frequency</td>
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<tr>
<td>Ready Mixed Concrete...continued</td>
<td>- Check cold weather concrete protection is adequate or not</td>
<td>Random check all areas where concrete is placed</td>
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<td></td>
<td>- Check if barricades are put in place to protect wet concrete from pedestrians and/or vehicular traffic</td>
<td>Random check all areas where concrete is placed</td>
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<td></td>
<td>- Check if depressions and bumps are found on concrete surface</td>
<td>Random check all areas where concrete is placed</td>
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<td></td>
<td>Check if sidewalks or other structures are constructed with the proper gradients</td>
<td>Random check all areas where concrete is placed</td>
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<td></td>
<td>Check if spalling is found on concrete surfaces and at expansion joint cuts</td>
<td>Random check all areas where concrete is placed</td>
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<td></td>
<td>Check if honey combs are developing on finished concrete surface</td>
<td>Random check all areas where concrete is placed</td>
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<td></td>
<td>Check if cracks are developing on finished concrete surface</td>
<td>Random check all areas where concrete is placed</td>
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<td>Monitor the work performed by field QA testing technicians</td>
<td>All site visits</td>
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<td></td>
<td>Check and document if cylinders are stored in an acceptable curing box or not</td>
<td>All samples taken until consistency is attained. Random checking thereafter.</td>
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<td></td>
<td>Check and document if the curing box is placed at a secured location or not</td>
<td>All samples taken until consistency is attained. Random checking thereafter.</td>
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<table>
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<tr>
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<th>Laboratory QA Test and Other Actions</th>
<th>Min. Laboratory Testing Frequency</th>
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<tr>
<td></td>
<td>Check if concrete cylinders are delivered to testing laboratory in accordance with the time limits or not (within a maximum of 76 hours for 35 MPa or less concrete, or within 28 hours for 35 MPa or higher concrete)</td>
<td>All samples taken until consistency is attained. Random checking thereafter.</td>
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<td>Material</td>
<td>On-site Visual Inspection and Other Actions by Inspector</td>
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<tr>
<td>Hot Mixed Asphalt 1</td>
<td>Check temperature of asphalt mix at point of discharge (at least 120°C at point of discharge) and air temperature of pavement for HM asphalt placing (for binder at least 2°C and for surface at least 7°C)</td>
<td>Typically the first load of the day and every second load until consistency is attained, Random checking thereafter.</td>
<td>Perform compaction tests on HM asphalt mat using nuclear density gauge</td>
<td>1 Test strip method (proof rolling):</td>
<td>1 Trial batching at hot mix asphalt plant and conduct full Marshall test (extraction and gradation (E&amp;G), AC content and Marshall properties tests) on trial batch 7 working days before asphalt placement</td>
<td>One trial batch per hot mix asphalt mix design</td>
</tr>
<tr>
<td>Hot Mixed Asphalt 2</td>
<td>Collect HM asphalt delivery tickets, review and document details of tickets</td>
<td>All deliveries to site</td>
<td>Prepare plate samples of HM asphalt on site for E&amp;G tests and Marshall properties tests for each type of mix (reject samples prepared by shovels)</td>
<td>See below:</td>
<td>2 E&amp;G Testing and Fast Track Reporting (for large quantity paving jobs like arterial road paving):</td>
<td>First production load from the asphalt plant on each paving day.</td>
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<tr>
<td>Hot Mixed Asphalt 3</td>
<td>Verify the weight of the loads delivered to site</td>
<td>As per City of Toronto Weight Verification Protocol</td>
<td>Large quantity paving job (for example, arterial road paving)</td>
<td>First production load from the asphalt plant on each paving day, every 250 Mg (tonne) thereafter</td>
<td>Conduct HM Asphalt Extraction and Gradation (E&amp;G) tests on the first production load sample from asphalt plant, report (fax or phone) the E&amp;G results to Project Engineer/Manager and asphalt plant as soon as the test results are ready. Advise changes to production if necessary</td>
<td>Every 250 Mg (tonne)</td>
</tr>
<tr>
<td>Hot Mixed Asphalt 4</td>
<td>Check and document the conditions of the hot mixed asphalt mat</td>
<td>See below</td>
<td>Small quantity paving jobs</td>
<td>Typically the first load of the day, every 250 Mg (tonne). Minimum 1 sample in the morning and 1 sample in the afternoon</td>
<td>E&amp;G Testing and Regular Reporting (7-working-day reporting):</td>
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<tr>
<td>- Check if there are areas with stone segregation on the mat and at longitudinal joints</td>
<td>Random check all locations where HM asphalt is placed</td>
<td></td>
<td>Visually check the nominal size of the aggregates used in the mix if they are complying with specification or not</td>
<td>All test samples taken on site</td>
<td>Conduct HM Asphalt Extraction and Gradation (E&amp;G) tests on the samples taken from site</td>
<td>All samples from site</td>
</tr>
<tr>
<td>- Check if all the stones in the mat are adequately coated with asphalt or not</td>
<td>Random check all locations where HM asphalt is placed</td>
<td></td>
<td>Visually check if type of aggregates used in the mix are complying with specification or not</td>
<td>All test samples taken on site</td>
<td>Conduct HM Asphalt full Marshall tests (E&amp;G, AC content and Marshall properties tests)</td>
<td>Every 500 Mg (tonne) after the first load</td>
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<tr>
<td>Material</td>
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<td></td>
<td>Check if there are areas with flushing / bleeding on the mat, especially on hot days</td>
<td>Random check all locations where HM asphalt is placed</td>
<td>5 Determine asphalt mat thickness by coring if the asphalt is paid by area or length in contract</td>
<td>Every 60 m length per traveling lane</td>
<td>5 Conduct AC recovered penetration test when RAP (Reclaimed Asphalt Pavement) is used in the mix</td>
<td>One test of each day of paving</td>
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<tr>
<td>Material</td>
<td>On-site Visual Inspection and Other Actions by Inspector</td>
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<tr>
<td>Hot Mixed Asphalt ...continued</td>
<td>Check and verify the thickness of asphalt mat if the asphalt is paid by area or length in contract</td>
<td>Every 50 m length of asphalt mat</td>
<td>Conduct HM asphalt in-situ properties and quality assurance check by coring samples on site</td>
<td>6</td>
<td>As directed by Inspector and/or Project Engineer / Manager</td>
<td>6</td>
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<td></td>
<td>Check if depressions and bumps are found on the surface of the mat</td>
<td>Random check all locations where HM asphalt is placed</td>
<td>Record in test report the air temperature of the site during testing</td>
<td>7</td>
<td>Every test</td>
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<td></td>
<td>Check if roll marks and scratches are found on the surface of the mat</td>
<td>Random check all locations where HM asphalt is placed</td>
<td>Record in test report the temperature of HM asphalt during sampling</td>
<td>8</td>
<td>Every test</td>
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<td></td>
<td>Check if oil spills are found on the surface of the mat</td>
<td>Random check all locations where HM asphalt is placed</td>
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<td></td>
<td>Check if opened and uneven construction joints are found on the surface of the mat</td>
<td>Random check all locations where HM asphalt is placed</td>
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<td></td>
<td>Check if contractor opens the mat to traffic when the mat is still warm</td>
<td>Random check all locations where HM asphalt is placed</td>
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<td></td>
<td>Check if contractor applies tack coat to old pavement, vertical face of curbs, cold pavement joints and structures as specified in contract and specification. Also check the rate of application and over-spraying</td>
<td>Random check all locations where HM asphalt is placed</td>
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<td></td>
<td>Monitor the work performed by field QA testing technicians</td>
<td>All site visits</td>
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February 2016  
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### Appendix C - Materials Testing Protocol

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<tr>
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</thead>
<tbody>
<tr>
<td>Granulars (Crushed Limestone and Recycled Concrete)</td>
<td>For RCM material, review contractor's supplied test data to confirm material being delivered is under control. Visually check the percent crushed of aggregate delivered and document findings. If testing recycled concrete, include sulphate testing of sampled aggregate.</td>
<td>Every load until consistency is attained. Random checking thereafter. Every 250 Mg (tonne) per type of material</td>
<td>Conduct compaction (including moisture content) tests using nuclear density gauge - Granular bases for roads, curbs, sidewalks and other structures</td>
<td>1 - 2</td>
<td>All trench backfill, granular bases and subbases</td>
<td>1 - 2</td>
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<td>Visually check deleterious materials (1% max) and document findings. Determine if RAP is present if not allowed (Granular A RCM, for instance)</td>
<td>Every load until consistency is attained. Random checking thereafter.</td>
<td>- Sewer and watermain trenches</td>
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<td></td>
<td>Order QA gradation tests from QA consultants</td>
<td>Recommend minimum of 1 test completed per source of RCM per project or as per OPSS.MUNI 1010.07.03.01, whichever is greater.</td>
<td>Take samples from stockpiles on site for gradation tests</td>
<td>2</td>
<td>Refer to TS 501.08 Material Specification for Compaction</td>
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<td></td>
<td>Order physical property test of aggregates from QA consultants if necessary</td>
<td>All deliveries to site</td>
<td>Take samples from stockpiles on site for Proctor density tests</td>
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<tr>
<td></td>
<td>Collect aggregate delivery tickets, review and document details of tickets</td>
<td>As per City of Toronto Weight Verification Protocol</td>
<td>Determine granular base thickness by coring or digging test pits</td>
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<tbody>
<tr>
<td>3 Granulars (Crushed Limestone and Recycled Concrete) ...continued</td>
<td>7 Verify the weight of the loads delivered to site if the materials are paid by weight</td>
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<td>8</td>
<td>Monitor the work performed by field QA testing technicians</td>
<td>All site visits</td>
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<td>4 Imported Earth</td>
<td>1 Visually check for deleterious materials and document findings</td>
<td>Every load until consistency is attained. Random checking thereafter.</td>
<td>1 Conduct compaction (including moisture content) tests using nuclear equipment</td>
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<tr>
<td>2</td>
<td>Verify the weight of the loads delivered to site if the materials are paid by weight</td>
<td>As per City of Toronto Weight Verification Protocol</td>
<td>2</td>
<td>- Sewer and watermain trenches</td>
<td>One test per 0.3 m lift for each increment or fraction of 150 lineal metres of backfill</td>
<td>2 Conduct Standard/Modified Proctor Density test</td>
</tr>
<tr>
<td></td>
<td>Collect earth delivery tickets, review and document details of tickets</td>
<td>All deliveries to site</td>
<td>- Road or sidewalk subgrade</td>
<td>One test per lift for each increment or fraction of 500 square metres on each traveling lane</td>
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<td>3</td>
<td>Monitor the work performed by field QA testing technicians</td>
<td>All site visits</td>
<td>3 Take samples from stockpiles on site for soil classification and engineering properties tests</td>
<td>Every 250 Mg (tonne) per type of material, or as required</td>
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<tr>
<td>5 Crack Filling Material</td>
<td>1 Check the temperature of crack filling material on site</td>
<td>Every 4 hours of operation</td>
<td>1 Take samples on site for AC penetration tests</td>
<td>At commencement of contract, every 20,000 m to 25,000 m</td>
<td>1 Conduct AC penetration test</td>
<td>All samples taken</td>
</tr>
<tr>
<td>Material</td>
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<tr>
<td>Crack Filling Material</td>
<td>2 Monitor the work performed by field QA testing technicians</td>
<td>All site visits</td>
<td>2 Inspect and verify all gauges on the melting pot</td>
<td>Every day when operation begins</td>
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</table>
Appendix D – As-built Drawing Guidelines

The purpose of this section is to provide some background material if you are preparing record or as-built drawings. This section is intended for use on City capital improvement projects or on private developer related projects.

Purpose

A requirement for a full-stream application under the Municipal Consent Requirements (MCR) is for the applicant to provide as-constructed drawings or as-built drawings. As well, under the Safe Drinking Water Act (SDWA) 2000 Part V as-built drawings of constructed facilities must be made available upon demand, if requested by the Ministry of the Environment and Climate Change. The material in this appendix outlines the requirements for preparing record drawings or as-built drawings, which may need to be submitted by the contractor in accordance with the contract documents, or by the Contract Administrator if an external service provider is used. The as-built drawings can then be used by city staff, other government agencies, developers and engineers for planning, design, and maintenance purposes.

Distinction between Record and As-built Drawings

The Professional Engineers of Ontario (PEO) document "Use of the Professional Engineer’s Seal" has a section titled "As-built and Record Drawings" and reads as follows:

Professional engineers should use the following distinction between as-built and record drawings. Drawings referred to as "as-built" are prepared by a third party, or by the engineer using information furnished by the contractor or other field staff. Record drawings are those prepared by the reviewing engineer after verifying in detail the actual conditions of the completed project. For some projects, this verification may require frequent or continuous presence on site. The distinction between as-built and record drawings determines whether drawings representing the final state of the projects should be sealed.

Because professional engineers are responsible for the content of drawings bearing their seals, as-built drawings should not be sealed,
since the engineer is not responsible for the content of these documents.

Some of the information provided on as-built drawings might be changes authorized by the engineer during construction. Other information might reflect changes initiated by other parties due to site conditions or other causes. Changes by the engineer will already have been documented by change orders, sealed sketches, or sealed reports, so there is no need to seal the as-builts. Where changes are by others, although the engineer will have a responsibility to advise the client whether the change was a result of a safety concern or a contravention of codes or standards, the engineer should not be forced to seal the documents, since to do so might imply that the changes were part of the engineer’s design. If as-builts are produced by making changes to the original construction drawings, the seal should not be applied, or should be removed if already in place, and the drawings marked "as-built drawing". In place of a seal, there should be a note referencing the original sealed drawings.

Sealed drawings with record information might imply to some parties that the engineer is providing some type of warranty or certification of the construction. This is never the case, since the contractor is always responsible for construction.

For any as-constructed drawing submitted to the City, the requirement will be as-built drawings, not record drawings.

Definitions

As-built drawing – is documentation created by or based solely on information provided by a third party that reflects the installed, constructed or commissioned conditions of a device, machine, equipment, apparatus, structure, system or other outcome of an engineering project. Since the engineer has not verified that the information is complete or accurate, as-built drawings must not be sealed.

Record drawing – is a document created to accurately reflect as-constructed, as-built or as-fabricated conditions and that has been sealed by a professional engineer after verifying that the document is accurate. They are usually retained to meet business or regulatory requirements.
Sealed – means a document is signed, dated and bears an impression of the professional engineer’s stamp. The seal implies that the professional engineer attests to the completeness and accuracy of the document.

Construction drawings – Construction drawings are generated from the tender drawings, modified to incorporate any changes from addenda that were issued during the tender process. Construction drawings are issued after the tender has closed and are the ones used at the construction stage. They will consist of one paper print of the approved design drawing with changes or corrections made as required by the City or the consultants/designers.

Process for As-built Drawings

The process of producing as-built drawings begins at the time the City receives a copy of the tracked changes on the construction drawings assembled by the City inspector assigned to the project. This task is by the Contract Administrator. The process concludes with a set of drawings for the project showing all known construction changes. All projects require the completion of an as-built drawing prior to close-out. The inspectors may red-line any changes to the contract drawings whenever they are provided.

Construction Phase

During the construction phase of the project, the contractor for the project will maintain one set of full size plans to mark up for as-built drawing purposes when drawings are provided as part of the tender call package. The contractor’s superintendent or authorized representative, together with the City’s construction inspector, will update the plans with as-built information on a daily basis. As-built data includes the final location of all new materials incorporated into the work and all existing improvements encountered during construction. Information will be shown either by check-marking any original dimension on the drawing, if they are correct, or by having the revised dimensions beside the original dimension.

The drawing status block on the border of the sheet is intended for formal changes made by addendum during the tender phase and for recording changes made during construction. A change is noted by describing it in the revision block, circling—clouding—the revised
area on the drawing and placing the revision letter or number in a triangle inside the circled—clouded—area.

**As-built Drawing Preparation**

Upon completion of construction, the as-built notes will be provided to the engineer together with the engineering survey field data and notes of the as-built conditions. This information will be the basis for the as-built drawing submitted. Changes will be transferred to the permanent CADD drawing file and labelled as "As-Built Drawing".

**Required Information**

The following are examples of changes made to a project that are required to be included on the as-built drawings:

- Field changes noted by the developer’s engineer of work or engineer of record in the case of development related projects.

- Comments or remarks of field information that may have been provided by the design consultant in the case of capital improvement projects.

- Field information provided on the contractors construction drawings, assembled by the contractor hired to perform the work.

- Project change order drawings or change order details indicating changes made to the contract drawings in the case of capital improvement projects.

- Field information provided on the inspectors construction drawings, assembled by the city inspector assigned to the project.

- Survey notes provided by the survey crew, assembled by the City’s engineering survey unit only when the City has performed the layout.
Completion of As-built Drawings

**Development Projects**

The developer’s engineer typically performs work required for completion of the as-built drawing.

The developer’s engineer will be requested to submit to the City, one set of white prints redlined to clearly indicate all field changes brought to the attention of the developer or the developer’s engineer.

The developer’s engineer will incorporate all remarks provided by the City and submit two hardcopy prints made from the corrected originals. Mylars will not be produced or supplied to the City until all changes have been incorporated and accepted by the City.

After the City is satisfied that all remarks have been included, the City will request the mylars be submitted as follows:

Only mylars with matte finish with a thickness of 4-mil will be accepted. White prints must be made from the original mylars and signed by the engineer of work. Each sheet shall have a "As-Built" in the revisions box signed by the engineer of work.

Drawings will be 24 inch x 36 inch. Larger sheet sizes are unacceptable.

The submission will also include a revised CADD file in MicroStation format on CD. Each CD will be labelled with the project name, company name, engineer’s name and telephone number.

**Capital Improvement Projects**

City personnel typically perform the work required for completion of the as-built drawings. In some cases the City may have the design consultant or the contractor, who is contracted by the City, to perform the work required to complete the as-built drawings.

City personnel will proceed with the completion of the as-built drawings incorporating all field changes and information as required.

If the City proceeds with having the as-built drawings completed by the design consultant or the contractor, the City will supply the notes and survey data required to complete the as-built drawings, unless the
consultant also acted as the contract administrator, in which case it would already have this information.

After the City is satisfied that all remarks have been included, the City will request that a set of as-built drawings to be provided as specified in Appendix A, *As-Built Drawings* of the *Design Criteria for Sewers and Watermains* manual.

**As-built Drawing Requirements**

For content requirements for water distribution systems, storm or sanitary sewer systems and stormwater management facilities, see the *Design Criteria for Sewers and Watermains* manual, Appendix A, *As-Built Drawings*. 
Appendix E – As-built Features Requirements

As-built drawings will show the accurate locations of construction features such as storm sewers, sanitary sewers, combined sewers, watermains and other water appurtenances, structures, conduits, power poles, light standards, vaults, width of streets, sidewalks, landscaping area, building footprints, channelization, pavement markings, property lines, equipments and processes and easements.

The following minimum information is required and indicates who is responsible to provide it.

Storm Drainage

Storm drainage features are intended to move rainwater and groundwater. As-built drawings will indicate all necessary information about the storm drainage system to evaluate whether the constructed features will be able to function as intended by the design. Information will be field verified or surveyed or both as outlined in the following table. The following table indicates what features are required and by whom should provide the information.
### Table: Storm drainage features

<table>
<thead>
<tr>
<th>Storm drainage features</th>
<th>Field verify (inspector)</th>
<th>Survey (engineering surveys unit or consultants surveyors)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pipe</td>
<td>size, material, class of pipe, bedding type, drop pipe size</td>
<td>inverts, drop pipe inverts, location of end of stub or bulkhead</td>
<td>Redraw pipe on drawing if pipe has moved more than 300 mm horizontally or 150 mm or more vertically. Recalculate slope on record length and surveyed inverts. Indicate new information on plans such as slope, length, and diameter and so on.</td>
</tr>
<tr>
<td>catchbasins, maintenance holes, outfalls, inlet structures</td>
<td>size, type, cover type, safety platforms, flow regulator, overflow, weir, grate type</td>
<td>rim elevation location of feature, overflow weir invert inlet/outlet inverts</td>
<td>Redraw structure on drawings if it moved 300 mm or more. Indicate new information on plans such as size, type and so on.</td>
</tr>
<tr>
<td>culverts</td>
<td>size, material, shape, seepage collars</td>
<td>location of ends of culverts and inverts</td>
<td>Redraw culvert on drawings if has moved more than 300 mm. Recalculate slope based on recorded length and surveyed inverts. Indicate new information on plans such as slope, length, and diameter and so on.</td>
</tr>
<tr>
<td>subdrains</td>
<td>pipe locations, material, and size</td>
<td></td>
<td>Redraw subdrains on drawings if it moved 300 mm or more.</td>
</tr>
<tr>
<td>laterals</td>
<td>size, material, class, bedding</td>
<td></td>
<td>Indicate locations on plan.</td>
</tr>
<tr>
<td>other drainage features</td>
<td></td>
<td></td>
<td>Redraw feature on drawings if it moved 300 mm or more.</td>
</tr>
</tbody>
</table>
Stormwater Management

Stormwater management features are intended to control the rate and quality of the rainwater runoff. As-built drawings will indicate all necessary information about the stormwater management system to evaluate whether the constructed features will be able to function as intended by the design. Information will be field verified or surveyed or both as outlined in the following table. The following table indicates what features are required and by whom should provide the information.

Table: Stormwater management features

<table>
<thead>
<tr>
<th>Stormwater management features</th>
<th>Field Verify (inspector)</th>
<th>Survey (engineering surveys unit or consultants surveyors)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>storage tanks</td>
<td>material, type, size, control systems such as orifice size and weir dimensions</td>
<td>control structure location, control elevations such as orifice inverts, weir elevations bottom elevations and access locations</td>
<td>Redraw structure on drawing if moved more than 300 mm horizontally or 150 mm or more vertically. Indicate new information on plans such as size, type and so on.</td>
</tr>
<tr>
<td>ponds</td>
<td>size, shape</td>
<td>control structure location, control elevations such as orifice inverts and weir elevations overflow elevation topographic survey including bottom elevations final volumes</td>
<td>Redraw pond on drawing if moved more than 3.0 m or more. Recalculate volume based on water surface shape and depth. Indicate new information on plans such as size, type, volume and so on.</td>
</tr>
<tr>
<td>wetlands</td>
<td></td>
<td>boundary of created or modified wetlands</td>
<td>Redraw wetland on drawings if moved more than 3.0 m or more. Recalculate volume based on water surface shape and depth. Indicate new information on plans such as size, type, volume and so on.</td>
</tr>
<tr>
<td>Stormwater management features</td>
<td>Field Verify (inspector)</td>
<td>Survey (engineering surveys unit or consultants surveyors)</td>
<td>Indicate on as-built drawing (drawing preparer or engineer)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>grease interceptor oil/grit separation</td>
<td>size, material, vault, dimensions</td>
<td>horizontal location of four corners of vault where applicable</td>
<td>Indicate vault dimensions and size, inverts.</td>
</tr>
<tr>
<td>infiltration systems, French drains</td>
<td>material, size, pipe such as size, type and diameter</td>
<td>inlet invert outlet invert</td>
<td>Redraw feature on drawings if it moved 300 mm or more.</td>
</tr>
</tbody>
</table>
## Water Distribution Systems

Water system features are intended to move or hold potable water. As-built drawings will indicate all necessary information about the water system to evaluate whether the constructed features will be able to function as intended by the design. Information will be field verified or surveyed or both as outlined in the following table. The following table indicates what features are required and by whom should provide the information.

### Table: Water distribution systems features

<table>
<thead>
<tr>
<th>Water distribution features</th>
<th>Field verify (inspector)</th>
<th>Survey (engineering surveys unit or consultants surveyors)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pipe and fittings</td>
<td>manufacture—material, size, class, bedding, joint type, fittings</td>
<td>top of pipe, location of valve, horizontal location of bends, tees and crosses</td>
<td>Redraw pipe on drawing if pipe has moved more than 300 mm horizontally or 150 mm or more vertically. Recalculate slope on record length and surveyed inverts. Indicate new information on plans such as slope, length, and diameter and so on.</td>
</tr>
<tr>
<td></td>
<td>measure distance between fittings—centre of tees, crosses, bends</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>crossing invert—location and invert of any utility crossings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>depth of pipes during installation at every fitting and appurtenances, vertical bends</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>location where insulation used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>valves in chamber such as gate valve, air valve, and butterfly valve</td>
<td></td>
<td>Redraw structure on drawings if it moved 300 mm or more. Indicate new information on plans such as size, type and so on.</td>
<td></td>
</tr>
<tr>
<td>Water distribution features</td>
<td>Field verify (inspector)</td>
<td>Survey (engineering surveys unit or consultants surveyors)</td>
<td>Indicate on as-built drawing (drawing preparer or engineer)</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>--------------------------</td>
<td>-------------------------------------------------------------</td>
<td>------------------------------------------------------------</td>
</tr>
<tr>
<td>hydrants</td>
<td>manufacturer</td>
<td>horizontal location of hydrant–centre of valve of stem</td>
<td>Redraw hydrant on drawings if it moved 300 mm or more.</td>
</tr>
<tr>
<td></td>
<td>hydrant bury depth</td>
<td>top of hydrant elevation</td>
<td>Indicate new information on plans.</td>
</tr>
<tr>
<td>water service lines</td>
<td>material, size, type (fire / domestic), location</td>
<td>curb stop valve location</td>
<td>Redraw service line on drawings if it moved 300 mm or more.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indicate new information on plans, for example existing size, type, and so on.</td>
</tr>
<tr>
<td>mainline flow meters chambers</td>
<td>type, size, vault or box and size</td>
<td>horizontal location of centre of box, horizontal location of four corners of vault, location of lid, rim elevation</td>
<td>Redraw vault or box on drawings if it moved 300 mm or more.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indicate new information on plans, for example, size, type, and so on.</td>
</tr>
<tr>
<td>pressure reducing valve chamber</td>
<td>size, vault size, vault drain data</td>
<td>horizontal location of four corners of vault, location of lid, rim elevation</td>
<td>Redraw vault on drawings if it moved 300 mm or more.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indicate new information on plans, for example, size, type, and so on.</td>
</tr>
<tr>
<td>backflow devices at street line–exterior to building</td>
<td>device brand, type, size, service line size, location of drain</td>
<td>horizontal location of four corners of vault or centre of box</td>
<td>Redraw vault or box on drawings if it moved 300 mm or more.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indicate new information on plans, for example, size, type, and so on.</td>
</tr>
<tr>
<td>backflow devices–interior to building</td>
<td>device brand, type, size, service line size, general location within building</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sanitary or Combined Sewer

Sanitary or combined sewer system features are intended to transport sanitary waste into a collection system. As-built drawings will indicate all necessary information about the water system to evaluate whether the constructed features will be able to function as intended by the design. Information will be field verified or surveyed or both as outlined in the following table. The following table indicates what features are required and by whom should provide the information is shown in parentheses:

<table>
<thead>
<tr>
<th>Sanitary combined sewer features</th>
<th>Field verify (inspector)</th>
<th>Survey (engineering surveys unit or consultants surveyors)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>maintenance holes</td>
<td>maintenance hole diameter, type, manufacturer, safety platform, flow restrictors, overflow</td>
<td>horizontal location of centre of manhole, horizontal location of centre of lid, rim elevations and all invert elevations, overflow weir invert</td>
<td>Note all changes and correct elevations.</td>
</tr>
<tr>
<td>pipe–gravity sewer main</td>
<td>size, material, class of pipe, bedding type, drop pipe size</td>
<td>length–horizontal length of pipe from centre of manhole to centre of manhole. Inverts, drop pipe inverts, locations of end of stub/bulkhead inverts, drop pipe inverts, location of end of stub or bulkhead</td>
<td>Redraw pipe on drawing if pipe has moved more than 300 mm horizontally or 150 mm or more vertically. Recalculate slope on record length and surveyed inverts. Indicate new information on plans such as slope, length, and diameter and so on.</td>
</tr>
</tbody>
</table>
### Table: Sanitary or combined sewer features (continued)

<table>
<thead>
<tr>
<th>Sanitary combined sewer features</th>
<th>Field verify (inspector)</th>
<th>Survey (engineering surveys unit or consultants surveyors)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>pipe and fittings–force main</td>
<td>manufacturer–material, size, class, bedding, joint type, fittings</td>
<td>horizontal location of main:</td>
<td>Redraw pipe on drawings if it moved 300 mm or more. Indicate new information on plans, for example, slope, length, size, and so on.</td>
</tr>
<tr>
<td>laterals</td>
<td>material, size, locations, backflow valve</td>
<td></td>
<td>Indicate location on plans.</td>
</tr>
<tr>
<td>cleanouts</td>
<td>Size, material, location</td>
<td>rim elevations, centre of box, horizontal location of centre of box</td>
<td>Redraw structure on drawings if it moved 300 mm or more indicate new information on plans.</td>
</tr>
<tr>
<td>grease interceptor or oil grit separators</td>
<td>pipe materials, size, vault dimensions and size</td>
<td>horizontal location of four corners of the vault and inverts</td>
<td>Show vault dimensions and size. Show pipe elevations.</td>
</tr>
</tbody>
</table>
Transportation

Transportation system features are intended to transport vehicle and pedestrian traffic. As-built drawings will indicate all necessary information about the transportation system to evaluate whether the constructed features will be able to function as intended by the design. Information will be field verified or surveyed or both as outlined in the following table. The following table indicates what features are required and by whom should provide the information.

Included but not limited to all surface features impacted by the construction.

Table: Transportation features

<table>
<thead>
<tr>
<th>Transportation features</th>
<th>Field verify (inspector)</th>
<th>Survey (engineering surveys or consultants surveyors)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer) Redraw on record drawing any and all transportation features listed if moved 300 mm or more.</th>
</tr>
</thead>
<tbody>
<tr>
<td>pavement</td>
<td>material, depth, width, type – rigid or flexible</td>
<td>elevations</td>
<td>Note all changes and correct locations indicated locations on plans</td>
</tr>
<tr>
<td>curb and gutter</td>
<td>location of face curb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>driveways</td>
<td>location, width, type – commercial or domestic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>signage</td>
<td>location, size, type of sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sidewalk</td>
<td>location, type - light or heavy, material, width</td>
<td>elevations</td>
<td></td>
</tr>
<tr>
<td>street lighting</td>
<td>height, wattage, material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>monument</td>
<td>location, materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>conduit</td>
<td>location, depth, materials, size, owner</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Other Utilities

As-built drawings will indicate all necessary information about other utilities to evaluate whether the constructed features will be able to function as intended by the design. Information will be field verified or surveyed or both as outlined in the following table. The following table indicates what features are required and by whom should provide the information.

Table: Other utilities features

<table>
<thead>
<tr>
<th>Other utilities features</th>
<th>Field verify (inspector)</th>
<th>Survey (engineering surveys unit or consultants surveyor)</th>
<th>Indicate on as-built drawing (drawing preparer or engineer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>other utilities</td>
<td>identify location and depth of all existing utilities encountered and new utilities constructed</td>
<td>Show utilities encountered and their depth.</td>
<td></td>
</tr>
</tbody>
</table>

handwell location, conduit entrance, type – street lighting, traffic
The main duty of an inspector at a utility project is to protect the interests of the City and the city’s infrastructure while ensuring that the work is done in accordance with City standards and specifications, the permit conditions, permit drawings, and the Municipal Consent Requirements (MCR).

Some of the activities that the inspector is responsible for are as follows:

- Inspecting work for conformance with the permit and requirements.
- Preparing site visit inspection reports and meeting reports.
- Tracking progress of work.
- Prepare weekly or monthly reports
- Advising project lead such as the engineer, engineering technical coordinator or construction supervisor of the construction issues.
- Attending and documenting pre-construction and any necessary subsequent construction meetings.
- Responding to the public and directing them to the proper authority.
- Taking photographs where necessary to illustrate issues.

Pre-Construction Meeting

For all full-stream permits, and for short-stream work that will result in a major disruption to traffic or area residents or both, a pre-construction meeting is required. The meeting should outline and discuss the method of construction, staging, schedule and traffic control. Any specific requirements regarding the restoration to be done should also be discussed. The inspector shall fill in the Utility Pre-Construction Meeting Summary form after the conclusion of the meeting (see Appendix A, Forms).
Changes in Work

Changes in work include, but are not limited to: the deletion, extension, increase or decrease in scope of work; the alteration of line alignment, grades, dimensions; or any alteration of the approved construction methods, backfilling, or staging.

When approached by the applicant utility company or their contractor to make any changes to the work described on the permit and associated drawings, the inspector shall immediately contact the engineering technical coordinator (case manager) for the respective district.

No changes shall be permitted without:

- Discussion between the inspector and the engineering technical coordinator (case manager) / supervisor to assess the impact of the requested change. Where necessary, a site meeting should be held.

- For any changes to the staging of the work, written approval must also be obtained from the Transportation Services division workzone coordinator.

Public Relations

The inspector is a representative of the City of Toronto, not of the utility project owner. It is important that the inspector be mindful of this relationship at all times. Any concerns regarding the work should be forwarded first to the contractor on-site or the contact number printed on the project information sign for the respective utility company. The inspector should only get directly involved if the nature of the concern is a violation of the terms of the permit or the MCR.

If a public relations issue does arise on-site between the utility contractor and a resident, the inspector should notify the utility owner named on the permit and also contact the engineering technical coordinator (case manager) and the construction supervisor to let them know of the situation. The utility project owner is accountable for the actions of their contractor and must provide the necessary oversight. As the City’s representative on-site, the inspector is there only as a facilitator to ensure the resident concerns are taken seriously and the contractor and utility project owner are tactful in resolving any issues.
Appendix G – Weight Verification Protocol

Weight verification protocol is for construction materials which are priced based on unit weight.

The purpose of this protocol is to outline the scope and procedures for the provision of weight verification to construction materials that are priced based on unit weight in City construction contracts.

Scope

Contractor’s delivery trucks carrying construction materials including, but not limited to, aggregates, asphaltic concrete and soils that are paid by weight as identified in the form of tender in the City’s construction contracts are subject to weight verification at the discretion of the contract administrator or the site inspector.

It is the responsibility of the site inspector to verify randomly the weight of the materials delivered to construction sites. The site inspector will issue a Weight Verification Order to truck drivers and contractor’s field representative when they decide to verify the weight of the materials delivered to site.

The City will not compensate contractors for any cost associated with the weight verification process.

Application

This protocol applies to all City’s transportation, structures, sewer, and watermain construction contracts. The provisions included in this procedure shall form part of the contract between the City and the contractor.
Material Delivery and Weight Verification Procedures

Prior to unloading materials that are priced based on unit weight, truck drivers shall submit the weigh tickets in-person to the site inspector. Material weigh tickets that are not accepted in-person by the site inspector prior to unloading will not be paid.

The City reserves the right to verify the weight of materials supplied in connection with the City’s construction contracts.

When directed by the site inspector, the truck carrying construction materials that are priced based on unit weight shall proceed immediately to a City solid waste management services transfer station specified by the site inspector, and the truck will be weighed at the facility.

The site inspector should minimize trucks waiting time at a transfer station and reduce trucks traveling time to and from a transfer station by:

- Contact the general supervisor, transfer operations at (416-392-3132) for west end sites and (416-392-3017) for east end sites one day in advance to get information about the best time to direct trucks for weight verification.
- Choosing a transfer station closest to the site, if possible.
- Avoiding weight verification in extreme weather conditions.
- Directing trucks to another transfer station to avoid roadways affected by traffic congestions and serious traffic accidents.

The site inspector will issue a Dump Authorization Slip (see sample on the next page) to the truck driver, who will show it to the transfer station staff upon arrival at the facility. The site inspector shall measure the temperature of hot mix asphalt at the site in a safe manner before and after the weight verification and record it in the Weight Verification Order.
If workload permits, site inspector should follow the truck in their vehicle to the transfer station. Otherwise, the site inspector should contact the transfer station staff to inform them about the incoming truck.

A weight scale receipt will be issued to the truck driver by the transfer station staff showing the verified gross weight of the truck and its content. The weigh scale receipt will also include information on the date of the operation, time of weighing, name of the facility performing the weighing, vehicle’s license plate number, name of inbound weigh scale operator and comments from the transfer station, if applicable. The truck driver should retain one copy of the weigh scale receipt for record and submit the other copy to the site inspector for verification purpose.

Should the weight verification show that the weight of the load is less than what is shown on the contractor’s weigh ticket by more than one percent, the site inspector shall direct the empty truck to return to the same facility on the same day to verify its tare weight.

The weighing facility will issue a new weigh scale receipt to the truck driver showing the verified tare weight of the truck. Both the truck driver and the site inspector should retain one copy of the receipt for record and verification purposes.

The transfer station will not charge the truck driver or the contractor for the weight verification operations.

**Figure:** Sample Dump Authorization Slip
Quality Assurance

For each contract, a minimum of one truckload for each type of construction material paid by weight shall be weight verified at a City weighing facility. If more than one load of the same material is expected to be delivered on the same day, the weight of the first load delivered to the site should be verified, if possible.

Should the weight verification show that the verified net weight of the material is less than what is shown on the contractor’s weigh ticket by one percent or less, Site inspector may instruct the contractor to perform weight verification on other trucks at his or her discretion.

Should the weight verification show that the verified net weight of material is less than what is shown on the contractor’s weigh ticket by more than one percent, the site inspector shall notify the contractor of the weight discrepancy immediately and instruct the contractor to take steps to correct the problem without delay. At the same time, the site inspector shall immediately direct the next available truck(s) to a city weighing facility to verify the weight of the load(s) until the contractor has rectified the problem and the weight discrepancy is within the allowable limits.

Contractors must ensure that all weight verified materials delivered to work sites meet all contract specifications. Any weight verified material that has failed to meet contract specifications, for example: the asphalt temperature is below specification, shall not be used in the contract and shall be disposed of off site at contractor’s expense.

Price Adjustment

Should the weight verification show that the verified net weight of the material is less than what is shown on the contractor’s weigh ticket by more than one percent, the payment for the affected load shall be made based on the weight measured by the City’s weighing facility.

The contract administrator will also adjust the method of measurement for all following loads that are not weight verified but have been delivered to the site before a new weight verification process can prove the contractor had rectified the weight inconsistency. The net weight of the following loads will be adjusted using an adjustment factor "A" as determined by the following formula:
A = 1.0 - (B - C)/B; where A ≤ 1.0; (B - C)/B > 1.0 %

where

1.0 % = weight tolerance allowed
A = adjustment factor
B = net weight shown on delivery ticket
C = net weight determined at the City transfer station

adjusted net weight = A x delivery ticket net weight

Example 1:

Net weight shown on delivery ticket = 20,000 kg (B)
Net weight determined at the City transfer station = 19,920 kg (C)
(B-C)/B = (20,000 – 19,920)/20,000 = 0.004 = 0.4%
0.4 % < 1.0 %, therefore the adjustment factor shall not be applied.

Example 2:

Net weight shown on delivery ticket = 20,000 kg (B)
Net weight determined at the City transfer station = 19,000 kg (C)
(B-C)/B = (20,000 – 19,000)/20,000 = 0.05 = 5.0%
5.0 % > 1.0 %, therefore the adjustment factor shall be applied.
A = 1.0 – (20,000 – 19,000)/20,000 = 1.0 – 0.05 = 0.95
adjusted net weight = 0.95 x delivery ticket net weight

All following loads that are not weight verified will be paid at the adjusted net weight until a new weight verification process has proven otherwise.

Measurement of Payment

Not applicable.

Basis of Payment

The City will not pay the contractor any costs associated with the weight verification process.
Appendix H – Health and Safety

The City of Toronto is committed to providing and maintaining safe and healthy working conditions for all members of the Toronto Public Service. It has committed to a continuous safety improvement program with a goal of Targeting ZERO Together – achieving a zero injuries workplace.

Making health and safety a top priority while Targeting ZERO Together, the Engineering & Construction Services (ECS) division has developed a comprehensive health and safety program committed to improving the safety of all staff, regardless of the type of work carried out or where the work is completed.

The ECS Health & Safety & Emergency Planning webpage provides division-specific H&S strategies, policies, procedures, best practices, guidelines, forms and various tools to help support employees in performing their duties safely and effectively.

Purpose

The purpose of the health and safety section in this manual is to provide a quick summary and guideline to employees working in the field, on construction sites, facilities or areas of similar nature.

All employees are responsible for familiarizing themselves with and fully complying with applicable legislation, the City's and ECS's health and safety policies, procedures, guidelines or best practices, as well as the site specific health and safety requirements of the constructor.

For additional and more in depth information, ECS comprehensive Health and Safety Program is available on the City's intranet at http://insideto.toronto.ca/ecs/index.htm.
Definitions

The following terms are defined in the *Occupational Health and Safety Act* as follows:

Competent Person means "a person who:

- Is qualified because of knowledge, training and experience to organize the work and its performance,
- Is familiar with this Act and the regulations that apply to the work,
- Has knowledge of any potential or actual danger to health or safety in the workplace.

Construction "includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, land clearing, earth moving, grading, excavating, trenching, digging, boring, drilling, blasting, or concreting, the installation of any machinery or plant, and any work or undertaking in connection with a project but does not include any work or undertaking underground in a mine"

Constructor means "a person who undertakes a project for an owner and includes an owner who undertakes all or part of a project by himself or by more than one employer"

Owner "includes a trustee, receiver, mortgagee in possession, tenant, lessee, or occupier of any lands or premises used or to be used as a workplace, and a person who acts for or on behalf of an owner as an agent or delegate"

Project means "a construction project, whether public or private, including:

- the construction of a building, bridge, structure, industrial establishment, mining plant, shaft, tunnel, caisson, trench, excavation, highway, railway, street, runway, parking lot, cofferdam, conduit, sewer, watermain, service connection, telegraph, telephone or electrical cable, pipe line, duct or well, or any combination thereof
- the moving of a building or structure
- any work or undertaking, or any lands or appurtenances used in connection with construction."
Roles and Responsibilities

In addition to the Roles and Responsibilities described in the Operations Sector document (EHS-MAN-101-01) the following apply to inspectors and contract administrators under applicable circumstances:

• Use, wear and inspect any equipment, protective devices or clothing as required.
• Attend the contractor's safety orientation/meetings as per the contractor's health & safety program.
• Use and operate only the equipment and tools that they are competent and qualified to do so and in a safe manner.
• Do not remove or make ineffective any protective device required by the manufacturer or the employer.
• Do not remove or deface hazardous material identification.
• Report any safety deficiencies such as defective equipment, tools or personal protective equipment (PPE) to their supervisor immediately.
• Report any safety violation, contravention or act to their supervisor immediately, regardless of the parties involved.

General Safety Rules

Safety in the Trailer or Office

• Maintain good housekeeping.
• Close filing cabinet drawers when not in use.
• Use chairs in an appropriate manner.
• Carry sharp items in an appropriate manner.
• Do not stand in entrances or exits particularly behind closed doors.
• Use handrails when using stairs.
• Practice good ergonomics.
• Ensure that Material Safety Data Sheets (MSDS's) are on site.

Safety in the Field

• Notify contractor when on site.
• Be aware of the potential hazards on the site.
• Use appropriate personal protective equipment.
• Use only equipment that is in good condition such as ladders and fall protection equipment.
• Watch for damaged power cords, tripping hazards, unprotected rebar and other poor housekeeping deficiencies.
• Ensure appropriate controls are in place when dealing with hazards.
• Become familiar with emergency and rescue procedures.
• Know the access and egress points.
• Do not operate equipment and machinery without authorization.
• Before accessing mobile equipment work zones, make eye contact with the operator to ensure that they have seen and acknowledge you.
• Know the traffic plan of the site.
• Remain aware of the environment and surroundings at all times, for instance, do not take pictures, write notes, or use cell phone until you are away from hazardous areas.

**Personal Protective Equipment (PPE)**

**Mandatory PPE**

• Wear CSA approved footwear (Ω TYPE 1 Boot)
• Wear CSA approved hardhat (TYPE 2 CLASS E)
• Wear appropriate high-visibility vest or other appropriate hi-vis clothing and if at night, wear reflective silver stripes encircling each arm and leg
• And other personal protection equipment as required

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**Note**: Hoodies, loose clothing, long hair, and loose jewellery should be taken off or tucked or tied in tight to the body to avoid entanglements.

**Conditional PPE—as required for specific hazards**

• safety glasses, goggles, visors, face shields etc.
• hearing protection
• respirators
• tyvek suits
• fall Protection equipment
• gloves, barrier creams
• personal flotation devices
• and any other PPE as determined through risk assessments
**Rights of a worker**

**Right to know**

- Workers have the right to know the potential hazards at their workplace as well as the potential hazards associated with their job or specific tasks.
- Workers have the right to protect themselves from these hazards.
- Workers have the right to additional training or instructions to enable them to understand the hazards they may deal with.

**Right to participate**

- Workers have the right to participate in prevention such as hazard recognition and control measures, notifying supervisors and Joint Health and Safety (JHSC) members.
- Workers may participate in training.
- Worker may participate on a JHSC committee or serve as a JHSC representative.

**Right to refuse**

- Employees refusing work shall contact the immediate supervisor.
- The supervisor shall follow the City of Toronto's work refusal procedure.

**Right to stop work**

A JHSC Certified worker has this additional right which can be used under specific circumstances—refer to functions of the JHSC document.

**Protection from reprisal**

Workers are protected by legislation from reprisal if they have acted in compliance with the OHSA or regulations or sought enforcement of the OHSA or regulations.
**Expectations**

**City of Toronto’s expectations of Contractors**

For the purpose of this procedure, "contractor" includes but is not limited to contractors, sub-contractors and constructors.

- Ensure compliance with all applicable legislations and regulations.
- In a timely fashion, provide the City of Toronto all of the necessary health and safety documentation required and requested.
- Notify the City of Toronto via a complete written investigation of all incidents, accidents, and near misses.
- Ensure that any unsafe act or condition observed within their respective site, are corrected in a timely fashion.
- Report to the City of Toronto any unsafe acts and conditions observed onsite regardless of the employer.
- Be responsible for the health, safety and environmental conditions of all persons present and activities conducted on their work site.
- When applicable, cooperate in a professional manner with external authorities or City of Toronto authorized personnel with regards to access, information, documentation and full disclosure as requested.
- Ensure that all Ministry of Labour visits are reported immediately to the City of Toronto.
- Ensure that all Ministry of Labour orders and notifications are complied with, within the inspector's set schedule.
- Cooperate with the City of Toronto and other subcontractors or trades on site in protecting the health and safety of everyone in the workplace.

**City of Toronto’s Expectations of Consultants**

For the purpose of this procedure, "consultant" includes but is not limited to engineers, architects, and other specialized persons not performing construction activities.

- Ensure compliance with all applicable legislations and regulations.
- In a timely fashion, provide the City of Toronto with all of the necessary health and safety documentation required and requested.
- Notify the City of Toronto via a complete written investigation of all incidents, accidents and near misses.
- When applicable, cooperate in a professional manner with external authorities or City of Toronto authorized personnel with regards to access, information, documentation and full disclosure as requested.
• Advise the City of Toronto when contractor safety performance is negative or when a contractor's safety behaviour/record can negatively impact the City of Toronto.

**Reporting Incidents, Accidents, and Near Misses**

**Events with City of Toronto Employees**

• All incidents, accidents and near misses must be reported immediately to the supervisor.
• The supervisor must immediately report all incidents, accidents and near misses to the program manager of Health & Safety & Emergency Planning.

**Events with Contractors**

• All incidents, accidents and near misses must be reported immediately to the project manager.
• The project manager must immediately report all incidents, accidents and near misses to the program manager of Health & Safety & Emergency Planning.
• The project manager shall obtain a copy of the contractor's investigation and provide to the program manager of Health & Safety & Emergency Planning for review.

**Safety Contraventions and Violations**

When known contraventions of the Occupational Health and Safety Act/Regulations are witnessed, the actions taken by the inspector or contract administrator will depend on whether or not the contraventions pose an immediate danger to life or health. The actions are illustrated in the following two scenarios:

**Scenario 1**: there is immediate danger to life or health. In this scenario, the inspector or contract administrator may stop the activity or the worker in question.

• If possible and safe to do so, take a picture.
• Verbally discuss the observation with the contractor's supervisor immediately.
• Follow up with an email summarizing the observation, the subsequent conversation and the action/non action (positive and
negative) taken by the contractor (cc: project manager and program manager, Health & Safety & Emergency Planning).

- The inspector or contract administrator always has the option and the right to call the Ministry of Labour (MOL) directly. As a measure of good faith and striving to continuously improve working relationships with contractors, it is advisable to attempt an internal resolution with the contractor before calling the MOL. However, the inspector or contract administrator should not hesitate to involve the MOL in dangerous circumstances, repeat offences or where the contractor refuses to comply with Occupational Health and Safety Act/Regulations.

**Scenario 2:** there is a known contravention but it does not constitute an immediate danger to life or health. In this scenario, the inspector or contract administrator is not to direct the contractor or their employee to comply.

- The inspector or contract administrator should contact their immediate supervisor and project manager or both if further direction is required, or verbally discuss the observation with the contractor's supervisor immediately.
- Follow up with an email summarizing the observation, the subsequent conversation and the action/non-action (positive and negative) taken by the contractor (cc: project manager and program manager, Health & Safety & Emergency Planning).
- The inspector or contract administrator always has the option and the right to call the MOL directly. As a measure of good faith and striving to continuously improve working relationships with contractors, it is advisable to attempt an internal resolution with the contractor before calling the MOL. However, the inspector or contract administrator should not hesitate to involve the MOL in dangerous circumstances, repeat offences or where the contractor refuses to comply with Occupational Health and Safety Act/Regulations.

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**Note:** The City of Toronto or its representatives may not direct the contractor in health and safety related matters, unless contract language explicitly states otherwise.

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**Emergency Response Program**

- Ensure that current emergency contact numbers are posted and available.
- Ensure there is a map and directions to nearest hospital.
• Become familiar with the Contractor's emergency response plan including:
  • evacuation point (muster) location(s),
  • fire extinguisher locations,
  • eye wash station locations,
  • first aid kit locations,
  • first aiders available on site at all times, and
  • spill kit locations.
• Follow the contractors' emergency response plan when on their site.

Training

For details of training requirements, see the "Roles and Responsibilities in the Operations Sector – ECS-MAN-102-01" document.

References

• [OHSA – Occupational Health & Safety Act](#)
• [Regulation 213/91 – Construction Projects](#)
• Roles and responsibilities in the Operations Sector – ECS-MAN-102-01
• Roles and responsibilities – Construction Sites & Facilities Sector, ECS-MAN-102-01
• Infrastructure Health & Safety Association – Construction Health & Safety manual
• City of Toronto's Occupational health and safety intranet site http://insideto.toronto.ca/health/staff/healthandsafety/
Appendix I – Sidewalk Deficiency Protocol

Assessment Schedule

All types of cracks, spalling or other deficiencies shall be assessed at the following periods:

• Within 28 days after the placement of the concrete. This will allow the contractor to rectify the situation immediately and minimize any possible disruption to the public if the contractor is required to relocate his forces;

• Immediately after receiving low compressive strength results. This allows the referee testing to take place as close to the strength timeline as possible;

• At the time of substantial completion so that all deficiencies other than hairline cracks can be rectified; and

• At the time of warranty inspection. This will be the final deficiency report that will be provided to the contractor, so care has to be taken to identify all defects.

Types of Defects Expected

The types of defects that require the removal and replacement of all concrete are listed below:

• The concrete is honeycombed. Honeycombing is defined as voids left in concrete owing to failure of the mortar to fill effectively the spaces among coarse aggregate particles. Honeycombing results in a greatly increased susceptibility to freeze thaw damage and reduced life expectancy.
**Honeycombed concrete**

- The concrete contains embedded debris. Embedded debris is defined as any material that is not part of the planned concrete mix design. Typical debris are pieces of wood from formwork or grade stakes left in place, rocks and garbage. The debris will cause voids in the concrete and may result in popouts and reduced life expectancy.

- The concrete has been damaged by freezing. Concrete that has experienced low temperatures prior to properly curing will result in a black appearance. If the black appearance fades after a week or so, then the assumption is that the damage was minor and the concrete has continued curing and may be acceptable if there are no other defects. If the black appearance is still evident after a month, then the assumption is that the damage caused by the freezing has ceased the curing process and therefore, the concrete is rejectable, regardless of the compressive strength achieved.
Concrete damaged by freezing

- The concrete temperature at the time of placement exceeded the maximum allowable temperature set out in the contract specifications. Hot weather conditions may produce a rapid rate of evaporation of moisture from the surface of the concrete and accelerated setting time. The high rate of evaporation alters the water/cement ratio of the concrete and will result in lower potential strength. The high rate of evaporation also induces early plastic shrinkage causing more cracking. The higher temperatures also accelerate the slump loss and may cause loss of entrained air.

- The concrete surface has been damaged by rain. Severity of rain damage can vary depending on the amount of exposure or intensity and how long the concrete cured prior to the exposure. Rain damage results in displacement of fines at the surface and causes improper elongation of the air voids. Rain damage causes the surface of the concrete to spall and results in an unacceptable finish to the concrete. It also increases the susceptibility of the concrete to freeze thaw damage.
Concrete damaged by rain

Concrete damaged by rain
• The concrete contains footprints or other undesirable impressions.

![Concrete containing undesirable impressions](image)

**Concrete containing undesirable impressions**

• The concrete has been subjected to traffic before it has achieved 75 percent of the specified 28 day compressive strength.

• The concrete has cracked or separated. Cracks in this section refer to unplanned separations in the concrete that are 2 mm or greater in width, separations that have shifted along the vertical alignment and are no longer flush, or both.
Hairline cracks are defined as fractures in which the fragments remain in alignment and do not separate because the line of break is so fine. Single hairline cracks that do not separate the concrete panel into a section less than 0.5 m wide do not require any further remedial action as the possible repairs available to use will typically result in a worse situation than leaving the hairline crack alone.
Multiple hairline cracks or hairline cracks that are closer than 0.5 m to the edges of the concrete panel shall be sealed to prevent any further damage. The sealant shall be Sikadur 52 epoxy injection grout as supplied by Sika Canada Inc. or an approved equal.

Concrete with multiple hairline cracks

Concrete with a crack requiring sealing
Single cracks that are less than 2 mm in width and do not show signs of shifting either at the time of inspection or the possibility of shifting at a future time can be sealed to prevent any further damage. The sealant shall be Sikadur 52 epoxy injection grout as supplied by Sika Canada Inc. or an approved equal.

Multiple cracks or cracks that are closer than 0.5 m to the edges of the concrete panel require the removal and replacement of the affected concrete between expansion joints—3 bays. Multiple cracks generally spider out and result in small pieces that can pop out or separate at future dates and reduce the life expectancy of the concrete.

- The concrete surface has spalled as defined in the General Conditions of Contract that the contract administrator will be the sole judge to the determination. Spalling is typically caused by rain or overworking the concrete surface during finishing. Concretes with higher supplementary cementing materials may be more susceptible to the effects of overworking the concrete finish (that is to say the way concrete was finished 15 years ago may not be acceptable on the new concrete mixes with higher supplementary cementing materials).
• Expansion and isolation joints are not vertical.

• The concrete sections have heaved or sunk, from their original position.
Appendix J – Bibliography

Field Services Manuals (Current City Divisions)

City of Toronto – Field Services Manual, Technical Services, Second Edition
Published by City of Toronto, 55 John Street, Toronto, Ontario, M5V 3C6, 2009.

Style Guides

City of Toronto – Corporate Writing and Style Guide (2009)
By Strategic Communications, City Manager’s Office. Published by City of Toronto, 55 John Street, Toronto, Ontario, M5V 3C6.

Writing Revisable Manuals – Print and Online

Directives

Frequency of Contractor Performance Evaluations
By Engineering & Construction Services, City of Toronto, 5100 Yonge Street, Toronto, Ontario, M2N 5V7, 2014.

Change Order Protocol
By Engineering & Construction Services, City of Toronto, 5100 Yonge Street, Toronto, Ontario, M2N 5V7, 2015.

Invoice and Unbudgeted Expenditure Documentation
By Engineering & Construction Services, City of Toronto, 5100 Yonge Street, Toronto, Ontario, M2N 5V7, 2015.

Construction Material Testing and Quality Assurance
By Engineering & Construction Services, City of Toronto, 5100 Yonge Street, Toronto, Ontario, M2N 5V7, 2015.

Compliance with Contract Terms and Conditions
By Engineering & Construction Services, City of Toronto, 5100 Yonge Street, Toronto, Ontario, M2N 5V7, 2014.

Sign-off of Daily Inspection Reports
By Engineering & Construction Services, City of Toronto, 5100 Yonge Street, Toronto, Ontario, M2N 5V7, 2014.
**As-built drawing** – is documentation created by or based solely on information provided by a third party that reflects the installed, constructed or commissioned conditions of a device, machine, equipment, apparatus, structure, system or other outcome of an engineering project. Since the engineer has not verified that the information is complete or accurate, as-built drawings must not be sealed.

**ASTM** – American Society for Testing Materials

**Book 7** – MTO’s Ontario traffic manual *Book 7 Temporary Conditions* has been developed to show how to apply traffic control devices in temporary construction, maintenance, and utility work zones, to help ensure worker safety, motorist safety, and motorist mobility. It has been prepared to assist works in the field by illustrating the appropriate signing and the channelization required for the most common types of roadway work operations.

**CADD** – Computer Aided Design and Drafting

**Canadian Standards Association (CSA)** – is a non-profit organization that oversees the development of voluntary consensus standards for products, services, processes, systems and personnel in Canada.

**CCTV** – Closed Circuit Television

**Change Directive (CD)** – The change directive is used to order the contractor to make revisions to the contract, which are on the critical path or will impact time or cost or both. The change directive is utilized to keep the project moving forward and a subsequent change order with cost and schedule impacts is issued once the work has commenced.

**City** – The City of Toronto—the corporation—and will be referred to as the City for the purposes of this document.

**Change Order (CO)** – Change orders are written amendments to the contract and are typically used for contingencies, change in the work, extra work, additional work, and obtaining credit for deleted scope.

**Construction drawings** – Construction drawings are created from the tender drawings, modified to incorporate any changes from addenda that were issued during the tender process. Construction drawings are
issued after the tender has closed and are the ones used at the construction stage. They will consist of one paper print of the approved design drawing with changes or corrections made as required.

**Consultant** – Consulting engineering firm retained by, or on behalf of the City. This referenced may also include municipal staff depending on the context.

**Contract Administrator** – The individual or firm responsible for overseeing the construction of the works and representing the City’s interest. See also Project Manager, Project Lead.


**Engineer** – The licensed individual or firm responsible for the design of the works or their designate. Also may be referred to as the design engineer.

**ESA** – Electrical Safety Authority

**Field Instruction (FI)** – Instructions that provide information or requests to the contractor or to authorize minor variations to the contract documents that do not impact schedule, scope, cost, or design.

**GC** – General Conditions of Contract

**MOE** – Ministry of the Environment for the province of Ontario.

**MTO** – Ministry of Transportation for the province of Ontario.

**Municipal Class EA** – Municipal Class Environmental Assessments undertaken by municipalities which can vary in their environmental impact, such that the projects are classified in the Class EA in terms of schedules.


**OPSS** – Ontario Provincial Standard Specifications

**Quality Control (QC)** – means a system or a series of activities performed by the contractor to ensure that materials supplied meet the specified requirements.
Quality Assurance (QA) – means a system of activities carried out by the owner to ensure that the materials received meet the specified requirements.

Record drawings – is a document created to accurately reflect as-constructed, as-built or as-fabricated conditions and that has been sealed by a professional engineer after verifying that the document is accurate. They are usually retained to meet business or regulatory requirements.

Request for Quotation (RFQ) – RFQs are typically used to obtain detailed pricing and scheduling information on the scope of work when there is an anticipated change in work, extra work, or additional work. RFQs are prepared by the contract administrator and provided to the contractor.

RoDARS – Road Disruption Activity Reporting System is a report which notifies all emergency services such as police, fire, ambulance and so on, must also be submitted enabling these services to adequately plan alternate routes in the event of an emergency. The RODARS form is also sent to the city dispatch, traffic services and the TTC for their information.

Sealed – means a document is signed, dated and bears an impression of the professional engineer’s stamp. The seal implies that the professional engineer attests to the completeness and accuracy of the document.

Shop Drawings – A drawing or set of drawings produced by the contractor, supplier, manufacturer, subcontractor, or fabricator. Shop drawings are typically required for prefabricated components, and are an example of a construction submittal as prescribed in the contract documents.

TRCA – Toronto and Region Conservation Authority

TTC – Toronto Transit Commission

Total float – is the amount of time the selected activity can be delayed, without delaying the project’s finish date.

Water/Sewer Card – a form filled in by the inspector or assistant inspector showing the location and physical details of the water service or sewer service installed by the contractor.

WSIB – Workplace Safety & Insurance Board
City of Toronto
Engineering and Construction Services
North York Civic Center
5100 Yonge Street, 4th Floor
Toronto, Ontario
M2N 5V7

www.toronto.ca
Appendix E6-4
Capital Works Procedures Manual
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Objectives and Scope

The overall objective of this manual is to help City staff who are involved in the delivery and support of capital projects to understand the responsibilities that accompany each role at each stage of a contract, the steps involved in the procurement process, and how to be consistent in the management and administration of internally and externally managed contracts. This manual documents the procedures, practices, policies and guidelines that are applicable in the procurement and administration of capital works contracts.

This manual is intended to encompass both linear and vertical projects, and should be utilized in conjunction with the Field Services Manual, Contract Administration Manual and the appropriate contract documents. City Project Leads and Contract Administrators should fully review all contract documents, Consultant agreements, applicable standards, supplementary specifications, special provisions, and drawings to ensure compliance with all contract requirements.

With the exception of payment and other matters exclusively related to the engagement of external services, the administrative, monitoring, filing and documentation procedures relevant to planning, delivery, acceptance and contract closing described in this manual are applicable to both internal and external services.

In the event that information contained within this manual contradicts the specific contract documents, the Purchasing By-Law or the Procurement Processes Policy, the aforementioned documents shall take precedence. Should any information within this manual conflict with the Field Services Manual, the document with the most recent revision date shall take precedence.

This manual is a living document, and will be updated periodically to reflect technical refinements and updates over time. As such, readers are advised to ensure they are referring to the most recent edition. This manual is available in electronic form only.
Disclaimer

It is the City's expectation and requirement that Project Leads and Contract Administrators deliver all capital projects in accordance with the procedures provided in, and referenced throughout, this manual. This manual is not intended to be an exhaustive list of all requirements, nor is it a substitute for professional judgement. Consultants remain responsible for conducting their own research and for seeking any other advice they deem necessary for the completion of their work.

Nothing contained in this manual shall relieve City staff or Consultants of their obligations and responsibility to deliver projects in compliance with applicable Municipal, Regional, Provincial and Federal legislation or regulations. Unless the requirements set out in this manual are more stringent, the information contained in this manual does not supersede or replace any legislation or regulation governing the provision of engineering services by City staff or Consultants.

It should be noted that the policies and procedures described in this manual do not apply in emergency situations. Staff who may be involved in emergency projects are advised to familiarize themselves with appropriate City policies and guidelines.

The requirements of this manual may only be changed with the written approval of the Chief Engineer and Executive Director's Office.

Compliance with Corporate Policies

All City staff involved in the delivery and support of capital projects are expected to observe and comply with the City’s corporate policies in performing their duties. Of particular importance is the compliance with the Conflict of Interest and Confidentiality provisions included in the Toronto Public Service By-Law. It is imperative that each staff becomes familiar with these provisions and discuss any doubt with their manager. Staff are expected and required to perform their duties in strict adherence to the policy. Failure to comply with the policy will lead to disciplinary actions up to and including dismissal.

The Toronto Public Service By-Law is available at http://insideto.toronto.ca/tps/.
Acknowledgements

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Roles and Responsibilities

This section provides a general description of the Engineering & Construction Services Division, as well as the job classifications involved in the overall workflow procedure for a contract or project. Detailed discussion on the specific responsibilities for each job classification is provided within the body of this manual.

Engineering & Construction Services: Overview

The primary function of Engineering & Construction Services (ECS) is to provide technical and administrative support in the delivery of the Capital Works Program initiated by our main internal Clients: Solid Waste Management Services, Toronto Water and Transportation Services.

ECS also provides similar services to Toronto Transit Commission (TTC), City Planning and Economic Development & Culture and other agencies / departments when requested. This work is coordinated by the Design & Construction Units with support from Engineering Support Services, as illustrated in Figure 1.

Capital projects are infrastructure replacements, rehabilitations or installations that are planned and coordinated through the coordinated capital program. These include but are not limited to additions, replacements, rehabilitation and improvements to solid waste management facilities, roads, sidewalks, bridges, water treatment facilities, water distribution systems and wastewater collection and treatment systems.

Capital projects are delivered by the following Design & Construction sections:

- **Major Infrastructure (MI)**: This section handles upgrades and renovations to the City’s wastewater treatment plants, water treatment and solid waste facilities. The Major Infrastructure section also provides project management and construction administration for the Don River & Central Waterfront Wet Weather Flow system, and the Integrated Pumping Station for the Ashbridge’s Bay Treatment Plant.
• **Linear Underground Infrastructure (LUI):** This section delivers projects related to the Basement Flooding Protection Program (delivery of modelling-based infrastructure upgrades to reduce risk of basement flooding, erosion, and damage to existing infrastructure), standalone undergrounds (infrastructure that conveys water and wastewater to and from residents), stormwater management infrastructure (storm sewers, storage tanks, tunnels, stormwater ponds and streams networks), as well as trunk sewers and transmission mains (large diameter water and sewer pipes and storage tanks for trunk sewers).

• **Transportation Infrastructure (TI):** This section undertakes work related to the rehabilitation, reconstruction and inspection of bridges, structures, and expressways, local roads (installation of underground work as well as the resurfacing or reconstruction of local roads), major roads (resurfacing or reconstruction of major roads, as well as construction of retaining walls, streetscaping and underground work including sewers and watermains), and streetcar ways and special projects (underground and road work within streetcar ways and civic works for Business Improvement Areas (BIA) and more complex projects involving complex City infrastructure).

The Design & Construction sections may be supported by the Engineering Support Services section, which is made up of the following units:

• **Construction Inspection:** This unit ensures that the work performed by Contractors on internally managed projects is completed and constructed to City’s standards and specifications. For detailed information on inspection services, refer to the *Field Services Manual.*

• **Contracts, Tenders & Payments:** The Contracts, Tenders & Payments (CT&P) unit assists Contract Administrators and Project Leads in the preparation and review of Call Documents for the procurement of professional services and construction. The CT&P unit also manages payments for all construction and professional services, reviews tender submissions, prepares documents for and coordinates the award and legal execution of contracts for ECS. CT&P also coordinates the legal execution of professional and construction contracts for Transportation Services. CT&P liaises with the Procurement and Materials...
Management Division (PMMD), Insurance & Risk Management and Legal Services staff on matters related to tender calls and requests for proposals, as well as the execution of the corresponding contracts and agreements.

- **Business Improvement & Standards**: This unit is responsible for developing and implementing new guidelines, standards, specifications, practices and procedures affecting municipal infrastructure.

- **Engineering Surveys**: This unit's responsibilities include undertaking topographic and preliminary design surveys for City-owned facilities and facilities owned by the City’s Agencies, Boards and Commissions (ABC’s), and providing construction layout services for City infrastructure. The unit also provides construction administration support to all internally delivered Capital Works Program projects in coordination with managers of the Design & Construction Transportation Infrastructure section.

- **Land & Property Surveys**: this unit is responsible for undertaking property and topographic surveys of lands owned by the City and its ABC’s; preparing legal descriptions of land; managing property records; undertaking title searches and analyzing complex property records; and the street naming and addressing functions for the City.

*Figure 1: ECS Infrastructure Delivery Operation Chart*
The Engineering Review section is responsible for ensuring that applications for land developments and third-party projects conform to City standards, policies, guidelines and procedures. Engineering Review also ensures that these projects can be serviced by existing infrastructure. In cases where this is not possible, Engineering Review ensures that new or upgraded infrastructure is provided.

Public consultation and community outreach is provided through the Public Consultation Unit (PCU) of the Policy, Planning, Finance & Administration (PPFA) division or the Office of the Chief Engineer and Executive Director, depending on the nature of the construction project. Refer to Chapter 1 for additional information on communication with the general public regarding construction projects.

Procurement of products and services is handled by Purchasing & Materials Management Division (PMMD). PMMD is responsible for ensuring all purchases assist in delivering City services at the best value possible for residents of the City of Toronto. PMMD develops policies, procedures and guidelines for the procurement of goods and services to ensure an open, fair, competitive, and transparent municipal procurement processes.

Financial services are available from the PPFA and Corporate Finance divisions. Legal services are provided through the Legal Services division.

Responsibilities of Engineering & Construction Services

ECS staff is responsible for delivery of various aspects of the Capital Works Program. These include:

- Managing individual projects within the Capital Works Program
- Providing design services for a wide variety of small to large multidisciplinary projects
- Coordinating the procurement of various contracts and professional services for studies and design, and contract administration services
- Tendering, awarding, and legal execution of construction contracts
• Ensuring application of City standards

• Administration and financial management of the contracts and agreements

• Providing advice to the Clients on scheduling and structuring of capital works projects to optimize the delivery of the projects

• Working with Purchasing and Materials Management (PMMD) and Legal Services divisions to support the implementation of capital works projects

• Updating project estimates, schedules, and cash flow for projects being managed by ECS

• Identifying new project needs as they arise during the delivery of a project, and communicating with the respective client asset management units

• Recommending alternate procurement methods, if appropriate, and obtaining authority to implement them

In carrying out these duties, ECS must ensure compliance with Division and City policies to ensure the effective and efficient completion of capital work projects within scope, on time, within budget and in accordance with terms and specifications of the contract.

In most cases the Client Division, within its capital works project planning group, is responsible for determining which capital project(s), phasing, and level of service is required from ECS based on its partnership agreement and in consultation with ECS. Planning for the City's bridge inventory is completed by the Bridges, Structures and Expressways unit of the TI section.

Study, pre-design, and detailed design of capital projects may be undertaken by ECS staff or by External Service Providers. Where external resources are used, ECS is responsible for overseeing the activities of the External Service Providers. Whether the project is undertaken by in-house staff or External Service Providers, an ECS Project Lead is assigned to manage the delivery of the project from planning through to closure. The Project Lead is accountable for acquiring the required services and overall day to day administration and documentation of the project. Table 1 lists the general types of Design & Construction projects provided by ECS.
### Table 1 – Types of Capital Works Projects

<table>
<thead>
<tr>
<th>Major Infrastructure (MI)</th>
<th>Linear Underground Infrastructure (LUI)</th>
<th>Transportation Infrastructure (TI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don River &amp; Central Waterfront Utility relocation associated with facilities projects Wastewater treatment plants Water treatment plants Solid waste management facilities Reservoirs Elevated water tanks Pumping stations Planning and feasibility studies related to water treatment</td>
<td>Local and trunk Storm sewer construction – new, replacement and rehabilitation Local and trunk sanitary sewer construction – new, replacement and rehabilitation Local and trunk watermain construction – new, replacement and rehabilitation Watercourse rehabilitation Non-treatment storm water facilities Force mains Inflow and infiltration reduction Sanitary or CSO Storage tanks Water distribution studies</td>
<td>Local road resurfacing / reconstruction Major road resurfacing / reconstruction Ramps &amp; expressway on grade</td>
</tr>
</tbody>
</table>
Definition of Roles

**Client, Client Division** - Unit or agency that represents funded programs that impact infrastructure within the City’s right-of-way, such as Toronto Water, Transportation Services, Solid Waste, TTC, and BIA. In most cases, the Client is accountable to identify and update project limits, scope, budget, and delivery year through the life of projects.

Also referred to as the Asset Owner.

**Construction Supervisor** – On internally inspected projects, Construction Supervisors are responsible for supervising, motivating, training, and the day to day management of construction inspection staff. The Construction Supervisor provides daily functional direction to the Construction Inspection staff as well as dealing with site and contract issues.

For additional details, refer to the *Field Services Manual*

**Consultant** – The Consultant is the person or entity engaged by the City and identified as such in the formal contract agreement. The Consultant can be the architect, engineer, or business entity licensed to practise in the province or territory of the place of the work. The term Consultant means the Consultant or the Consultant’s authorized representative.

The Consultant may provide study, design, engineering services, and Contract Administration services for City projects, as stated in the agreement.

**Contract Administrator** – On internally managed projects, the Contract Administrator provides functional direction to the Inspector and is accountable for all matters related to the project, including managing the project’s scope, budget, schedule, maintaining contract documentation, and reporting progress to their manager as well as all Clients or Stakeholders. The role involves overseeing the various project states from pre-construction to completion, reviewing Inspector’s reports, contract changes and authorizing payments.

When an External Service Provider, typically a Consultant, is involved in the project, they take on the role of Contract Administrator. On these projects, the Consultant must work with
the City's Project Lead throughout the project as defined in the agreement.

Details of roles and responsibilities are outlined in the Call Document and consulting services agreement for the project or program. Generally, the City Project Lead is responsible for decisions related to scope, schedule, budget and design impacts, and ensuring that the project is delivered on time and on budget while meeting the City's requirements. The External Service Provider makes recommendations to the City's Project Lead on a variety of items such as Contractor payments and Contract changes.

For both internally and externally managed projects, the Contract Administrator shall be familiar with all submissions, additional approvals, and other items specific to the Contract that are to be completed to the satisfaction of the City at various stages of the construction phase.

See also "Project Lead."

**Contractor** - The person or business that enters into a contract to furnish supplies or perform work at a certain price or rate and with a certain schedule. When in a binding agreement with the City, the Contractor is required to fulfill the obligations as outlined in the contract documents and specifications within a given schedule and price. All City contracts place the onus on the Contractor for complying with all applicable bylaws, statutes, and regulations and for carrying out the works in such a manner so as not to unnecessarily or unreasonably inconvenience the public. The Inspector (for internally managed projects) must assure that the quality of materials and workmanship is not compromised during the Contractor's due process. Any deviation from the contract design or specifications must be approved by the City prior to being implemented.

It is the Contractor's responsibility to direct their staff and subcontractors.

**Design Supervisor** – For linear internally designed projects, Design Supervisors are responsible for supervising the designers and draftspersons as they complete the design, as per the scope of work and schedule.
Division Head – Reports directly to the Deputy City Manager and is responsible for setting the overall strategic direction of their division by establishing its goals and objectives. Also responsible for establishing effective working relationships with other departments such as Corporate Services, Finance, Economic Development Culture and Tourism, City Planning, as well as suppliers, union officials and the community to achieve mutual objectives. In regards to the processes described in this manual their role is to review and approve projects within their delegated signing authority. For ECS, this is the Chief Engineer and Executive Director. For Toronto Water and Transportation Services, this is the General Manager.

External Service Provider – A person or entity engaged by the City to provide services including but not limited to consulting, design, and contract administration.

See also "Consultant", "Contract Administrator."

Fairness Consultant – A third party retained to assess the procurement process and provide assurance that all components and/or proponents on a call were evaluated objectively and in accordance with approved and required procedures.

Field Ambassador – The Field Ambassador is the dedicated point of contact for the general public during program delivered construction projects, such as the Basement Flooding Protection Program. In a typical project, the Contract Administrator is the main point of contact for the general public, and the Inspector directs on-site communications. When a Field Ambassador is involved in a project, their role is to provide direct and timely response to issues from the public, reducing the amount of involvement between the public and the Contractor and construction delivery staff.

General Contractor – The person or business who contracts for and takes responsibility for completing a construction project. The General Contractor also hires, supervises, and pays all subcontractors and suppliers.
Inspector – The Inspector leads all inspection activities on site and works directly with the Contract Administrator. The Inspector also documents field activities completed by the Contractor. For further detail, refer to the Field Services Manual.

Operations Lead – On Major Infrastructure and Facilities projects, this is the Operations staff member who is the single point of contact for Operations. The Operations Lead is assigned to assist the Project Lead by assembling an Operations review team for Operability and Maintainability review of the new Capital Project.

Program Manager - When a collection of projects are being delivered under a Program Management structure by External Service Providers, the financial and strategic aspects of the program are overseen by a Program Manager. The Program Manager also works in conjunction with Project Leads, who manage the day-to-day activities of the individual projects.

Project Lead – The Project Lead is the project engineer, project manager, senior project engineer, or senior project manager who is accountable for ensuring the completion of the project from pre-design to the end of the warranty period.

While a contract is in the pre-design, design, and tender stages, responsibilities of the Project Lead include confirming the scope with the various internal Clients, liaising with internal and external Stakeholders, overseeing the completion of the design (overseeing the Consultant through completion of design, in some cases), obtaining all necessary approvals, as well as developing, reviewing and tendering the contract documents.

After an internally managed contract has been awarded, the role of Contract Administrator is taken on by the Project Lead. Responsibilities include overseeing the construction phase, managing the approval of change orders, managing the approval of monthly payment certificates and ensuring final acceptance of the work at the various stages of construction.

After an externally managed contract has been awarded, the Consultant is usually assigned the role of Contract Administrator and reports to the City Project Lead. The City Project Lead provides support and oversight on items such as payments and contract changes, upon receipt of recommendations from the
Consultant Contract Administrator. The Project Lead works with the Consultant to ensure that the projects are designed and constructed within budget, schedule, as per City and applicable standards, and meet the expectations of the Clients.

On both internally and externally managed contracts, final authorization on payments is provided at manager level. Authorization of Changes in the Work are determined by signing authority, in accordance with the Financial Control By-law. The Project Lead liaises with internal and external Clients or Stakeholders and is the single point of contact for the Client Division.

See also "Contract Administrator."

**Stakeholders** – The units, groups, or individuals that may affect, be affected by, or perceive themselves to be affected by a decision, activity, or outcome of a project.
Chapter 1: Communication

1.1. Introduction

This chapter provides an introduction to the methods used to communicate with internal and external Stakeholders and the project team.

Effective communication between all parties is critical to the success of any project. This includes communication between the Project Lead, and the public, Consultants, project team, as well as internal and external Stakeholders.

Municipal construction works will often cause varying degrees of disruption to the local community. Depending on the project, it is important to be aware of the impacts a project will have on a community (such as street access, driveway access, lane access, effects on traffic, generation of dust, noisy work, or disruptions to water service) and to provide as much information about these impacts (length, duration, dates) as possible. This is reflected in Engineering & Construction Services’ mission statement:

"To create safe and sustainable municipal infrastructure that enhances the high quality of life for the people of Toronto, through professionalism in project planning, engineering and project management services."

Notifying the community about the project, its potential impact and benefits are essential in gaining understanding and support from the community. Keeping open lines of communication within the project team ensures the same understanding about project goals and objectives, it also promotes efficiency as team members complete their tasks. Communication between all parties will help ensure the project is completed successfully.

1.2. Communication: External Stakeholders

When the design stage of a project begins, the Project Lead should identify the potential Stakeholders and assess the need for a communication plan. Stakeholders may include residents, tenants, property owners, businesses, and institutions such as schools, places of worship, community centres, libraries, and hospitals. Stakeholders may also include Councillors, utilities,
and road users such as drivers, pedestrians, cyclists, and transit providers.

1.2.1. Communication Management

External communication regarding construction projects is managed through the ECS Customer Services & Issues Management Program Manager (CS&IMPM), or in certain situations through the Public Consultation Unit (PCU) of the Policy, Planning, Finance & Administration (PPFA) division.

The CS&IMPM is responsible for issues management, managing stakeholder notification, and supporting Project Leads in their needs when communicating ECS-led projects with the public.

The PCU is the City of Toronto's in-house public consultation service provider, and often leads public consultation activity for a Municipal Class Environmental Assessment (MCEA). Public consultation is regularly required by Council and is an integral part of many planning processes such as MCEA.

For most construction projects, information is conveyed to the residents, businesses, and Councillors for local and adjacent wards to the construction area through the use of Pre-Construction Notices and Construction Notices. In most cases, notices are prepared by the Project Lead and reviewed and approved by the CS&IMPM.

Support from PCU is required if the project is one, or a combination of the following:

- Is the result of an environmental assessment that was managed by the PCU
- Has Business Improvement Area (BIA) involvement
- Work is planned for an arterial or collector road (watermain, sewer and road) and impacts are severe and lengthy
- Has other Stakeholders (Councillors, resident associations, businesses, etc.) involved
- Will require a complete shutdown of any kind (intersection, road, service, etc.)
The Project Lead should refer to the *Notification Guide for Design and Construction Projects* for guidance in assessing the notification and communication requirements and for notice templates. The *Notification Guide* was developed by the PCU.

The *Notification Guide*, as well as a checklist to assist Project Leads to determine communication needs, are available on the [PPFA intranet site](http://example.com).

### 1.2.2. Pre-Construction Notices

Pre-construction notices are sent to properties, including businesses, affected by construction projects during the tender phase of a project, 3-4 months prior to work beginning and no later than one month before work starts. This timeframe often corresponds to the tender being issued.

Details regarding the delivery of notices is provided on the *Notification Guide*. The distribution area for notices varies; the *Notification Guide*, PCU and CS&IMPM will support staff to confirm the distribution area.

Pre-Construction notices advise affected stakeholders of project details, which include:

- Expected construction start month
- Expected construction end month
- Map of work area
- What to expect before construction starts, such as markings that will be made on the ground
- Contact information for Project Lead
- Ways to obtain additional information (Project Lead contact information, 311, TTY Hearing Impaired Service, project website)

Any required actions or planning by property owners should also be included in the Pre-Construction Notice, such as removal of installations (sprinklers, furniture, etc.) in the right-of-way, planning for substandard water service replacement or pre-construction surveys.
1.2.3. **Construction Notices**

Construction notices are delivered no more than four weeks and no less than two weeks before construction begins, after the contract has been awarded and scheduling details have been confirmed with the Contractor. Details regarding the delivery of notices is provided on the *Notification Guide*.

Construction notices provide more detailed information, in addition to the details provided in the pre-construction notice, such as

- information on equipment to be moved on site
- what to expect during construction (including noise, dust, traffic detours)
- hours of work
- road and sidewalk access restrictions
- parking restrictions
- changes to garbage and recycling collection
- information regarding surface finishes to be restored after construction
- changes to transit service

1.2.4. **Construction Update Notices**

In some cases it may be helpful to distribute additional notices during the construction period, such as when the construction period is long with distinct phases of work, where there are important community and business impacts, or a change of schedule. Construction Updates should be used on any project that:

- is more than 2 months in duration
- involves a number of work / traffic staging changes or
- involves a number of phases in the contract.
For instances where a disruption will only affect a limited number of properties, Construction Update Notices can be hand delivered to the properties.

### 1.2.5. Notice Preparation

Templates for various project types are available on the PPFA PCU Notification Guide intranet page at [http://insideto.toronto.ca/ppfa/pcu-notification-guide.htm](http://insideto.toronto.ca/ppfa/pcu-notification-guide.htm). A new template must be downloaded each time a notice needs to be prepared. The templates and other materials are updated periodically, as such, downloading a new template for each notice will ensure that the Project Lead is using the most recent version.

Pre-Construction Notices, Construction Notices, and Construction Updates are to include a map of the work area. It is the responsibility of the Project Lead to prepare the map. The maps are to be prepared using the Map Creator tool, available on the ECS intranet site: under the "Tools" tab, click on "DMOG (Base mapping/SSARA)", then click "Map Creator."

The Project Lead must allow adequate time for the preparation, review, printing, and distribution of every notice. Once the draft notice(s) are complete, the notices must be:

- Reviewed by the Project Lead's manager (allow one week for review)
- Sent to CS&IMPM for input and approval, or to PCU if they are involved (allow one week for review)
- Upon receipt of approval, sent to affected Councillor's offices (allow one week review time)

Complex projects, such as those with severe traffic impacts, planned in busy downtown communities and with active residents, businesses and councillors, will require more detailed and robust communications plans and tools. The Project Lead should be prepared for additional consultation / update meetings, more frequent updates and notices and sharing information for emails, websites and social media.

Additional information about managing communications on these type of projects are outlined in the *Notification Guide*. 

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1.2.6. Signage

Capital Improvement Project Construction Signs are erected at the project location prior to the commencement of the work. These signs summarize project information including the project title, start date, expected completion dates, project details, and contract number. Before construction work begins, these must be placed near entry and exit points, or at the beginning and end locations of the project.

The Contractor is responsible for the production and installation of these signs; however, the Project Lead shall work with the Contractor to determine the appropriate locations and content for the signs. The responsibilities of the Contractor with respect to Capital Improvement Project Construction Signs are detailed in the contract documents. Templates for the signs are available on the ECS external website for the Contractor to reference. The CS&IMPM can provide support for the signage wording to ensure compliance and consistency with similar signage.

Fence Mesh Banners may also be used to communicate project details to the public. When specified, the Contractor is responsible for the supply, installation, relocation, maintenance, and removal of these banners. Signage is also used to control traffic once work has commenced. Signage is also used to control traffic once work has commenced. The responsibilities of the Contractor with respect to traffic control signage are detailed in the contract documents.

1.2.7. Other Communication Tools

Depending on the project and advice from CS&IMPM and PCU, additional tools may be used to communicate project information with the public. These tools include:

- News releases
- Public meetings
- Briefing notes
- Fence mesh banners
- Custom websites
- Email list servers
• Twitter / social media

Details on how to use these and other tools are provided in the Notification Guide.

1.3. Communication: Project Team

Communication to internal stakeholders will occur through a variety of methods, depending on the nature of the information being conveyed. These methods include but are not limited to progress and spending forecasts and updates, briefing notes (as requested for senior management or councillors), responses to inquiries from the public, and responses to inquiries from the media.

Communication between project team members will occur through several methods, including but not limited to email, telephone conversations, and organized meetings. Retention and filing of project-related correspondence is discussed in Chapter 9. This section outlines the major types of meetings that may be held during the course of a project.

The Project Lead will hold regular meetings throughout a project to facilitate communication among the project team members, as well as to monitor and control progress. Several types of meetings are conducted, depending on the type of project. These include initiation meetings, pre-construction meetings, and site meetings.

These meetings are introduced below.

1.3.1. Meeting Organization: Agendas, Minutes

Key elements of effective meetings are:

• **Planning**: Ensure that there is a need for the meeting, prepare an agenda with realistic time frames and distribute in advance. Arrange for the appropriate parties to be invited to the meeting, and let them know why their attendance is required.

• **Control**: Start on time, have a clear purpose for the meeting, establish ground rules for the meeting (i.e., do not allow people to interrupt each other and eliminate side conversations), and keep on track.
• **Record**: Take notes during the meeting (or designate a recorder) so that key points and decisions are documented. Action items should be recorded with completion dates and the name of the person or organization who is responsible to complete the action item. The meeting minutes should be kept in a consistent format, and ensure that the minutes are distributed to all attendees and filed in accordance with Appendix I: Centralized Filing. These elements should be incorporated into all meetings to ensure that discussions and decisions are documented for the project file.

• **Issuance of Minutes**: Minutes taken during the meetings should be distributed within five working days of the meeting.

1.3.2. **Initiation Meeting**

On consulting assignments and internally designed projects, an initiation meeting with the Project Lead, the External Service Provider (primarily engineering Consultant, if applicable), Stakeholders (as required), and the Client Lead should be held to ensure that all parties have a full understanding of the project and contractual terms. Topics to discuss during an initiation meeting include project scope, schedule, funding, and cost. These meetings are also referred to as "kickoff meetings."

Additional details regarding the initiation meeting can be found in Sections 2.6.3, 4.5.2.2, and 5.2.1. Document ECS-CWP-01 is a sample agenda for an initiation meeting, including sample topics that may be discussed.

1.3.3. **Pre-construction Meeting**

On construction projects (Chapter 6), a pre-construction meeting with the major participants in the construction phase, should be held. The purpose of the pre-construction meeting is to introduce the parties involved in the construction phase, and to discuss procedures to be followed throughout the course of the project. It often includes a review of the required permits, approvals and communications required and confirmation of the Contractor mobilization and schedule. The pre-construction meeting should occur after the contract is awarded and the contract is executed by the Contractor and before the work commences.
Additional details regarding the pre-construction meeting can be found in Section 6.5.2.1. Document ECS-CWP-02a is a sample agenda for a pre-construction meeting for a linear project, and Document ECS-CWP-02b is a sample agenda for a vertical project.

1.3.4. Site Meetings

Site meetings are conducted once a project is underway. Site meetings should be held at least once per month, depending on the nature and duration of the project, and as noted in the contract. Site meetings may be held more frequently if warranted by the construction schedule or if required during commissioning. The Project Lead shall determine the frequency of the meetings and call for special meetings when necessary.

The meetings should generally be attended by the

- Project Lead
- Client’s representative, if applicable and appropriate
- External Service Provider, if one is engaged (usually a Consultant)
- General Contractor’s representative
- Utility companies’ representatives, if applicable
- Subcontractors’ representative upon invitation by the General Contractor
- Third Parties and Stakeholders impacted by the project, such as TTC, Metrolinx, Parks Forestry & Recreation, CNR

The minutes of meetings should be kept in a consistent format. The Project Lead should ensure that the minutes are distributed to all attendees and the appropriate Stakeholders.

Additional details regarding site meetings can be found in Section 6.5.3, as well as the Field Services Manual.
Chapter 2:  Project Initiation and Planning

2.1. Introduction

This chapter describes how projects are initiated before they are assigned to ECS, how projects are tracked and set up after they have been initiated, and typical files that are set up once they have been assigned.

2.2. Project Initiation

Linear projects (projects within the municipal right-of-way) are coordinated by the Major Capital Infrastructure Coordination (MCIC) Office. Major infrastructure projects (wastewater treatment plants, water treatment and solid waste facilities) are initiated by the Client Division.

2.2.1. Linear Infrastructure Projects

ECS obtains the majority of capital works projects from the respective infrastructure asset management and programming/planning sections of the Client Divisions.

The MCIC Office guides the multi-year coordination of linear infrastructure planning, design and construction on behalf of City divisions, various utilities and other organizations. As projects move closer to delivery, MCIC manages specific identified risks with the objective of improving project delivery rates.

MCIC, with input from various divisions within the City, develops the Capital Works Program through an annual budget planning process. Following the approval of the Program by Council, the planning and asset management sections of the operating divisions, in consultation with ECS, identify on an annual basis, capital works projects that require support from ECS in design, procurement and project administration.
There are six distinct phases identified in the delivery of capital works:

1. **Assessment of Needs.** In this phase, Client Divisions evaluate and prioritize their infrastructure needs. Depending on the project, an Environmental Assessment may be required.

2. **Intra-divisional clearances or Intra-organizational clearance.** In this phase, Client Divisions share and review the needs lists within their Division or organization, and assess the condition of all their assets in locations where construction is proposed.

3. **Inter-divisional Clearance or inter-organizational clearance.** In this phase, Client Divisions exchange their complete programs and review all their assets in locations where construction is proposed by others.

4. **Pre-Design.** In this phase, the scope of individual projects is fully defined and clearances are obtained from the Client Divisions.

5. **Detailed Design.** Detailed design is undertaken by the delivery agents (e.g. ECS). In this phase, the design details are confirmed, and the project is brought to a tender-ready stage. Some projects, depending on their nature and complexity, may require a longer design period.

6. **Construction.** In this phase, work is tendered out to a Contractor by the delivery agents, and the work is undertaken by the Contractor.

Engineering & Construction Services becomes involved in the process at the pre-design phase. After the Inter-Divisional / Intra-Organizational Clearance phase (prior to pre-design), the Capital Works Program is closed for changes. Changes that arise during the pre-design, detailed design, and construction phases must go through the MCIC Program Change Management process as detailed in the Capital Coordination Protocol document available for download on the MCIC intranet site.
Chapter 2: Project Initiation and Planning

Information provided to the ECS Design and Construction sections at the pre-design stage includes a spreadsheet summarizing project locations, work types, and preliminary budget.

The location, type and timing of construction that is planned across the city each year is presented in T.O. INview, an online map that displays work planned each year, by each organization. T.O. INview is accessed through the internal and external websites of the MCIC Office (http://inside.toronto.ca/toronto/mcic/introduction.htm).

Detailed information on how MCIC develops and maintains a five-year coordinated capital program is presented in the document **Capital Coordination Protocol**, available on the MCIC intranet site.

### 2.2.2. Facilities and Major Infrastructure Projects

Facilities and major infrastructure projects are initiated by the Client Divisions. The Client Division identifies the need for the work and documents this through a business case. The work is jointly reviewed by the Client Division and the Project Delivery groups to determine the method for delivery of the work and the timing. The project is then assigned to a Project Lead, who works with the Operations Lead to establish a budget and project team. The budget and business case are included in the Capital Works Program and subject to approval by City Council, the project proceeds.

The Project Lead defines the Scope of Work after consultation with all the Stakeholders, completes a project charter (if required) and prepares the Call Document to hire a Consultant for the engineering of the project and the contract administration during construction stage of the project. The Project Lead takes the responsibility for completing the project from initial engineering through to the end of the warranty period.

### 2.2.3. Procurement of External Services

Once a project has been initiated, a need for preliminary drawings and reports by an External Service Provider may be identified. Refer to Section 4.2 for detailed information on the procurement of External Service Providers. Chapter 3 provides
detailed discussion on the policies governing the procurement of services.

2.3. Project Tracking Portal

Project Tracking Portal (PTP) is a web-based system used by the City to track projects, contracts, cashflow, commitments and expenditures. It provides up-to-date project information on scope, schedule, effort, budget, engineering fees, expenditures and milestones as well as produces a variety of operational and executive reports.

Detailed information on the setup and management of projects and contracts, as well as time tracking responsibilities of staff, is available in the document *PTP Business Protocols*, available on the intranet at [http://insideto.toronto.ca/ptp/protocols.htm](http://insideto.toronto.ca/ptp/protocols.htm), as well as from the Information & Technology intranet site at [http://insideto.toronto.ca/itweb/training-resources/guides.html](http://insideto.toronto.ca/itweb/training-resources/guides.html).

There are three types of contracts established in PTP:

- **Unit Price** – Used primarily by the Linear Underground Infrastructure and Transportation Infrastructure sections for unit price construction work. Unit price contracts reference standard items in PTP.

- **Professional Services** – Used for request for proposals (RFP) for consulting services and request for quotations (RFQ) for engineering and testing services.

- **Lump Sum** – Used primarily by the Major Infrastructure section, the Bridges Structures & Expressways unit, and other units for lump sum construction work.

Projects are created in PTP as soon as they are initiated or confirmed, usually before a project is assigned to a Project Lead. When the Capital Works Program for the current year is confirmed by MCIC, linear projects are entered into PTP by the PTP Administrator. Vertical projects are created in PTP by the Manager or CT&P Supervisor after authorization to proceed with the project has been confirmed.

Project dates and financial information is tracked through their various phases, such as planning, design, construction and post-construction. Contracts are tracked in PTP through the pre-tender, tender, award, construction, and warranty phases.
2.4. Project Filing

ProjectWise is an integrated suite of software solutions used by ECS staff for document/file management, publishing, and collaboration. Electronic files must be maintained on ProjectWise as soon as possible upon the initiation of the project or contract, so that the files are accessible to all project team members.

Hard copies of certain documents may be required to be kept for legal reasons (for example, sealed documents, or those with original signatures). The types of files that are required to be retained are further described in Chapter 9.

Detailed information about ProjectWise can be found on the intranet site (http://insideto.toronto.ca/projectwise/).

2.5. Types of Files

This section describes the types of files typically generated on various types of projects.

2.5.1. Files for Consulting Assignments

All documents related to these projects should be filed for record as per the filing structure accepted by the section or unit. Examples of files generated on consulting assignments include:

- RFP files - information and documents pertaining to the development of the terms of reference, addenda, technical and financial proposals, procurement process, record of reference checks, etc.

- Contract files – executed contracts, bonds and insurance certificates, minutes of meetings, correspondence, requests, authorizations, release and waiver, completion certificate, etc.

- Payment files – billing information (as stipulated in the RFP or Agreement), Contractor invoices and supporting documentation (including payroll information, Workplace Safety and Insurance Board (WSIB) certificates and statutory declarations where applicable), approved scope change documentations, approved payment certificates, claims related documents, etc.
• General files - internal/public/councillors/utilities correspondence, miscellaneous documents

Some of the documents may be maintained in an External Service Provider’s filing system. All project documentation is to be turned over to the City Project Lead at the conclusion of the project, before the final payment is processed. All materials and goods purchased in connection with the project and paid for by the City should also be turned over to the Project Lead. The Project Lead should take necessary steps to deduct from the final payment any cost of materials and goods that were not turned over to the City.

Refer to Chapter 4 for additional information on the management of external study and design services.

2.5.2. Files for Internally Designed Projects

For internally designed projects (Chapter 5), working drawings, draft documents, preliminary, and any correspondence related to decisions made regarding the design should be kept on file. Other examples of files from internally designed projects include:

• documents pertaining to scope confirmation
• 30, 60 and 90% design, design-related correspondence
• meeting minutes
• Internal correspondence and comments
• External correspondence and comments (public, Councillors, utilities)

Refer to Chapter 5 for additional information on the steps undertaken for projects designed in-house.

2.5.3. Files for Construction Projects

Files and directories for construction projects (Chapter 6) are typically set up at the tender stage. All documents related to a construction project should be filed during the various phases of the project. Examples of files for construction projects include the following:
• Design and tendering files – Information and documents pertaining to project design and tendering such as checklists, approvals, addenda, bids, etc.

• Contract administration files – Executed contracts, bonds and insurance certificates, minutes of meetings, Client correspondence, requests, authorizations, etc.

• Contractor files – Contractor correspondence, request for information, Request for Quotation, performance evaluations, correspondence pertaining to Change Directives and Change Orders, etc.

• Inspectors Reports

• Payment files – Price schedules (base items and accepted “equivalents and alternatives” where applicable), Contractor invoices and supporting documentation (including WSIB Clearance Certificates and statutory declarations where applicable), approved Change Directives and Change Orders, third party cost recovery billing information (set up separate sub-files for each third party if necessary), approved payment certificates, etc.

• Claim related files – Claims submitted by the Contractor, as well as any documentation pertaining to the claim or potential claim. See Section 6.5.14 for further discussion on dealing with claims.

• General files – Internal correspondence, public correspondence, correspondence with Councillors, correspondence with utilities, comments, miscellaneous documents

Insurance certificates and surety bonds should be kept in the project file in a separate sub-directory with the agreement for easy access. For further information regarding safekeeping of insurance certificates and surety bonds, refer to the document Instructions for Safekeeping of Letters of Credit, Performance Bonds, Insurance Certificates and Parental Guarantees, available on the Corporate Finance intranet site.

External Service Providers acting as Contract Administrators may have maintained a file system for the project. The Project Lead shall ensure that the files are turned over to the City at the end of the contract, before the final payment is issued, and stored at an appropriate location.
Refer to Chapter 6 for additional information on the management of construction projects.

2.6. **Project Planning**

This section describes the planning activities taken by ECS upon the initiation of a project. Main activities and tasks include confirmation of funding availability, assigning staff, defining project scope and notifying Stakeholders.

2.6.1. **Internal Scheduling, Costing, Budgeting**

To minimize or avoid any contract amendments, sufficient time should be allocated for project planning, meeting and verifying project scope with all Stakeholders prior to finalizing the procurement document. All information pertaining to the agreed project scope, budget, and schedule are documented.

2.6.2. **Staff Resources and Project Team**

The ECS Director or Manager shall determine whether there are sufficient in-house resources to carry out the work and whether the project is within the area of expertise of in-house staff. If not, the procurement of an appropriate External Service Provider will be initiated.

In any case, the ECS Director or Manager assigns the project management duty to a Project Lead and, in consultation with the Client Division, identifies the appropriate Client lead.

The ECS Project Lead is responsible for the overall management and administration of the project. This includes, where necessary, defining and documenting the roles and responsibilities of each team member, communications protocol and the expected commitment and involvement at the various stages of the project.

Where necessary on internally managed projects, the ECS Manager may assign a staff member(s) to the team, and through mutual agreement, designate an appropriate Client lead or staff member having the requisite professional expertise or experience, to be responsible for specific tasks, such as:

- participating in the development of the Call Document
• overseeing the quality of delivery of a particular area(s) of work

• other functions including reviewing and agreeing to certain parts of all progress payments, and sign off of milestones and deliverables.

Typical project teams are organized as shown in Figure 2 and Figure 3.
Figure 2: Design Services - Linear Project Team

Figure 3: Design Services - Vertical Project Team
2.6.3. Defining Project Scope

2.6.3.1. Linear Contracts

The Project Lead sets up an initiation meeting where project scope, funding, limits, schedule, and required approvals and permits are confirmed by the respective Clients. Refer to document ECS-CWP-01 for a sample initiation meeting agenda.

The ECS Project Lead is to produce a Pre-Design Report (ECS-CWP-03) which confirms the budget estimates, scheduling information, and project scope discussed at the initiation meeting. This report must be completed before any preliminary or detailed design work on internally designed projects. Refer to Section 5.2.1 for additional information on initiation meetings for internally designed projects.

2.6.3.2. Vertical Contracts

Prior to commencement of any design work, the Project Lead shall ensure that the Project Work Scope has been defined and signed by the Client Division. The Project Lead defines the "Scope of Work" after consultation with all the Stakeholders, and prepares the Call Document to hire a Consultant for the designing of the project and the contract administration during construction stage of the project. A Project Charter may be used at this stage.

2.6.3.3. Managing Changes in Project Scope

For both linear and vertical contracts, good communication with the Client Division is important, particularly when it comes to changes in the project scope. The Client Division should be advised as significant changes in scope are identified. The Client Division shall also be kept informed in writing prior to the additional expenditures which would result in the exceedance of the total contract or Client funding as part of the Purchase Order (PO) Amendment process.

For Client Division initiated scope changes, the Client should provide a formal written change request to the Project Lead.
2.7. Approvals and Permits

Project Leads should be aware of necessary approvals and permits that may be required to complete a project. Typically, applications for these are initiated at or around the detailed design stage. All necessary approvals and permits for the engineering design are to be secured prior to tendering unless approved otherwise by the appropriate Director.

Where required, the application process for an Environmental Compliance Approval (ECA) from the Ministry of the Environment and Climate Change (MOECC) should be initiated as soon as the final design is completed.

An ECA may be required for projects that will generate emissions and discharges related to air, noise, waste, or sewage. The ECA application form (available on the MOECC website at [https://www.ontario.ca/page/ministry-environment-and-climate-change](https://www.ontario.ca/page/ministry-environment-and-climate-change)) is signed by the Project Lead or their manager, and is submitted through the City's Transfer of Review Program. Information regarding the Transfer of Review Program is available on the Toronto Water intranet site on Policy and Program Development. Watermain approval is required on all watermain replacement projects.

Activities posing minimal risk to the environment and human health may be registered with the Environmental Activity and Sector Registry (EASR). Detailed information on whether an ECA or EASR is required is available on the MOECC website.

Ideally, MOECC approval should be completed prior to tendering the project. However, for Linear Infrastructure replacement projects and Major Infrastructure projects, tendering may proceed prior to obtaining the ECA. If this is the case, the specification of the contract should clearly indicate that the City has applied for but not yet received MOECC approval and that award of the contract is dependent on the project being approved. It should be noted that the tender may become void while waiting for the approval due to the expiry of the bid bond validity period.

Except in cases where the ECA is subject to equipment capacity or selection, under no circumstances shall a plant or facility contract be awarded for construction prior to the issuance of an ECA by the MOECC. In the case of the above exception, the ECA application and review have to be completed.
Approval from other entities such as the Toronto and Region Conservation Authority (TRCA), MOECC dewatering permit, and the Toronto Public Utilities Coordinating Committee (TPUCC) may also be required. If required, sign-off should be secured prior to tendering.
Chapter 3: Procurement

3.1. Introduction

This chapter describes the bylaws governing procurement at the City of Toronto, the mechanisms in place for procuring the services of Contractors and Consultants, and the methods through which contracts are awarded. This chapter also discusses the use of rosters, and the role of Fairness Consultants in the procurement process. For details on the specific tasks carried out by the Contracts, Tenders & Payments (CT&P) unit, refer to the Contract Administration Manual available on the ECS intranet site.

The procurement of goods and services – including the services of Consultants and Contractors – is handled through the Purchasing & Material Management Division (PMMD). PMMD oversees procurement activities and develops policies, procedures and guidelines for the procurement of goods to ensure an open, fair, competitive, and transparent municipal procurement process.

ECS Design & Construction sections, in conjunction with the CT&P unit, work with PMMD to procure the services of Consultants and Contractors. The Design & Construction sections translate the Client Divisions’ needs into the standards, specifications, and drawings included in the Call Documents. The CT&P unit ensures that the Call Documents are complete before they are submitted to PMMD for distribution to the vendor community. PMMD acts as an intermediary between the City and the vendor community.

In general, the procurement process consists of the following steps:

1. Define need, Project Scope, and project estimate
2. Confirm funding
3. Develop, review and post Call Document
4. Evaluate responses to Call Document
5. Recommend proponent
6. Award to proponent

7. Execute project / purchase

PMMD estimates that the time to get through all of the steps can range from five to seven months. The timeframe may be longer, depending on how long it takes to complete the design and develop the Call Document.

Depending on the nature of the project, procurement may be carried out using one of the following Call Documents:

- **Request for Proposal (RFP)** – A formal invitation from the City for firms or individuals to submit a proposal to a stated problem or need the City has identified. Proponents are evaluated on technical quality and price.

- **Request for Quotation (RFQ)** – An invitation from the City to vendors/suppliers to bid on specific products or services. Used when project requirements can be precisely defined as a fixed price or on a unit basis, or a combination of both. Bidders are generally differentiated on price only.

- **Request for Tender (RFT)** – Similar to an RFQ but specifically used on Construction projects. Chapter 195 of the municipal code defines Construction as “the construction of any improvement in or on real property and includes the repair, renovation, or demolition of an improvement.” Bidders are differentiated on price only, but may also have to meet minimum experience qualifications as defined in the RFT.

If a better understanding of the supply market is needed before a RFP can be issued, a Request for Information, Request to Pre-Qualify, or Request for Expression of Interest can be used:

- **Request for Information (RFI)** – Used to obtain information from prospective bidders to assist in developing the scope of the work. The RFI describes the nature of the assignment, outlines the areas where the scope of work needs to be firmed up or filled in and asks a series of specific questions that the bidders are asked to respond to. Responding to a RFI is not a pre-qualification step; however, it would be acceptable to narrow the list of prospective bidders to those who respond to the RFI (as long as that is disclosed).
• **Request to Pre-Qualify (RTP)** - Precedes a Call for Tenders, Quotations or Proposals. Used to identify and pre-select bidders, where it is deemed that the nature and complexity of the work involved warrants the time and effort required to pre-select the most experienced and qualified bidders.

• **Request for Expression of Interest (REOI)** – Helps determine the interest of the market place to provide a scope of work or services being contemplated by the City. A REOI typically provides a brief description of the opportunity, outlines the steps towards award, and asks for general information about the Proponent. An REOI essentially establishes a bidders list or roster; it is not to be confused with a pre-qualification process. REOIs may include cost information.

The Project Lead should be aware of the policy *Access to Information for Members of Council at Various Stages of the Procurement Process* which sets the criteria and process for Council input and direction into the specifications and scope of a particular procurement. This policy is available on the PMMD Bylaws, Policies and Procedures intranet site (subject to change under new bylaw).

### 3.2. Financial Control and Purchasing Bylaws

Procurement at the City of Toronto is undertaken with regard for the *Financial Control By-Law* (Chapter 71 of the Municipal Code), the *Purchasing By-Law* (Chapter 195 of the Municipal Code), as well as the *Procurement Processes Policy*.

The *Purchasing By-Law*, with the *Financial Control By-Law*, provides the overall framework for proper and effective procurement processes in the City that meet divisional operational needs, while ensuring effective financial controls and accountability. More specifically, the *Purchasing By-law*, with the *Procurement Processes Policy* outlines:

- the authority, roles and responsibilities of the Chief Purchasing Official and other City officials;
- the authority of the Bid Award Panel, Standing Committees and Council;
• the process for calling of bids and awarding of contracts;
• the conditions under which goods and services can be sourced without a competitive process;
• the conditions under which a bid may be deemed unbalanced;
• bid disqualification; and
• dispute resolution.

The *Purchasing By-Law* and the *Procurement Processes Policy* are updated periodically. Current versions of PMMD bylaws, policies, and procedures are available on the PMMD Bylaws, Policies and Procedures intranet site.

### 3.3. Signing Authorities

The *Financial Control By-Law* delegates the signing authorities to each Division Head. Signing authority amounts are applicable to an individual award or commitment, which is defined in Chapter 71 of the Municipal Code as "a contractual obligation for the purchases of goods, services or construction, including the execution of any document evidencing the obligation." This includes the authorization of a purchase requisition for the issuance of a PO (Chapter 195 of the Municipal Code).

For an award that covers multiple contracts or phases over several years, such as design, construction administration, and post-construction services, the delegated signing authority limit is applicable to the total value of the original authorized award amount of that commitment, not the individual contracts and PO's issued under that award, unless the contracts are issued to different External Service Providers.

### 3.4. Role of Purchasing and Materials Management Division

PMMMD provides the following services:

• Determining the appropriate method of procurement and also providing guidance and advice to Clients regarding the most appropriate method of competitive bidding for their requirements.
Chapter 3: Procurement

- Maintaining templates for Request for Quotation, Request for Tender and Request for Proposal documents for issuance.

- Posting bid documents electronically on online Call Document system for purchase by bidders, as well as managing distribution of USBs and DVDs for large data files.

- Conducting formal public opening for Call documents.

- Preparing summaries of bids received.

- Forwarding bid summaries and bid responses to Clients for their evaluation and recommendation.

- Reviewing Call Documents and Specifications provided by the Clients for completeness.

- Facilitating Fair Wage check.

- Posting of awards on the City's internet site.

- Advising on the use and applicability of a Fairness Consultant in the preparation and review of a Call document.

- Assisting Client Divisions in the evaluation of bids received.

- Reviewing the recommendations from Client Divisions to ensure the award is appropriately made to the lowest bidder for a RFQ, or best value for a RFP, meeting the required specifications.

- Ensuring that all purchases meet the policies required by the Client Divisions and applicable legislation.

- Conducting call debriefings at the end of the call process when requested by the proponent/bidder after an award has been made or if the call has been cancelled.

### 3.5. Unbalanced Bid Analysis

Unbalanced bidding can occur when a bidder places prices on items that do not appear to reflect reasonable, actual costs. Because an unbalanced bid may not result in the lowest overall cost to the City (even though it may be the lowest submitted...
bid), all bids received in response to a Call are analyzed for unbalanced items by PMMD.

The *Unbalanced Bid Analysis Procedure* is available on the [PMMDC Policies and Procedures intranet site](#). The implementation of the procedure helps to ensure awarded bids represent the best value for the City.

A bid may be deemed unbalanced when:

- it is based on prices which are significantly less than cost for some items of work and prices which are significantly overstated in relation to cost for other items of work; and

- the bid may not result in the lowest overall cost even though it may be the lowest submitted bid; or

- it is so unbalanced as to be tantamount to allowing an advance payment.

PMMDC will work with staff on the Call Document to obtain more information about estimated quantities and prices in order to conduct the unbalanced bid analysis once bids are received. In the case of RFT's, the Division is to provide PMMD with a price summary template (details on the price summary template are available in the *Unbalanced Bid Analysis Procedure*). In the case of RFQ's or RFP's, either the Division or PMMD shall develop the price summary template. In all cases it is the responsibility of the Division to provide the price and quantity estimates, where feasible. All call documents will provide disclosure to prospective bidders that the City may reject a bid if it determines, in its sole discretion, that a bid is materially unbalanced.

After a Call closes, bids are evaluated by PMMD following the *Unbalanced Bid Analysis Procedure*. PMMD will summarize the bids in a spreadsheet and flag any concerns regarding unbalanced line items for divisional staff to review and consider, in light of the estimates and fluctuations in unit prices among bidders. For lump sum contacts, the unbalanced bid analysis will consider whether the price has been structured to provide for an upfront payment to the vendor. This may result in a joint decision between PMMD and divisional staff to cancel a Call or disqualify a particular bidder for providing an unbalanced bid.
3.6. Request for Proposal

A RFP is an invitation to External Service Providers to submit a quotation to the City for a specific set of requirements, along with a proposed approach for meeting those requirements. The RFP document must clearly articulate both what is required and the factors that are important in delivering the product and/or service.

Proponents are evaluated on both the technical quality of the proposal and price. Proponents may offer different approaches to meeting the requirements. Proposals are not assumed to be equivalent across proponents.

The request for proposal procedure is outlined in the Request for Proposal Procedure available on the PMMD Bylaws, Policies and Procedures intranet site.

When preparing the RFP document, the Project Lead should, in most cases, work with the Client lead on the technical part of the document. Also, special security and/or insurance requirements shall be determined in consultation with the Insurance & Risk Management section of Corporate Finance. The Project Lead should refer to the following checklists, both available on the PMMD Bylaws, Policies and Procedures intranet site:

- RFP Process Key Considerations / Requirements
- Effective Contract Management Key Considerations / Requirements

The current generic RFP template posted on the PMMD template site may be used for preparing the RFP document. A previously issued RFP document shall not be used in place of the current generic template to ensure up-to-date requirements are included in the RFP document.

A version of this template that is to be used in procuring professional engineering services for plant contracts, and may be used by other units as required, is available on the ECS intranet site: http://insideto.toronto.ca/ecs/dc/templates.htm. Appendices that are to accompany the RFP, as well as the Consulting Agreement Template, are also available on the intranet site.
Instructions for preparing and assembling the RFP documents are included within the RFP template, and should be followed closely. With the exception of optional provisions and project specific requirements which are noted in the template, the content of the RFP is not to be modified without the approval of PMMD and Legal Services.

RFP Call Documents can be issued to include the cost and technical aspects together or through a two envelope system where the evaluation of the technical aspects of the proposal is reviewed and scored prior to the opening of the cost envelope. The selection of one of these options is required to be included in the Call Documents.

Regardless of the version of the Call Document used, it is imperative that all works and tasks (e.g. securing necessary permits or approvals) to be performed as well as documentation requirements are clearly identified in the terms of reference. The RFP document is recommended to be reviewed by at least one additional staff member prior to being forwarded to PMMD. Further, all Call Documents will provide disclosure to prospective bidders that the City may reject a bid if it determines, in its sole discretion, that a bid is materially unbalanced.

The RFP package is forwarded to PMMD with a covering memorandum signed by the appropriate ECS staff that has the delegated signing authority.

3.6.1. City Standards, Policies and Procedures

The following are common standards, policies and procedures that may be applicable in design assignments. Note that this list is not exhaustive; other project/discipline-specific standards may be required.

- CADD Graphic Specification Manual
- City’s drawing number and contract number
- Standard Construction Specifications and Drawings for Roadwork
- Standard Construction Specifications and Drawings for Sewers and Watermains
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- **Ontario Provincial Standards**
- Utility cut circulation and permit procedures, requirements and applications (refer to the [Municipal Consent Requirements webpage](#))
- **Standard project notifications to councillor, other Stakeholders and/or residents impacted by the project**
- Public consultation procedures
- Standard templates for linear and vertical tender documents (Section 3.11)
- **Road Disruption Activity Reporting System** (RoDARS) procedures
- **Road Allowance Control System** (RACS)
- **Design Criteria for Sewers and Watermains**
- **Curb Radii Guidelines**
- **Vehicle Travel Lane Width Guidelines**
- **Pavement Design Guidelines**
- **Accessibility Design Guidelines**
- **Process Control System (PCS) Implementation Manual**
- Toronto Water Electrical Specifications and Master Single Line Diagrams (SLD)
- Commissioning Guidelines

The applicable items should be referenced in the RFP document. The Project Lead should assist or facilitate the consulting / contracted professional services provider to obtain the referenced documents.

3.6.2. Evaluation of Proposals

RFPs must have an evaluation process that is applied in a fair manner to all respondents. The scoring/weighting table must be prepared and submitted to PMMD prior to distribution of the RFP Call Document to the evaluation team.
The procedure *Determining the Evaluation Team* is available on the [PMMDBynlaws, Policies and Procedures intranet site](#). The evaluation team members must evaluate the proposals in accordance with the evaluation process set out in the RFP and provided to PMMD.

Mandatory requirements and the evaluation criteria are not to be deviated from in the evaluation process. A term, condition or requirement for evaluation not explicitly stated in the Call Document or in an addenda cannot later be used to evaluate submissions, nor can any method of scoring/weighting contained in the Call Document be changed. For these reasons, it is critical that the development of the Call Document and its terms and conditions, expected deliverables and process of evaluation, be carefully prepared.

Parties proposing a more complex evaluation process involving more than one stage to the evaluation, should discuss proposed evaluation approaches with staff from PMMD prior to issuance of the Call Documents.

When determining the composition of the selection committee, care should be taken to ensure a balanced representation of Client views and expertise. The committee size is determined by the nature of the assignment and the extent of expertise required. A minimum of two evaluators are required.

Selection committee members are required to sign a *Non-Disclosure & Conflict of Interest Declaration* form. This form is available on the [PMMDBynlaws, Policies and Procedures intranet site](#). This form must be maintained by the Project Lead, and provided to PMMD.

For RFPs with estimated values over $500,000, PMMD should be requested to attend the selection committee meetings as an observer to ensure that the evaluation processes is followed objectively and to answer any process questions of the selection committee. Clients may request PMMD’s attendance as an observer at selection committee meetings for lower value proposals as necessary.

Extreme caution should be used on mandatory criteria. Mandatory criteria should appear in only one place in the document to ensure the bidders know what they are. Mandatory requirements include technical mandatories, contractual
mandatories and submission mandatories. Failure to meet any mandatory requirement results in the rejection of a Proposal.

### 3.6.3. References

It is the responsibility of the Project Lead to check references if references are requested in the Call Documents. References must be checked prior to forwarding the final recommendation to PMMD. Documentation related to the reference checks shall be kept, as described in Section 2.5

### 3.7. Performance Evaluations

Each Call Document should include information regarding Contractor or Consultant performance evaluations. At time of tender, the proponent will be aware of the basis upon which they will be evaluated throughout and at the end of the project.

#### 3.7.1. Contractor Performance Evaluations

The Contract Administrator will confirm the frequency of Contractor Performance Evaluations with the General Contractor at the pre-construction meeting, which is to be consistent with the Contract requirements. On externally managed construction projects, the City’s Project Lead is to advise the Contract Administrator with the milestones for performing the Contractor Performance Evaluations.

The frequency for completing Contractor Performance Evaluations is detailed on the PMMD intranet site at [http://insideto.toronto.ca/purchasing/cpe_tool.htm](http://insideto.toronto.ca/purchasing/cpe_tool.htm).

#### 3.7.2. Professional Services Performance Evaluation

For ECS and Toronto Water projects, External Service Providers are evaluated using the Professional Services Performance Evaluation Form (PSPE), available on the ECS intranet site at [http://insideto.toronto.ca/ecs/excel/professional-services-performance-evaluation.xlsm](http://insideto.toronto.ca/ecs/excel/professional-services-performance-evaluation.xlsm). This evaluation tool is to be piloted by both ECS and Toronto Water through 2017. The number of Professional Services Performance Evaluations conducted throughout a consulting assignment will depend on the complexity and duration of the assignment. At a minimum,
one interim and one final evaluation should be conducted per phase / PO. Consideration may be given to performing an evaluation after the warranty period is complete.

3.8. Request for Information and Request for Expression of Interest

Requests for Information (RFI) or Requests for Expression of Interest (REOI) are used to help determine the interest of the marketplace to provide a scope of work or services being contemplated by the City. The bids submitted with these Calls may include cost information.

The steps to issue a RFI or REOI are the same as those for an RFP Call.

The RFI or REOI process shall not be used to pre-qualify potential suppliers or Consultants. Responses cannot be used to influence the chances of the participating suppliers, Contractors or Consultants from becoming the successful proponent in any subsequent opportunity.

3.9. Request for Supplier Qualifications (Request to Pre-qualify)

A Request for Supplier Qualifications or Request to Pre-qualify (RTP) shall be used, and precede a Call for Tenders, Quotations or Proposals in order to identify and pre-select bidders, where it is deemed that the nature and complexity of the work involved warrants the time and effort required to pre-select the most experienced and qualified bidders.

A RTP may also be utilized for projects that may benefit from, or require, an accelerated Tender schedule. During the RTP process, typically 90% drawings are issued to allow the bidders to review the scope of work in detail, although drawings at earlier stages of completion may also be issued depending on the project. During the subsequent RFT process, the bidders are already familiar with the project and are more likely to have their questions prepared at the beginning of the Tender period. This may allow for a shorter tender period and reduce requests for an extension in the closing date.
Note that going through the RTP process may not always always result in a shorter tendering period. The bids received in response to these Calls shall not include cost information.

3.10. Request for Quotation

A RFQ is an invitation to External Service Providers to submit a quotation to the City at a lump sum fixed price, or on a unit cost basis, or a combination of both.

The RFQ procurement process is used where tasks and deliverables involve technical solutions that are highly specific, and where there is a low likelihood of much variation among the approaches to be submitted. The Terms of Reference and/or Technical Specifications for the Services or Goods to be delivered must be clearly defined.

Usually the most competitive price is the major factor for evaluation. A RFQ submittal is evaluated for contractual formality and with the lowest priced proponent being awarded the assignment.

The RFQ process is described in the document Request for Quotation Procedure posted on the PMMD Bylaws, Policies and Procedures intranet site.

3.11. Request for Tender

Request for Tender (RFT) Calls are to be used on construction projects. Chapter 195 of the Municipal Code defines construction as “the construction of any improvement in or on real property and includes the repair, renovation, or demolition of an improvement.” Generally, "real property" refers to land and buildings.

Two forms of the tender document template are available: one for linear projects, and one for vertical projects. These templates are modified from the PMMD templates (available on the PMMD Templates intranet site) and are updated periodically. As such, new RFTs should always be prepared using the latest version of the ECS templates.

The linear template (available on the ECS Linear Tender Document Templates intranet site) is used for road, TTC, bridge,
sewer, watermain, streetscape, and sidewalk projects, which are usually based on unit price. Certain contracts, such as those for trunk watermains and sewers that are based on lump sum can also use the linear template, with some changes. The linear template can be used for other types of projects, such as earth work and stormwater management ponds, if the contract is based on unit price.

The vertical template (available on the ECS Vertical Tender Document Templates intranet site) is used for building and facilities construction projects that are usually based on a lump sum price.

The linear and vertical templates are similar, except for Section 5 (General Conditions of Contract) and Section 6 (Contract Execution Package) which reference different documents:

- **Section 5 – General Conditions of Contract**
  - linear template uses General Conditions of Contract – Linear Infrastructure
  - vertical template uses CCDC 2 Stipulated Price Contract and the Supplementary Conditions to CCDC 2

- **Section 6 – Contract Execution Package**
  - **Form of Agreement**
    - linear template uses the City's standard form
    - vertical template uses the agreement form in CCDC 2
  - **Performance Bond**
    - linear template uses the City's standard bond form
    - vertical template uses CCDC 221-2002 Performance Bond form
  - **Payment Bond**
    - linear template uses the City's standard bond form
    - vertical template uses CCDC 222-2002 Payment Bond form

### 3.11.1. Tender Document Sections

Instructions for preparing and assembling the tender documents are included within the Tender templates, and should be followed closely. The following paragraphs serve to highlight
some of the instructions as well as to provide supplementary information on the tender document.

With the exception of optional provisions and project specific requirements which are noted in the template, the content of the tender template is not to be modified without the approval of PMMD and Legal Services.

One of the items in Section 2 to be specified is the amount of bid bond required. In accordance with policy adopted by City Council in July 2005, the amount to be noted as required for bid bond is "10% of the bid price with consideration for contract size." The policy also outlines the requirements for the performance bond and the payment bond.

The Project Lead can refer to the document *Bid Bonds / Performance Bonds*, available on the PMMD Bylaws, Policies and Procedures intranet site, for guidance on factors that may warrant a higher bond amount. Consultation with Insurance and Risk Management is advisable for large, complex or unusual projects prior to establishing a required bond amount.

Section 4 contains the Scope of Work. This section should be as complete as possible to avoid the need for issuing addenda during tendering and minimizing Changes in the Work during construction. The Project Lead should work closely with the Client Divisions to ensure their requirements are clearly defined and covered in the scope of work and that they are aware of the change procedures discussed in Chapter 7.

Section 4A contains the Special Specifications. These are specifications that cover requirements specific to a project that are not detailed in any standard specification. As such, the Project Lead must ensure that the Special Specifications include only project specific requirements. Special Specifications should be cross-referenced to a unit work item in the Pricing Form of the tender, unless the costs associated with that Special Specification are incidental to the project. Terms and conditions of tendering process or contract must not be included in this section. Call-specific provisions should be reviewed to confirm that they do not conflict with the General Conditions of Contract or Special Conditions.

A list of existing Special Specifications is available on the ECS Special Specifications intranet site. Also available on the Special Specifications intranet page is the document *Writing Special*
Specifications, which provides guidance on how to write and modify Special Specifications.

Section 5 of the linear template includes the General Conditions of Contract (GC) adopted by the City Council. Approvals by Legal Services and the ECS Chief Engineer and Executive Director are required for any amendment to the provisions in the GC. The GC’s are updated periodically and available on the ECS Linear Tender Document Templates intranet site. Project Leads are to ensure that the most current version is included in the Tender document.

The Project Lead is advised to review Section 5A to ensure the Specific Conditions that may be applicable are properly reflected in the tender Call Document. The Liquidated Damages and insurance provisions should be reviewed and requirements adjusted according to project needs. Liquidated damages are further discussed in Section 3.11.2. Changes to Section 5A require approval from Legal Services.

Insurance and Risk Management has established standard limits of commercial liability insurance, automobile insurance and pollution insurance. For projects involving new building construction, design-build, large renovation or unusual construction or arrangement, the Project Lead should seek advice from Insurance and Risk Management for insurance requirements of the project.

Some conditions of contract such as penalty for delay or a higher amount of liquidated damages can influence the tender pricing and yet they may not be easily enforced. Should it be necessary to amend the provisions in Section 5 and Section 5A, PMMD and Legal Services should be consulted. Similarly, amendments to the General Conditions of Contract and the Supplementary Conditions to CCDC 2 require the approval of the ECS Chief Engineer and Executive Director and Legal Services.

Current applicable City policy documents should be included in Section 7. The Project Lead is responsible for including the appropriate policies in Section 7.

3.11.2. Liquidated Damages

The amount of Liquidated Damages should be based on a "true estimate" of damage as a result of delay in completion of the
project. It should be calculated for each project and the documentation should be kept in the project file.

Document ECS-CWP-04 is a spreadsheet that demonstrates how liquidated damages may be calculated.

3.11.3. Pre-Tender Tasks

Tasks to be completed by the Project Lead, CT&P, PMMD, Contractor and the External Service Provider prior to the tendering of the contract are provided in Appendix D, and are summarized below.

Although the tasks are listed more or less in the order of procurement process, they need not be completed in the sequence listed as some can be performed concurrently:

1. Enter planned milestones into PTP
2. Complete draft tender document and engineering estimate
3. Obtain written confirmation / commitment of funding from the Client Division / third party for their share of costs. See subsection 3.11.3.1 below for details on funding approval
4. Complete the Pre-tender Approval form (ECS-CWP-05) indicating funding authority, funding availability and regulatory approval
5. Draft tender document, engineering estimate, and Pre-tender Approval form to be forwarded to CT&P. CT&P sends draft tender to PMMD for review inclusive of specifications (Linear Infrastructure section requires the tender documents to be checked by at least one additional staff member)
6. After the document has been reviewed and approved by PMMD, finalize tender documents inclusive of specifications and drawings, fully signed and stamped
7. For Linear and Vertical projects: ensure that geotechnical reports (Linear projects only), designated substance
reports, and any other specific reports, if any, are incorporated in the tender documents. Note that, MI projects specifically exclude geotechnical reports from the tender call documents.

8. Complete the applicable Tender Document Checklist (ECS-CWP-07 and ECS-CWP-08 for linear and vertical tenders respectively) and attach to the fully completed Pre-tender Approval Form (ECS-CWP-05). All signatures are required on the Tender Document Checklists before the tender Call Documents are printed.

9. CT&P to arrange for printing and delivery of a specified number of tender documents to PMMD with the Print Office. As a general guide, a minimum of 2 business days should be allowed for the printing of tender documents prior to forwarding tender package to PMMD.

10. Ensure an appropriate number of copies of tender documents including drawings are sent to PMMD by the issue date, and apprise the Consultant, Client lead, designated Contract Administrator, and other key staff involved in the administration of the contract.

3.11.3.1. **Funding Approval**

**Toronto Water Projects.** On linear projects, Level 2 funding approval for Toronto Water projects is obtained via email request from the Project Lead to Toronto Water Asset Management. Level 3 funding approval is obtained using a Capital Project Contract Award Authorization form (CAAF). The CT&P unit will prepare a CAAF, which details the 2nd level account codes already assigned via email, and will forward it to the Project Lead for review and signature. CT&P will then send the signed CAAF, Contractor's pricing form, and bid analysis to Toronto Water for authorization. Toronto Water approves and signs the CAAF, and sends it back to CT&P along with 3rd level account codes.

On vertical projects, a CAAF is used to obtain both Level 2 and Level 3 funding, initiated by the Project Lead. For Level 3 funding, the Project Lead forwards the signed CAAF, low bid, bid analysis, and Consultant’s recommendation letter to Toronto Water.
**Transportation Services Projects.** Funding approval for Transportation Services projects is obtained using a Transportation Capital Authorization Form (TCAF) and shall follow the *Guidelines and Protocols for Use of Account Codes and Approved Budget*, which are updated annually and available on the Transportation Services Infrastructure Asset Management & Programming intranet site. The Project Lead will prepare the TCAF for the 2nd level account codes, and will forward the TCAF, along with the engineering estimate, detailed project location(s) and description to the Transportation Infrastructure Asset Management & Programming unit (IAM&P) for authorization. IAM&P will review the TCAF and provide approval via email to confirm the level 2nd level account codes. For 3rd level requests, CT&P will prepare the TCAF and will forward the TCAF to the Project Lead for review and approval. CT&P will forward the approved TCAF, the low bid, and the breakdown of the low bid cost distribution report to IAM&P. A signed TCAF is not required for Transportation Services projects, as an emailed TCAF will confirm the request.

**Solid Waste Projects.** Level 2 and Level 3 funding approval for Solid Waste projects is obtained by the Project Lead via email request to Solid Waste Management Services.

Additional detail on these processes can be found in the *Contract Administration Manual*.

### 3.11.4. Decision on Formality of Tender

Tender opening is conducted by PMMD. After tenders are opened, PMMD will check if all required documents are submitted and also if they are completed properly. PMMD will deal with any bid irregularities found during the opening in accordance with the Procurement Process Policy.

The Project Lead shall review all submitted tenders for formality and conformance to all tendering requirements as specified in the tender document.

Guidance for dealing with various general bid irregularities and mathematical errors can be found in the PMMD documents titled *Procurement Processes Policy* and *Mathematical Errors* posted on the PMMD Bylaws, Policies and Procedures intranet site.

The Project Lead should review all submitted tenders upon receipt from PMMD. The review should focus on all tendering
requirements as specified in the tender document. If a tender includes a potential informality, the Project Lead is to seek confirmation and/or clarification from the PMMD buyer. PMMD will make the determination, in consultation with Legal where required, and advise of their decision. The declaration of informality, if warranted, is made by PMMD.

3.11.5. Review of Alternative Proposals

If the tender includes an option for bidders to provide “alternate or alternative” proposals, the Project Lead should ensure the proposal complies with the requirements that may include the need to also submit a base proposal and the necessary supporting documentations for the alternatives with the tender. PMMD shall be contacted for any tenders that may be considered informal due to non-compliance of requirements.

The alternative proposals shall be evaluated based on the submitted information and documentation provided with the tender. At no time during the review of the alternative proposals which may impact the ranking of tender for award, should staff seek additional information or clarification with respect to the alternative from the bidder and its sub-trades or suppliers. Should it be necessary to seek clarification from the bidder, the Project Lead should consult with the PMMD buyer who is the only person permitted to speak with bidders prior to award.

Alternate proposals should only be considered from the proponent whose proposal offers the best value after the base bid review. If the offered price savings for an alternative impacts the ranking of the tenders, then the alternative must be reviewed and accepted or rejected prior to awarding the contract.

If the alternative proposal’s price savings do not impact the ranking of the tenders, then the tenders can be evaluated without the review of the acceptability of the alternative. The successful tender will then be selected after evaluating the base scope of the tenders and the contract will be awarded accordingly.

Following award of the contract, and prior to commencing work on the area of the project where the alternative may apply, the proposed alternative must be reviewed and accepted or rejected. The tendered price savings must be applied if the alternative is accepted.
3.12. Contingency Allowance

The Contingency Allowance is the fixed amount specified in the Contract documents which the External Service Provider carries to cover increases in cost for Changes in the Work. As these changes are not defined, the External Service Provider cannot be expected to know, in advance, the overhead cost requirements. Work performed under a Contingency Allowance is authorized and conducted through change management procedures (Chapter 7).

The amount of the Contingency Allowance will vary from one project to the next, typically amounting to 10 to 15% of the estimated project cost. Ideally, the amount should be sufficient to cover potential costs of managing unforeseen risks and unknown site conditions leading to Changes in the Work.

When determining the Contingency Allowance, the Project Lead should take a number of items into consideration, including industry practices, relative risk of the project, level of certainty in site conditions (soil conditions, existing infrastructure), duration of the project, and confidence in the design and scope of the work.

Contingency Allowances are often discussed among the Project Lead, the Client Division, and the Unit Manager before they are set.

3.13. RFP, RFQ and RFT Advertising Period

PMM must provide a reasonable period of time for suppliers to prepare and submit bids by taking into consideration factors such as:

- the nature and complexity of the procurement;
- the extent of subcontracting anticipated; and
- the time necessary for transmitting solicitation documentation by non-electronic means.

The timelines for posting solicitations also depend on the estimated maximum value of the solicitation, which is determined by the Division in consultation with PMMD. The estimated value is then compared against the thresholds set out
in the Canadian Free Trade Agreement (CFTA) and the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) for goods, services, and construction services.

The CFTA thresholds are generally lower than the CETA thresholds. Both CFTA and CETA thresholds are detailed in the PMMD procedure Notice of Intended Procurement and Timelines for Posting Procurements, available on the PMMD intranet site.

For solicitations with values greater than the CFTA threshold and less than CETA thresholds, the advertising period must be at least 15 calendar days. A Notice of Intended Procurement is required. A Summary Notice is not required for these solicitations. Templates for the Notice of Intended Procurement and the Summary Notice are available on the PMMD intranet site.

Solicitations for works above the CETA threshold require both a Notice of Intended Procurement and a Summary Notice. The minimum advertising period is dependent on the publication date of the Notice of Intended Procurement. The advertising period may be reduced by 5 day reduction for each of the following circumstances:

• the Notice of Intended Procurement is published by electronic means

• all the RFP, RFQ and RFT documentation is made available by electronic means from the date of publication of the Notice of Intended Procurement

• the City accepts tenders by electronic means

At time of writing, the City is addressing the last two bullet points.

Where a site meeting (mandatory or optional) is stipulated in the Call Document, the Project Lead should make arrangements as soon as possible to set up the meeting, particularly the availability and suitability of the meeting facility. Information regarding the attendees, including their names, their companies or affiliations and phone numbers must be recorded for the project file. The attendee list must be kept confidential; the attendee list should not be released in subsequent addenda.
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Any inquiries received by the Project Lead following the site meeting regarding meeting attendees, or any other matter concerning the Call Document, must be directed to PMMD (refer to Section 3.14). Should any inquiries concerning the Call Document result in further research or preparation by bidders, the advertising period may be adjusted accordingly.

Project Leads are responsible for preparing any technical addenda that arise during the advertising period and for providing them to PMMD. If a Consultant is retained to prepare the Call Documents, it is still the responsibility of the Project Lead to approve any addenda and forward them to PMMD. It should be noted that any required addenda should be issued at least 48 hours before closing. Document ECS-CWP-09 is a sample addendum.

3.14. Communication with Bidders

According to the City’s Procurement Process Policy, the Chief Purchasing Official or designate is the official point of contact for all calls. Up to and including the announcement of award, all communication and inquiries must be directed to the official point of contact.

Inquiries during the call process must be referred to PMMD to avoid the appearance of unfairness to other bidders. In the event that a bidder requests information from the Project Lead directly, the request for information must be fully documented for the project file, and the bidder must be directed to the CPO or designate. Information resulting from a Request for Information must be distributed to all bidders in an addendum to the Call Document.

If a debriefing is requested by a vendor in regard to its bid, the request must be directed to PMMD which will coordinate the response with the division and if required, Legal Services.

No staff shall communicate any additional information or internal discussion with any bidder in the process of award of the contract. Notification of award shall only be done after the final position is determined, as declared by PMMD.
3.15. Bid Award Panel, Standing Committees and City Council

Award of contracts must be made in compliance with the Toronto Municipal Code Chapter 195 - Purchasing. Generally, the Project Lead will recommend the successful bidder to be awarded the contract to CT&P and PMMD. The Chief Purchasing Official or the Bid Award Panel has the authority to make the award depending on the value of the contract and if all of the following requirements are met:

• Award is to the highest ranked proponent resulting from an evaluation and meeting the requirements,

• Funding approval is in place, and

• There are no material written objections to the award

The award authority of the Chief Purchasing Official and the Bid Award Panel is subject to the value of the contract (excluding taxes) as follows:

• Chief Purchasing Official – value of contract is $500,000 or less

• Bid Award Panel – value of contract is over $500,000, and less than $20 million

If the award is to be made by the Chief Purchasing Official: prepare a memo recommending the award. The memo is to be authorized according to the delegated signing authority. Document ECS-CWP-10b is a template for a memo recommending the award of a construction project. Documents ECS-CWP-11 and ECS-CWP-12 are sample memos of recommendation for consulting assignments under a single and multiple agreements / PO's, respectively.

If the award is to be made by the Bid Award Panel: in addition to the memo recommending the award authorized by the delegated signing authority, a report jointly prepared by the division and PMMD and signed by the Director of Purchasing is required. The report should be reviewed by the appropriate ECS Director prior to forwarding to PMMD. A Bid Award Panel report template is available at the following link:
http://insideto.toronto.ca/secretariat/staffreport/index.htm
If the value of the contract exceeds $20 million (excluding taxes) and all three requirements indicated above are satisfied, the Standing Committee responsible for the program is authorized to make the award or make a recommendation to City Council.

In this case, a staff report recommending the award shall be referred to the Standing Committee responsible for the program (Public Works & Infrastructure Committee for Solid Waste Services, Engineering & Construction Services, Transportation Services and Toronto Water projects). The staff report is to be jointly prepared by the Division undertaking the project and PMMD and signed by the appropriate Division Head and CPO.

The draft award report should be circulated to PMMD and the Capital Asset Manager of the Client Division. The following issues should be clarified before the draft report is circulated:

- Disqualification of lowest bidder, resulting in the contract being awarded to the second lowest bidder
- Any bid irregularities

The delegated signing authority for the memo recommending the award will vary depending on the value of the contract. The delegated signing authority limits are updated on an annual basis and are specific to each division.

After the award of contract is made, a letter is forwarded to the successful bidder by PMMD. In addition, CT&P should provide a letter indicating that the City will be forwarding to them documents for execution. Documents ECS-CWP-13a and ECS-CWP-13b are templates for the letter of acceptance for linear and vertical projects, respectively. The acceptance letter may be faxed or emailed to the successful bidder. If faxed, the fax confirmation sheet is to be filed for record.

Regardless of contract value, if any of the three requirements indicated above are not satisfied, City Council's approval, through the Standing Committee responsible for the program, is required for the award.
3.16. Purchase Requisition and Purchase Order

A purchase order (PO) is required for all construction contracts and consulting assignments. Note that a purchase requisition is required for the issuance of a PO.

A project can have more than one funding source; the sources are identified on the Purchase Requisition. It is imperative that each source be treated separately in accordance with Toronto Municipal Code Chapter 71 – Financial Control: the total funding available for a project does not represent a pool of funds that can be used for any portion of the work. If the cost of work exceeds the available funding for the designated account, funds cannot be taken from other sources within the same project.

Prior to the issuance of a PO, a number of items of documentation must be completed, including but not limited to:

- Recommendation memo (see document ECS-CWP-11 and ECS-CWP-12 for single and multiple POs, respectively)

- For projects approved by the Bid Award Panel, Bid Award Panel report (see template on http://insideto.toronto.ca/purchasing/procedures.htm)

- Insurance certificate, WSIB (see Section 4.5.2.1 for information on security and insurance requirements)

- Surety bonds

- Any mandatory requirements prior to award stipulated in the Call Document

The Project Lead should confirm with the PMMD buyer assigned to the tender call what other documentation is required, as requirements may vary depending on the project.

Following the execution of the agreement where required, the Project Lead or CT&P (depending on the type of project) is to request PMMD to issue a PO to the External Service Provider. This is done through a Purchase Requisition.

For construction contracts, CT&P prepares the Purchase Requisition and requests PMMD to issue the PO. For consulting assignments, the Project Lead prepares the Purchase Requisition and requests PMMD to issue the PO. The Project Lead shall note that some projects can have two or more
funding sources associated with them; these should be identified on the Purchase Requisition. It is imperative that each source be treated separately in accordance with Toronto Municipal Code Chapter 71 – Financial Control.

PMMĐ requires a copy of the first page of the agreement, which shows the agreement date, and last page, which shows signatures, of the executed agreement to issue the PO. On Consultant projects, only the Consultant’s signature is required on the signature page for the issuance of the PO.

If the PO is issued to utility owners performing works on their own utilities, the template for additional terms and conditions in Document ECS-CWP-14 shall be completed and attached to the PO request sent to PMMD.

Exceeding of approved funds from an account requires a Purchase Order Amendment (POA) and proper authorization. Refer to Section 7.10 for additional details on the POA process.

3.17. Use of Rosters for Consultants

Rosters can be established to reduce the work required to issue and review call and bid documents for works that are done on a consistent basis. A roster should only be used where sufficient upcoming work has been identified to justify the category required.

Each work assignment must not be greater than $500,000.00, excluding taxes and should be approved by the appropriate delegated signing authority. A formal call, rather than a roster, must be issued by PMMD for work where the actual assignment amount is greater than $500,000.00.

A formal agreement is required for all assignments, unless Legal Services has reviewed the REOI terms and conditions associated with the roster, and has provided written confirmation that no formal agreement is necessary.

Refer to the PMMD policy Using an Established Roster to Obtain Professional, Consultant or Other Services, available on the PMMD Policies and Procedures intranet site, for further information on the use of rosters for Consultants.
3.18. Fairness Consultant

The primary purpose of a Fairness Consultant is to assess and provide assurance that all components and/or proponents on a call were evaluated objectively and in accordance with approved and required processes. The Fairness Consultant does not address whether the right product or vendor was selected. Rather, it is the process of the selection itself that is assessed in terms of whether all participants were evaluated objectively according to approved and required processes.

Fairness Consultants may be perceived by both internal and external parties, as providing more neutrality and independence than that provided by staff. Assurance from an arms-length party that procurement was consistent with best practices may reduce controversy, complaints and liability. This perceived objectivity, in turn, enhances the defensibility of procurement decisions.

The need for a Fairness Consultant should be assessed by a group of staff from the Client Division, PMMD, Legal and others as required. Fairness Consultants shall be used only in limited circumstances defined by call complexity and the likelihood of intense scrutiny, such as high-profile projects where there is significant public interest, for calls where the value of procurement exceeds the CETA threshold, and for calls where City Council is required to approve them such as multi-year projects.

The policy detailing the use of Fairness Consultants (Feasibility of Using Fairness Consultants for Certain Procurements) is available on the PMMD Bylaws, Policies and Procedures intranet site.

3.19. Non-Competitive Procurement

Non-competitive procurement is the procurement of goods or services through the solicitation or acceptance of a proposal from a single provider.

Chapter 195 of the Municipal Code sets out the allowable exceptions to a competitive process based on procurement practices and trade agreements, where both the proposed non-competitive procurement and the particular supplier can be justified in good faith, based on one or more of the following:
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- A statutory monopoly
- An absence of competition in the market due to technical reasons
- The existence of exclusive rights such as patent, copyright, license or warranty restriction
- Procurement of a work of art
- For additional deliveries by an original supplier of goods and services that were not included in the original procurement, but where a change cannot be made for economic or technical reasons without causing significant inconvenience or substantial duplication of costs for the City
- An attempt to acquire the goods competitive in good faith has failed to find a compliant supplier or where the submissions received are collusive
- An emergency;
- Construction, renovations, repairs and/or maintenance in respect of real estate leased or occupied by the City which may only be conducted by another person in accordance with a real estate agreement;
- The goods or services are purchased under circumstances which are exceptionally advantageous to the City, such as in the case of a bankruptcy or receivership;
- It is advantageous to the City to acquire the goods or services from another public body;
- Another organization is funding or substantially funding the procurement and the City has determined that the supplier and the terms and conditions of the commitment into which the City will enter are beneficial to the City;
- The procurement of a particular brand of goods or services that are intended solely for resale to the public and no other brand meets the City’s program objectives nor is the brand available from any other source;
- Goods purchased on the commodity market;
• Purchase of a prototype or a first good or service that is developed in the course of a contract for research, experiment, study or original development

• A contract to be awarded to the winner of a design contest, provided that:

  - the contest is organized in a manner that is consistent with the principle of fair competition contained in this policy, in particular relating to advertising; and,

  - the participants are judged by an independent jury with a view to design contract being awarded to a winner; or

  - such other non-competitive procurement exemptions authorized by Council.

Non-Competitive purchases less than $50,000 excluding taxes can be processed through a Divisional Purchase Order (DPO) with proper approvals. Details regarding the Non-Competitive and DPO processes and associated forms are posted on the PMMD Bylaws, Policies and Procedures intranet site.

3.19.1. Non-Competitive Procurement less than $500,000

Purchases in excess of $50,000 and less than $500,000, exclusive of taxes, require the completion of a Non-Competitive Procurement Form, available on the PMMD Bylaws, Policies and Procedures intranet site.

The rationale stated in the Non-Competitive Procurement Procedure Form must include the detailed reason(s) for the product or service selected as well as verification and the identification of the Non-Competitive vendor and why no other vendor could be selected to provide the product or service that is required, or why proper purchasing procedures (i.e. competitive bidding process) cannot be followed. All pertinent supporting documents are to be attached to the completed Non-Competitive Procurement Procedure Form.

In the case of a proprietary situation, the Non-Competitive Procurement Procedure Form is to include a written confirmation from the vendor either by email or on a separate company letterhead, confirming they have proprietary, trademark or patent rights. If the product or service is unique or exclusive to a particular vendor, it is also necessary to justify
new_cost after deductions, refunds and credits), or purchases subject to approval of Standing Committees require a staff report which must be approved by Standing Committee and Council. The staff report should be prepared by the Project Lead in conjunction with PMMD staff.

The staff report must clearly indicate that it is a non-competetive request and note the reason for the non-competetive purchase using one of the reasons noted in Section 3.19.

3.20. Social Procurement

The City of Toronto Social Procurement Procurement Program encourages the use of the procurement process for goods and services to advance positive economic, workforce, and social development outcomes. Social Procurement for Capital Works projects will either require workforce development, for procurement with a total contract value of more than $5 million or supply chain diversity for contracts over $100,000. For DPOs, a quote from a certified diverse supplier must be included as part of the three-quote process.

Language in the Call Document templates reflects this component of the procurement process. Further information on Social Procurement is available from the Social Procurement Purchasing Coordinator and through the PMMD Social Procurement intranet page.
3.21. Certificate of Recognition

The City of Toronto has endorsed and adopted the Certificate of Recognition (COR) program as a mandatory requirement for companies bidding on future construction contracts. Effective January 1, 2017, the requirement for COR certification only applies to bidders for contracts valued at greater than $25 million.

Additional information regarding COR is available in Appendix F.
4.1. Introduction

Studies or design of capital projects would typically require the services of a Professional Engineer. These services could either be provided by in-house staff or by External Service Providers with the required qualifications.

External Service Providers or Consultants are used when City staff are fully occupied with other assignments and are not available to undertake additional projects, and when specific experience or expertise required is not available in-house. Project Leads managing large program management assignments work in conjunction with a Program Manager (see Roles and Responsibilities). External Service Providers are also used on bridge design projects.

This section describes the process of procuring study and design services from External Service Providers and the administration of the ensuing contracts.

4.2. Procurement of External Services

The Purchasing & Material Management Division (PMMD) Procurement Processes Policy, posted on the intranet at http://insideto.toronto.ca/purchasing/procedures.htm, provides an overview of the City purchasing processes and policies. PMMD procedures for the following methods of procuring services are also posted at the same location:

- Request for Expressions of Interest (REOIs)
- Request for Supplier Qualifications, or Request to Pre-Qualify
- Request for Proposals (RFPs)
- Request for Quotations (RFQs) and
- Non-Competetive Procurement

The Client Division’s requirement and PMMD's advice should be taken into consideration in selecting an appropriate procurement...
method. Detailed discussion on the various methods of procurement and the policies governing them are provided in Chapter 3.

The following sections describe the Request for Expressions of Interest (REOIs), Request to Pre-Qualify (RTP), Request for Proposals (RFPs), Request for Quotations (RFQs) and Non-Competetive Procurement procedures for acquiring external study and design services, including consulting services, for ECS projects.

4.2.1. Consulting Services

The Project Lead should be aware of specific requirements for hiring Consultants. The Selection and Hiring of Consulting Services Policy defines “consulting services” as any firm or individual providing expert advice/opinion on a non-recurring basis to support/assist management decision in the following areas:

- **Technical** - undertake activities on a defined assignment in analyzing technical problems and recommending solutions (including the selection of engineering/architectural designs, research, appraisals, planning).

- **Management / Research and Development** – undertake planning, organizing and directing activities to assist managers in analyzing management problems and recommending solutions for a defined assignment (can be operational, administrative, organizational or policy in nature); with research and development being investigative study to provide the City with increased knowledge or information.

- **Information Technology** – undertake activities on a defined assignment to assist managers in needs assessment and system selection including information processing, telecommunications and office automation (can be analytical, testing or of a business process nature).

- **External Lawyers and Planners** – as determined in consultation with Legal Services staff

- **Creative Communications** – inclusive of advertising, promotions, public relations and design advice.
4.2.2. Request for Expressions of Interest (REOI)

If a better understanding of the supply market is needed before an RFP can be issued, a Request for Expression of Interest (REOI) can be used. An REOI helps determine the interest of the market place to provide a scope of work or services being contemplated by the City. REOI's may include cost information.

The REOI terms of reference will be prepared by the ECS Project Lead with support/review by the ECS Manager, and final review by the Client Division (if necessary).

Administrative tasks of the Project Lead include forwarding the completed terms of reference with a covering memorandum, signed by the appropriate ECS staff with the delegated signing authority, to CT&P requesting the REOI be issued. For Linear Infrastructure projects, the REOI document must be reviewed by at least one additional staff member prior to being forwarded to CT&P who deals with PMMD.

PMMMD is responsible for distributing the REOI package to the potential consulting firms.

4.2.3. Request for Proposal

A Request for Proposal (RFP) is a formal invitation from the City for firms or individuals to submit a proposal to a stated problem or a need the City has identified.

When preparing an RFP, the Project Lead should follow the general procedures described in the PMMD document Request for Proposal Procedure posted on the PMMD Bylaws, Policies and Procedures intranet site.

The City Project Lead must review and be familiar with the RFP terms and conditions, RFP appendices, as well as the technical and financial proposal from the External Service Provider. This is required to ensure that the consulting assignment can be managed in accordance with the scope and the terms and conditions of the consulting agreement. The consulting agreement includes the RFP, any addenda, cost proposal, and the legal agreement.

Detailed discussion on the policies governing Requests for Proposal is presented in Chapter 3.
4.2.3.1. Use of Fairness Consultant

The primary purpose of a Fairness Consultant is to assess and provide assurance that all components and/or proponents on a call were evaluated objectively and in accordance with approved and required processes.

Detailed discussion on the use of Fairness Consultants is provided in Chapter 3.

4.2.3.2. RFP Procedure

Prior to initiating an RFP request, the Project Lead should confirm funding availability with the Client Division. The RFP procedure is outlined in the document Request for Proposal Procedure posted on the PMMD Bylaws, Policies and Procedures intranet site.

The RFP package is forwarded to PMMD with a covering memorandum signed by the appropriate ECS manager or director. Document ECS-CWP-15 is a sample memo to PMMD requesting the issuance of a RFP.

The RFP submissions are to be evaluated according to the criteria specified in the RFP and by an evaluation team established by the Division Head or designate. The procedures for determining the evaluation team and for evaluating the RFP are provided on the PMMD Bylaws, Policies and Procedures intranet site (Determining the Evaluation Team and Request for Proposal Procedure).

Upon completion of the evaluation and a successful proponent is selected, the Project Lead will prepare for the award of the contract in accordance with Toronto Municipal Code Chapter 195 – Purchasing, and as described in the next section.

4.2.3.3. Award of Consulting Assignments

Generally, the Project Lead will recommend which proponent should be awarded the contract to CT&P. The CT&P unit assists in awarding and execution of the contract; refer to Appendix D for additional information on the roles and responsibilities of the award process. The Chief Purchasing Official, Bid Award Panel, Standing Committee or City Council has the authority to make the award, depending on the value of the contract. Detailed
discussion on the role of the Bid Award Panel, Standing Committees and City Council is provided in Section 3.15.

The Project Lead is to prepare or coordinate the required memo or staff report under the appropriate delegated signing authority for awards to be made either by the Chief Purchasing Official (CPO), Bid Award Panel, Standing Committee or Council. The requirement for a memo or a report is as follows:

- Award to be made by the CPO – a memo recommending the award is required. Documents ECS-CWP-11 and ECS-CWP-12 are sample memos of recommendation for consulting assignments under a single and multiple agreements / PO’s, respectively.

- Award to be made by the Bid Award Panel – in addition to the memo recommending the award authorized by the appropriate delegated signing authority, a staff report jointly prepared by ECS and PMMD and signed by the director of PMMD is required. A sample staff report recommending the award of an assignment is provided on the PMMD template site http://insideto.toronto.ca/purchasing/templates.htm.

- Award to be made by the Standing Committee or City Council – a staff report recommending the award shall be referred to the Standing Committee responsible for the program (Public Works & Infrastructure Committee for Solid Waste Services, ECS, Transportation Services and Toronto Water projects). The report, jointly prepared by ECS and PMMD, is to be authorized by the Chief Engineer and Executive Director of ECS and the CPO.

The City Clerk’s Office sets meeting dates for Council and committees, and sets the submission dates for staff reports. Project Leads must be aware of the lead times required for staff reports to be reviewed and submitted to the Chief Engineer and Executive Director of ECS in order to be included on the meeting agenda. Details regarding the procedure for staff report submissions, report templates, and report deadlines are available at http://insideto.toronto.ca/ecs/divguide/reporting/.

For Toronto Water projects requiring the approval of Bid Award Panel, Standing Committee or City Council, the draft award report should be forwarded to the manager of Capital Programming & Facility Asset Planning unit of Water
Infrastructure Management (WIM) for review and confirmation of funding availability.

Successful proponent(s) who met the minimum technical score but were unsuccessful, and proponents who did not meet the minimum technical score requirements are notified in writing by PMMD.

Following the award of the study / design services contract, Project Lead shall take steps to execute a formal agreement where one is required (Section 4.3) and to ensure that a Purchase Order is issued through PMMD (Sections 3.16 and 4.4).

4.2.4. Request for Quotation

A Request for Quotation (RFQ) is an invitation to External Service Providers to submit a quotation to the City at a lump sum fixed price, or on a unit cost basis, or a combination of both.

When preparing an RFQ, the Project Lead should coordinate with the Roster Captain if required, and refer to the document Key Considerations/Requirements Checklist, available on the PMMD Bylaws, Policies and Procedures intranet site.

Discussion on the policies governing Requests for Quotation is presented in Section 3.10.

4.2.5. Non-Competitive Procurement

Non-competitive procurement is the procurement of goods or services through the solicitation or acceptance of a proposal from a single provider.

According to the Non-Competitive Procurement Policy, a non-competitive process shall only be used if one or more certain conditions apply and a process of negotiation is undertaken to obtain the best value for the City.

The conditions under which non-competitive procurement may be used and the procedure to complete the required documentation are are detailed in Section 3.19, as well as the Non-Competitive Procurement Policy, available on the PMMD Bylaws, Policies and Procedures intranet site.
Following the required approvals, the Project Lead shall take steps to execute a formal agreement (Section 4.3) or to ensure a PO is issued (Section 4.4).

4.3. Formal Agreement

A formal agreement is required for competitive purchases valued at more than $100,000.00 and all Non-Competitive purchases. A formal agreement may be also prepared for competitive purchases valued at less than $100,000.00; consult Legal Services if specific guidance is required. A copy of the Consulting Agreement Template is available on the ECS intranet site: [http://insideto.toronto.ca/ecs/dc/templates.htm](http://insideto.toronto.ca/ecs/dc/templates.htm).

If the contract is awarded by Bid Award Panel or a Standing Committee, the date on the agreement should be the date of the award. If it is a staff awarded contract, the date should be the date that the purchase requisition is signed by the delegated signing authority.

Where study / design assignments involve work activities, such as design, site supervision, post construction/warranty, that have a definitive boundary between the completion of one work component and the commencement of the other, separate agreements and POs will be required to facilitate the release of Construction Lien Act holdbacks.

For contracts where a formal agreement is required, the Project Lead is to use the standard agreement template. The authority for signing the agreement is set out in Toronto Municipal Code Chapter 257. The *Criteria and Guidelines for Formal Agreements for Goods and Services* document and the *Execution of Formal Agreements for Goods and/or Services* document (both are posted at [http://insideto.toronto.ca/purchasing/procedures.htm](http://insideto.toronto.ca/purchasing/procedures.htm)) outline the criteria for requirements of a formal agreement and the procedures for its execution. Table 2 summarizes the formal agreement criteria and the corresponding signing authority.

For contracts where Legal involvement is required, the Project Lead is to forward the five original copies of the agreement that has been executed by the External Service Provider to Legal Services for execution by the City. Fully executed agreements are distributed as follows:
• Legal Services - 1 copy
• Purchasing & Materials Management Division – 1 copy
• External Service Provider - 1 copy
• Engineering & Construction Services - 1 copy
• Client Division – 1 copy (for Major Infrastructure Projects)

Distribution requirements may vary by unit; Project Leads are to request clarification as required.
### Table 2 – Formal Agreement & Delegated Signing Authority

<table>
<thead>
<tr>
<th>Type &amp; Value of Purchase Excluding Taxes</th>
<th>Agreement Requirement</th>
<th>Signing Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive purchase up to $100,000</td>
<td>No formal agreement is required. The Call Document should set out the terms and conditions</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Competitive purchase $100,000 to $500,000</td>
<td>Formal agreement is required</td>
<td>Division head, Deputy City Manager or City Manager</td>
</tr>
<tr>
<td>Competitive purchase Over $500,000</td>
<td>Formal agreement is required</td>
<td>City Clerk and Division Head or the City Manager or the Chief Financial Officer</td>
</tr>
<tr>
<td>Non-Competitive purchase Up to $50,000</td>
<td>Formal agreement is required</td>
<td>Division Head</td>
</tr>
<tr>
<td>Non-Competitive purchase Up to $500,000</td>
<td>Formal agreement is required</td>
<td>City Manager</td>
</tr>
<tr>
<td>Non-Competitive purchase Over $500,000</td>
<td>Formal agreement is required</td>
<td>City Clerk and Division Head</td>
</tr>
<tr>
<td>Consultant Roster RFQ's up to $500,000</td>
<td>Formal agreement is required unless Legal has reviewed REOI terms and conditions</td>
<td>Division Head</td>
</tr>
</tbody>
</table>

- **NOTE:** Check most recent version of signing authority schedule.
4.4. Purchase Order

A Purchase Order (PO) is required for all external service assignments. Following the execution of the agreement where required, CT&P is to prepare a purchase requisition and request PMMD to issue a PO to the External Service Provider.

Refer to Section 3.16 for information regarding Purchase Orders.

4.5. Management of Consulting Assignments

The Project Lead, with assistance from supporting staff, is accountable for the overall management and administration of the contracts. Key management and administration functions include setting up file structures for depositing and tracking of project related records and payments, monitoring the progress of the project, processing of payments, dealing with Changes in the Work, and accepting the completed work. This section describes those functions and the related tasks and procedures.

4.5.1. Project Setup in Project Tracking Portal

Once a professional services project has been initiated, a "Professional Services Contract" will be set up in Project Tracking Portal (PTP) by CT&P and linked with the project.

General information on PTP is provided in Section 2.3. Detailed information on the setup and management of projects and contracts, as well as time tracking responsibilities of staff, is available in the document PTP Business Protocols, available on the intranet at http://insideto.toronto.ca/ptp/protocols.htm.

4.5.2. Commencement of Work

Following the execution of the agreement, the Project Lead should take the steps described in the following subsections in preparation for the commencement of work and subsequent administration of the contract.
4.5.2.1. Security / Insurance Requirements

Prior to commencement of the project and issuance of a PO, CT&P shall ensure that all insurance, bonding and security requirements as stipulated in the agreement (note that the RFP document is part of the agreement) are in place. The expiry dates of insurance, bond and security should be noted and steps be taken one year prior to expiry (90 days for WSIB) to ensure uninterrupted coverage through the project.

Typical insurance requirements for External Service Providers include:

- Professional liability insurance (errors and omissions)
- Automobile insurance
- Comprehensive general liability (if applicable)
- Pollution liability (if applicable)
- Workplace Safety and Insurance Board (WSIB)

The insurance certificate should be checked for compliance with the contract requirements. Guidelines for checking the insurance certificate can be found on the Insurance and Risk management intranet site at [http://insideto.toronto.ca/corporate_finance/insurance/certificate-insurance.htm](http://insideto.toronto.ca/corporate_finance/insurance/certificate-insurance.htm)

Insurance certificates and surety bonds should be kept in the project file with the agreement for easy access. For further information regarding safekeeping of insurance certificates and surety bonds, refer to the Corporate Finance intranet site.

4.5.2.2. Initiation Meeting

An initiation meeting with the External Service Provider and the Client lead(s) ensures that all parties have a full understanding of the project and contractual terms, particularly:

- **Project Scope** - confirm the project deliverables and expectations and if necessary, identify tasks leading to such deliverables. For complex, multidisciplinary projects that span over several years, the Project Lead shall keep a Project Deliverable Checklist in the form of an issue log to
capture key issues, decisions, changes and deliverables specific to the project. The Project Deliverable Checklist is to be updated as the project progresses to document scope changes if there are any. Document ECS-CWP-16 is a list of typical activities included in pre-design and detailed design projects, which can be used to form the basis of a Project Deliverable Checklist.

- **Project schedule** - confirm the overall project schedule and dates for completion of Milestones to be provided by External Service Provider

- **Project cost** - confirm the proposed fee or quotation and the payment terms specified in the legal agreement which includes the Call Document and all addenda and any subsequent clarification communications with the Client lead and the Consultant. Any adjustment to the payment terms must be agreed to by the External Service Provider and the City and confirmed in writing. A copy of the confirmation letter is to be kept in the payment file.

- **Drawing format** – confirm the drawing format with the External Service Provider at the initiation meeting

See ECS-CWP-01 for a sample initiation meeting agenda.

### 4.5.3. General Management Duties and Tasks

The External Service Provider’s agreement with the City, which includes the Call Document and the Consultant’s submission, defines the External Service Provider’s obligations. The role of the Project Lead is to liaise with the External Service Provider and provide assistance or advice where necessary to comply with City policies, standards and procedures and to ensure achievement of deliverables in accordance with the Agreement.

#### 4.5.3.1. External Service Provider’s Requests

The Project Lead should review requests from the External Service Provider and provide timely response. Where the requests may have an impact on the terms and conditions of the agreement, responses must be provided in writing and where necessary under signature by the delegated signing authority.
4.5.3.2. City Standards, Policies and Procedures

To ensure compliance with City standards, procedures and Municipal Codes, the Project Lead should assist the External Service Provider in obtaining the applicable documents as referenced or identified in the Call Document. Refer to Section 3.6.1 for further information on City standards, policies and procedures.

4.5.3.3. Project Deliverables

The External Service Provider is required to carry out the scope of work and submit project deliverables as defined in the agreement. The Project Lead should review the agreement, including the terms of reference and the External Service Provider’s proposal, and summarize the deliverables by developing a Project Deliverable Checklist. Document ECS-CWP-16 is a list of typical activities included in predesign and detailed design projects, which can be used to form the basis of a Project Deliverable Checklist.

In general, the Project Lead shall:

- Monitor the project deliverables as specified in the agreement and confirmed at the initiation meeting;
- Review the deliverables to ensure they are as specified in the agreement and are of acceptable quality;
- Provide timely feedback to External Service Provider if deliverables do not meet the requirements of the agreement;
- Ensure that requests for Changes in the Work or scope changes are properly authorized and administered according to the terms of the agreement. Chapter 7 describes the procedure and requirements for Changes in the Work; and
- Ensure that all project deliverables are received at the completion of the project.
4.5.3.4. Project Schedule

The schedule that is included in the agreement and any agreed to changes at the initiation meeting defines the contracted timelines in which the project deliverables are to be provided.

The Project Lead’s tasks in monitoring the project schedule include:

• Monitoring the progress in relation to the schedule paying particular attention to critical path and Milestone events

• Following up with the External Service Provider if deliverables are not submitted as scheduled

• Reviewing status reports and updated schedules submitted (where required) by the External Service Provider and providing timely feedback if there are any concerns

• Reviewing requests to revise project schedule and confirming approval or denial of requests in writing with External Service Provider. Note that proper authorization is required and a PO Amendment may also be required if the change results in an increase in cost (Section 4.6) or planned completion date.

4.5.3.5. Project Cost and Progress Payment

The Project Lead is to monitor the project cost with respect to the progress of the project. Payments to the External Service Providers are to be made according to the terms stipulated in the agreement and any adjustments agreed to at the initiation meeting. Payments should only be made for the works completed and when the deliverables are acceptable according to the requirements of the agreement.

The following are some of the general requirements for processing the payments:

• Status report is current and reflects the work completed to the invoice date

• Supporting documents identify the staff, billing hours and billing rate
Chapter 4: Consulting Assignments

- The assigned staff and billing rate are consistent with the fee proposal in the agreement

- Changes to staff (as identified in the RFP, cost proposal, or contract documents) or billing rate have received written approval, either by a submittal form from the Consultant or email, depending on the terms of the agreement. A sample memo is provided in Document ECS-CWP-17.

- Charges against provisional items, contingency or additional work are pre-authorized through appropriate change management procedures

- Disbursements are claimed according to the provisions and are supported with receipts and/or documentations

- Accumulated invoice amount is consistent with the progress of the project

- Earned Value reporting should be included where the project contract allows for it

- Construction Lien Act holdback is applied where required

For projects that last many months, the Consultant should create a spreadsheet summarizing the billing amounts, paid amounts, the balance for each category of cost (base deliverables, disbursements, provisional item, contingencies) and other pertinent information as required for the monitoring of the expenditures and progress.

The engineering agreement mentioned in Section 4.3 states that materials or goods purchased by the External Service Provider in connection with the project and paid for by the City shall become the City’s property. A spreadsheet listing the items should be created and updated as payments are processed to track the purchased materials or goods that shall be turned over to the City. The list is to be used at the conclusion of the project to verify if all items are accounted for.

4.6. Authorization of Changes to Scope of Work

To avoid any potential contractual disputes and delays in completing the original work on time, significant additional work should be avoided. The steps and information required for the
authorization of a change in scope of work are discussed in Chapter 7.

### 4.7. Acceptance of Study / Pre-design

On completion of the study/pre-design assignment, the required deliverables shall be submitted to the City for review and comment. The Project Deliverable Checklist (Document ECS-CWP-16) developed at the beginning of the project can be used to verify that the project is completed according to the agreement and all required deliverables have been submitted.

Depending on the project requirements, the Project Lead may circulate the deliverables to the Client Divisions and other applicable Stakeholders for their review and comments. The consolidated feedback resulting from the reviews is to be forwarded to the External Service Provider for discussion/incorporation into the final study/pre-design report.

Upon acceptance of the final study/pre-design report, the Project Lead should issue a letter of acceptance to the External Service Provider advising that the report has been reviewed and accepted (sample wording is provided in Document ECS-CWP-18). If the project includes detailed design, the External Service Provider should also be advised to commence the next stage of the assignment.


It is imperative that the study/pre-design report be finalized and accepted by the Clients as the report forms the “baseline” on how the next phase of the assignment will proceed. An unfinished baseline will have a detrimental impact on the next phase pertaining to scope, time and money. City staff should attempt to review documents in a timely manner, ideally completing reviews with a three week turnaround time.

### 4.8. Acceptance of Detailed Design

At the completion of the detailed design stage of a project, the deliverables to be received by the Project Lead are tender-ready
contract drawings and specifications, both in hardcopy and electronic format. Drawings and specifications must be signed and stamped by a Professional Engineer (who is licensed to practice in the Province of Ontario) on behalf of the External Service Provider. The City's standards and drawings for linear and facility projects are available on the City of Toronto external website (under "CADD Graphic Specifications.")

The Project Lead is to file the hardcopy and the electronic copy of the contract documents in supervised, centralized, secured and readily accessible location within their work unit location. Refer to Chapters 2 and 9 for additional discussion on project files.

4.9. Turn Over of Records and Purchases

The Project Lead should ensure all documents related to the project, as well as materials and goods purchased in connection with the project and paid for by the City are turned over to the City at the conclusion of the project in electronic format before final payment is processed. If a list of purchased materials and goods paid for by the City has been created and maintained, it should be utilized for verification and confirmation of receipt.

The Project Lead should take necessary steps to deduct from the final payment any cost of materials and goods that were not provided (turned over) to the City.

See also Chapter 9 for additional information on the retention of project files.

4.10. Final Payment and Holdback Release

Prior to processing the payment of the External Service Provider’s final invoice and the release of the statutory holdback, if there is any, the Project Lead is responsible to:

• Confirm with the Client(s) of their acceptance of all final deliverables

• Ensure that there are no outstanding claim(s)

Further, CT&P staff will:

• Initiate a lien search
• Ensure that the External Service Provider has submitted a statutory declaration (SD-Final in Document ECS-CWP-19) sworn before a commissioner of oaths. In cases where the External Service Provider has hired a subcontractor to perform work, SD-Final is issued by the subcontractor.

• Where required according to the payment terms and conditions of the agreement, ensure that the External Service Provider has submitted a certificate of an auditor licensed under the Public Accounting Act, 2004.

If all the above are in order, the final payment should be made as soon as possible and the statutory holdback be released after 45 days as per the provisions of the Construction Lien Act. For ease of tracking and monitoring, the holdback and final payment may be released as separate payments.

After the final payment is processed and the holdback is released, CT&P requests that PMMD close the PO in the SAP financial system, and that the remaining funds are returned to the Client Division.

4.11. Professional Services Performance Evaluations

Consultants' performance is evaluated at specified intervals using the Professional Services Performance Evaluation Form, available on the ECS intranet site. This form was released in Spring 2017 and is to be piloted by both ECS and Toronto Water through 2017. The number of Professional Services Performance Evaluations conducted throughout a consulting assignment will depend on the assignment’s complexity and duration. Refer to Section 3.7 for additional information on performance evaluations.

4.12. Claims by External Service Providers

A claim is an assertion by a claimant (in this case, an External Service Provider) for compensation, payment, or reimbursement for a loss under a contract or agreement, such as unanticipated delays in work.

The Project Lead is to ensure that the claim is reviewed carefully and resolved in a timely and equitable manner. Upon receipt of a claim from an External Service Provider, the Project
Lead shall brief their manager and review the claim as soon as possible.

Items to review when assessing the validity of the claim include but are not limited to the following:

- Call Document, particularly the original scope of work
- Scope and rationale for the claim
- Any other supporting documentation, correspondence, minutes, records

The Project Lead shall contact the External Service Provider for additional information or clarification where and when necessary.

Following the review of the claim, the Project Lead should convene a meeting with the Client Division(s) to discuss the claim and any proposed resolution.

Any agreement made with the External Service Provider in resolving the claim must be in writing. If the agreement results in additional cost, the approval must be provided in accordance with the delegated signing authority. If the costs result in exceeding the original PO value, a Purchase Order Amendment will be required (refer to Section 7.10).
5.1. Introduction

In general, linear projects – watermain, sewer, and road projects – are designed internally. External Service Providers are used for design when City resources are limited, or when specific experience or required expertise is not available in-house (refer to Chapter 4). In many cases, the services for the design of capital projects is provided by in-house Professional Engineers and engineering designers.

This section describes the general process of designing linear projects when conducted internally. Externally designed projects encompass the same general steps, such as pre-engineering and subsurface utility engineering. Program-specific design requirements, as well as roles and responsibilities of the City and the External Service Provider, are detailed in the RFP.

5.2. Design Initiation and Pre-Engineering

Once the capital project has been assigned to an ECS unit for internal design and delivery, the project is assigned to a Project Lead by the unit's Manager. At the same time, the project is also assigned to a Design Supervisor. The Project Lead is responsible for coordinating with the Design Supervisor and for initiating the design of the proposed improvement.

Following the assignment of the project to a Project Lead and Design Supervisor, the Project Lead should take the steps described in the following subsections in preparation for the commencement of work and subsequent administration of the contract.

5.2.1. Initiation Meeting

The Project Lead is responsible to confirm the Project Scope and limits of the project with the respective Client Divisions. Prior to the commencement of any preliminary design work, the Project Lead shall conduct an initiation meeting with the design staff and the Client lead(s) to ensure that all parties have a full understanding of the project, particularly:
• **Project scope** - confirm the project deliverables and limits and if necessary, identify tasks leading to such deliverables

• **Project schedule** - confirm the overall project schedule and dates for completion of Milestones

• **Project budget** - confirm the Clients' budget for each component of the project

On internally designed projects, the scope, schedule, and budget should be captured in a Pre-Design Report. Document ECS-CWP-03 is a sample Pre-Design Report and Project Checklist for internally designed projects. This form summarizes scope and budget, and provides checklists for required investigations, Stakeholder consultations, and approval requirements. This form should be completed and its contents confirmed prior to proceeding with the design.

5.2.2. **Pre-engineering Site Reviews**

For road, sidewalk, and underground related work, the Construction Supervisor coordinates a pre-engineering site review prior to undertaking detailed design stage. The purpose of the review is to ascertain the general condition of the asset, obtain initial quantity estimates, etc.

The Design Supervisor coordinates the transfer of the information to a base plan and arranges for the Designer to undergo a site visit to confirm location, quantities, etc. The base plans are to be revised as necessary.

The Project Lead shall then conduct a site review, with the draft base plan, to confirm the scope of the work and limits of construction.

The responsibility of reviewing and approving the pre-engineering site review lies with the Project Lead.

5.2.3. **Engineering Survey and Subsurface Utility Engineering Investigations**

Once the Project Lead confirms the Project Scope and limits of the project, the request for engineering surveys and a subsurface utility engineering (SUE) investigation is then initiated by the Design Supervisor to the Manager of the
Engineering Surveys unit. This is done by completing a Survey Request Form (ECS-CWP-20) and emailing it to engsvy@toronto.ca.

The Design Supervisor, in consultation with the Project Lead, shall be responsible for specifying the category of survey and the level of SUE required. Engineering surveys are completed using ECS's in-house surveying resources. Subsurface utility engineering investigations are completed by an external vendor and managed by the Engineering Surveys unit.

Subsurface utility engineering investigations are typically required for underground engineering design projects and in some cases, specialized surface related engineering projects which involve road alterations, utility relocations, streetscaping and TTC track work. Existing subsurface utilities and their related structures constitute a significant portion of this infrastructure, which creates risks for projects.

Inaccurate, incomplete and/or out-of-date information on the existence and location of existing subsurface utilities reduces the abilities of the Project Lead, Design Supervisor, City and Contractor to make informed decisions and to support risk management decisions regarding the project's impact on existing utilities.

In general, the levels of SUE typically required are as follows:

- **SUE Quality Level B**: Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities.

- **SUE Quality Level A**: Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for potential damage.

One or both of SUE Quality Level A or B may be required on engineering design projects. The level(s) required are determined by the complexity of the work.

In certain cases, SUE Quality Level A is requested during the detailed design phase after SUE Quality Level B information has
been determined and critical subsurface information is needed to provide input to the design.

5.2.4. Utility Circulation

At the pre-engineering phase of the project, the Design Supervisor issues a Utility Design Initiation Notice (DIN) to all utilities located within the right-of-way and limits of the proposed project. A sample DIN is provided in Document ECS-CWP-21. The purpose of the DIN is to:

- notify utilities of the proposed improvement
- obtain as-built drawings indicating existing and abandoned plant locations
- recommend that the utilities conduct an inspection of all existing infrastructure to assess the condition and possible need for repairs, relocation or upgrades prior to the commencement of the City's project
- identify any conflicts with existing or planned utilities

Information obtained through the utility circulation process is incorporated into the engineering design.

5.2.5. Geotechnical Investigation

The Project Lead is responsible for requesting geotechnical investigation work through the Soil and Groundwater Quality Unit (SGQ). Geotechnical investigations are completed by external vendors and managed by SGQ.

The request for geotechnical investigation is submitted using Document ECS-CWP-22 ("Form 1", also available from SGQ), and must include basic project information such as contract number, project type, street, project limits, project tender date and geotechnical investigation report submission date. Staff from SGQ will work with the Project Lead to determine the scope of work and testing requirements for the geotechnical investigation. All testing requirements are documented in Document ECS-CWP-22. Once the scope and testing requirements are confirmed, the work request is submitted to an External Service Provider for delivery.
The draft and final geotechnical investigation reports and recommendations are submitted to the Project Lead for review and comments.

5.2.6. Other Investigations

The Project Lead shall review the scope and determine if any additional investigations are required prior to commencing detailed design. These may include non-destructive testing for road work, or condition surveys of retaining walls, slopes, or historical buildings. The design and/or construction methods may be determined from the results of the condition surveys.

5.3. Detailed Design

The Project Lead and Design Supervisor work together with the appropriate engineering design staff to move the project through the design phase. Typically, engineering designs are provided to the Project Lead for review and comment at the 30%, 60%, 90% and 100% stages of development.

To avoid any potential conflict and delay in completing the original work on time, significant additional work should be avoided. All proposed works should be confirmed with the Client Division at the initiation meeting (Section 5.2.1).

The Project Lead sets up design review meetings with the Design Supervisor, design staff and Client leads to review and provide comments as the design progresses. At the 90% design stage, designs are peer-reviewed by an alternate Project Lead within the same unit. As well, the Construction Supervisor provides comments on constructability. Refer to Section 5.5 for discussion on the peer review process.

The tasks and Milestones that comprise each watermain, sewer, and road project will vary from one project to the next. Sample design Milestones for the 30%, 60%, 90% and 100% stages of development for watermain, sewer and road projects are provided in Appendix E to this manual. These Milestones are to be used as a guide, and are not to be considered an exhaustive list of the design details required.
5.3.1. City Standards, Policies and Procedures

To ensure compliance of City standards, policies, procedures and Municipal Codes, the Project Lead and design staff should utilize the appropriate City standards, policies and procedures during detailed design. The following are common standards, policies and procedures that may be applicable in design assignments:

- CADD Graphic Specification Manual
- Standard Construction Specifications and Drawings for Roadwork
- Standard Construction Specifications and Drawings for Sewers and Watermains
- Ontario Provincial Standards
- Standard templates for tender documents
- Design Criteria for Sewers and Watermains
- Curb Radii Guidelines
- Vehicle Travel Lane Width Guidelines
- Pavement Design Guidelines
- Accessibility Design Guidelines
- Field Services Manual

5.3.2. Project Deliverables

In general, the Project Lead shall:

- monitor the project deliverables as specified and confirmed at the initiation meeting
- review the design to ensure they are as specified and are of acceptable quality
- provide timely comments to engineering design staff if the design does not meet the requirements
Chapter 5: Linear Project Design

• prepare Special Specifications, list of tender items, engineer’s estimate and tender documents. Ensure that the Client Division receives a copy of the engineer’s estimate. This should be completed at the 90% design stage.

• coordinate funding approval (based on the engineer’s estimate) prior to tendering of the project, and tender call documents – refer to Chapter 3 for information on funding approval.

5.4. Approvals and Permits

All necessary approvals and permits are to be secured prior to tendering unless approved otherwise by the appropriate director. Where required, the application process for an Environmental Compliance Approval (ECA) from the Ministry of the Environment and Climate Change (MOECC) should be initiated as soon as the final design is completed.

Refer to Section 2.7 for further information on approvals and permits.

5.5. Peer Review

At the 90% design stage, designs are peer reviewed by an alternate Project Lead within the same unit, as well as the Construction Supervisor for final review. The purpose of the Construction Supervisor’s review is to comment solely on constructability issues.

The purpose of the peer review is to identify any oversights in design or areas requiring clarification during the design process, as well as to review the accuracy of design drawings against unit priced items. The peer reviewer, assigned by the unit’s manager, undertakes a technical review of drawings, tender documents and special specifications.

The peer review process typically takes approximately 2 weeks, and the results are submitted to the Project Lead.
5.6. Completion of Detailed Design

At the completion of the detailed design stage of a project, the deliverables by Project Lead are tender-ready contract drawings and specifications. Drawings and specifications must be signed and stamped by a Professional Engineer (who is licensed to practice in the Province of Ontario). At this point, the Project Lead may contact CT&P to begin the procurement process.

The Project Lead is to file the hardcopy and the electronic copy of the contract documents in a supervised, centralized, secured and readily accessible location within their work unit location. Refer to Chapter 2 for information on file storage, as well as Chapter 9 for information on file retention.

5.7. Project Tender

Once the contract documents are prepared, the project is ready to be tendered. Refer to Section 6.4 for detailed information on the tendering process. Details on the policies governing the procurement of goods and services are presented in Chapter 3.
Chapter 6: Construction Projects

6.1. Introduction

This chapter deals with the administration of construction contracts delivered by Engineering & Construction Services (ECS) both internally designed and through External Service Providers.

6.2. Approvals and Permits

All necessary approvals and permits are to be secured prior to tendering unless approved otherwise by the appropriate Director. Refer to Section 2.7 for information on approvals and permits.

6.3. Works Performed by Third Party Owners

City capital works may affect gas, phone, cable, hydro, pipeline and railway facilities or structures. If the City engages any owner of these facilities, utilities or railways (Third Party Owner) to undertake any work on their own assets, either one of the following two methods of service procurement may be used:

- Non-Competitive process and issuance of a Purchase Order (PO)

- Cheque Requisition in accordance with Section 71-14 (Schedule A, item 4) of the Toronto Municipal Code Chapter 71 – Financial Control (Schedule A payment process)

The Non-Competitive process for the issuance of a Purchase Order should be used only if the Third Party Owner insists on a PO from the City. In which case, the Additional Terms & Conditions for Purchase Orders to Third Parties Performing Work on Own Facilities (ECS-CWP-14) is to be attached to the PO to be issued to the Third Party Owner undertaking the work by the Project Lead. This will negate the need for a formal agreement for the Non-Competitive process.

The preferred method of engaging and paying for the Third Party Owner’s services for works on its own assets is by
Cheque Requisition or invoice payment. It involves the following steps:

1. Obtain a proposal for work to be performed and the estimated costs from the Third Party Owner

2. Review the proposal and if determined to be satisfactory, confirm funding availability with the Client Division, and then provide a written confirmation under the delegated signing authority to the Third Party Owner indicating:
   
   a. Acceptance of its proposal
   
   b. A “not to exceed” cost which is to be paid on a time and material basis or lump sum depending on the discussion and ensuing understanding with the Third Party Owner
   
   c. That a PO is not necessarily required pursuant to Section 71-14 of the Toronto Municipal Code Chapter 71 – Financial Control (though a PO can be issued if requested)

3. Forward an email or internal memorandum attaching all of the above mentioned documentations to CT&P advising that payment(s) to this particular work is/are to be made by cheque requisition(s) after receipt of an invoice in accordance with Section 71-14 of the Toronto Municipal Code Chapter 71 – Financial Control

The delegated signing authority is the same as that for the award of a contract acquired through a competitive procurement process. The limits, based on value of work and exclusive of taxes, are updated on an annual basis and are specific to each division.

6.4. Request for Tender

Request for Tender (RFT) Calls are to be used on construction projects. Refer to Section 3.11 for detailed discussion on the RFT process, the templates to be used, and the components of each template.
While PMMD is responsible for handling the tendering process, preparation of the tender Call Document is the responsibility of the Project Lead. PMMD will work with staff on the Call Document to get more information about estimated quantities and prices, in order to conduct the unbalanced bid analysis once bids are received. Refer to Section 3.5 for information on Unbalanced Bid Analysis.

Figure 4 summarizes the major tasks of construction contract tendering procedures. The following sections describe the key activities to be performed when issuing a tender call for a construction project. These tasks, and the parties responsible for each task, are further outlined in Appendix D.

The procedures of RFT and the governing procedures are discussed in Chapter 3.
Figure 4: Formal Contract Tendering Procedures
6.4.1. Pre-tender Tasks

Before a project can be tendered, there are a number of tasks and items of documentation that are to be completed, including confirmation of funding, preparation of the call document and engineering estimate, preparing supplementary documents such as drawings and geotechnical reports for distribution with the tender books, and printing hard copies of the Call Document for distribution to bidders (the tender Call Document books). These tasks are discussed in detail in Section 3.11.3.

6.4.2. Tendering Period

The tendering period begins after a tender call has been issued and ends when the tender closes. During this time, bidders review the tender package, submit questions, if any, to PMMD, and addenda are issued as necessary. Mandatory site meetings and bidders meetings are also held during this time.

Refer to Section 3.13 for further discussion on the tender advertising period.

6.4.3. Decision on Formality of Tenders

Tenders are opened by PMMD. PMMD will check if all the required documents are submitted, and if they were completed properly. Tenders that comply with submission requirements are considered to be formal, and those that do not are considered to be informal.

Decision on the formality of tenders, including tender opening and bid irregularities, is discussed in greater detail in Section 3.11.4.

6.4.4. Communication with Bidders

During the tendering process, the Chief Purchasing Official (CPO) or designate is the official point of contact for all vendors. Up to and including the announcement of award, all communication and inquiries must be directed to the official point of contact. Communication with bidders is discussed in further detail in Section 3.14.
6.4.5. Review of Alternative Proposals

Tenders may allow bidders to provide “alternate or alternative” proposals. In these cases, refer to Section 3.11.5 for discussion on how to evaluate alternative proposals, particularly if a tender’s ranking is affected. Note that the selection is made based on the base bid.

6.4.6. Evaluation of Bids

PMMD receives and reviews the bids, and forwards them to CT&P for bid analysis. Part of PMMD’s bid analysis includes reviewing all construction calls to identify mathematically and materially unbalanced bids (see Section 3.5). Detailed information on this review is available on the PMMD intranet page introducing the Unbalanced Bid Analysis Procedure. The procedure is also available on the PMMD Policies and Procedures intranet site.

Upon receipt of opened tenders and Unbalanced Bid Analysis summary from PMMD, CT&P conducts the bid analysis in PTP. CT&P will forward the tenders, PMMD’s Unbalanced Bid Analysis summary, and the PTP Bid Analysis Report to the Project Lead. The Project Lead, together with a peer (not a manager), must evaluate the bids in accordance with the evaluation process set out in the tender and provided to PMMD, and in accordance with the Unbalanced Bid Analysis Procedure. This includes reviewing all unit prices, confirming quantity estimates, and determining whether the low bid represents the best value to the City, even after mathematically unbalanced items are taken into consideration. The Project Lead is to then prepare a memo (ECS-CWP-10a) that acknowledges that the unbalanced bid analysis has been completed, and summarizes the results of the review.

The memo must state that the prices and quantities of mathematically unbalanced items (if any) can be managed during construction. Conversely, if significant errors were detected in the tender quantities that would cause a financial impact to the City, the memo may recommend that the tender be cancelled and retendered with revised quantities at a future date.
6.4.7. Award of Construction Contracts

After the bids have been evaluated, the construction contract may be awarded. The policies governing who has the authority to award construction contracts are discussed in Section 3.15.

The Project Lead should then proceed with the following steps:

1. Review, complete and sign the Pre-Award Checklist (Document ECS-CWP-23)
2. Obtain the External Service Provider’s recommendation if applicable
3. Confirm experience and qualifications (if applicable)
4. Verify that the following requirements are met:
   • Award is to the qualified bidder with the lowest bid price meeting the requirements
   • Funding approval is in place (see Section 3.11.3.1)
   • There are no material written objectives to the award
5. If all three preceding requirements are met, determine if the award is to be made by the Chief Purchasing Official or Bid Award Panel according to their award authority indicated in Section 3.15.
   • For award to be made by the Chief Purchasing Official: prepare a memo recommending the award. The memo is to be authorized according to the delegated signing authority. A template for a memo recommending award of a construction project is provided in Document ECS-CWP-10b.
   • For award to be made by the Bid Award Panel: in addition to the memo recommending the award authorized by the delegated signing authority, a report jointly prepared by the division and PMMD and signed by the Director of Purchasing is required. The report should be reviewed by the appropriate ECS Director prior to forwarding to PMMD. A Bid Award Panel report template is available at: http://insideto.toronto.ca/secretariat/staffreport/index.htm
6. The delegated signing authority for the memo recommending the award will vary depending on the value of the contract. The delegated signing authority limits are updated on an annual basis and are specific to each division.
7. For award to be made by the Standing Committee or City Council, a staff report shall be referred to the Standing Committee responsible for the program (Public Works and Infrastructure Committee for Solid Waste Services, Engineering & Construction Services, Transportation Services and Toronto Water projects). The staff report to the Standing Committee recommending the award is to be jointly prepared by the Division undertaking the project and PMMD and signed by the appropriate Division Head and CPO.

8. The draft award report should be circulated to PMMD and the Capital Asset Manager of the Client Division. The following issues should be clarified before the draft report is circulated:
- Disqualification of lowest bidder, resulting in the contract being awarded to the second lowest bidder
- Any bid irregularities

9. After the award of contract is made, a letter is forwarded to the successful bidder by PMMD. In addition, CT&P should provide a letter indicating that the City will be forwarding to them documents for execution. Documents ECS-CWP-13a and ECS-CWP-13b are templates for the letter of acceptance for linear and vertical projects, respectively. The acceptance letter may be faxed or emailed to the successful bidder. If faxed, the fax confirmation sheet is to be filed for record.

10. Within three (3) days after the contract is awarded, the Project Lead is to advise the PMMD buyer with the milestones for performing the Contractor Performance Evaluations.

Any decisions or renegotiations that involve financial commitments for contract terms which appear to be ambiguous, unclear or inconsistent are only to be made after consultation with the City's Legal Services Division and approval by senior management. All such consultations and approvals are to be documented.

The City Clerk's Office sets meeting dates for Council and committees, and sets the submission dates for staff reports. Project Leads must be aware of the lead times required for staff reports to be reviewed and submitted to the Chief Engineer and Executive Director of ECS in order to be included on the meeting agenda. Details regarding the procedure for staff report
Chapter 6: Construction Projects

submissions, report templates, and report deadlines are available at http://insideto.toronto.ca/ecs/divguide/reporting/.

6.4.8. Execution of Agreement

Following the award of the contract, agreements should be executed according to the procedure Execution of Formal Agreements, posted on the PMMD Policies and Procedures intranet site. A copy of the Form of Agreement is included in Section 6 of the tender documents. As noted in Section 3.10, the linear template uses the City's standard form whereas the vertical template uses the agreement form in CCDC 2 Stipulated Price Contract.

Execution of agreement generally involves the preparation of required forms, forwarding the completed forms to the Contractor for execution, checking the Contractor's original executed copies of agreement to ensure that no changes are made and that the documents are properly completed, signed, sealed and where required, witnessed. Finally, the original copies of the agreement will then be executed by City official(s).

CT&P staff preparing the agreement document should be aware that the date of agreement is the date of award and that it must be consistent across all contract documents, such as the Performance Bond and the Payment Bond.

Subsections 6.4.8.1 and 6.4.8.2 provide further information on the preparation of documents for execution. The documents are forwarded by CT&P with a covering letter (see documents ECS-CWP-13a and ECS-CWP-13b) to the successful bidder for execution. If the Contractor fails to execute the agreement within the time period stipulated in the tender document, CT&P should be advised so that they can issue a reminder letter (ECS-CWP-24) to the Contractor.

6.4.8.1. Forms for Linear Project Agreements

CT&P staff prepares the standard form of agreement for execution, under the delegation of authority approved by City Council in 2001 (Clause 6, Report No. 2 of the Works Committee, as adopted by the Council at its meeting held on March 6, 7 and 8, 2001).

The following are the City's standard forms required for the execution of linear contracts. These forms are included in
Section 6 (Contract Execution Package) of the linear template, posted at http://insideto.toronto.ca/purchasing/templates.htm:

- Form of Agreement (with a pre-printed "Approve As To Form" stamp)
- Performance Bond form
- Labour and Material Payment Bond form
- WSIB and Tax Statutory Declaration Form
- Insurance Certificate form
- Statutory Declaration Form for OHSA, if applicable
- Declaration of Compliance with Anti-Harassment Discrimination Legislation and City Policy

The Form of Agreement includes instructions for preparing the Form for execution. The other forms are completed by filling in the pertinent information required.

Three original copies of the forms (four if Legal Services handles the execution) should be forwarded to the Contractor with a covering letter outlining the execution requirements. Legal Services handles executions for Multi-Year Contracts and Special Contracts. Document ECS-CWP-13a is a template for the letter of acceptance for linear projects.

6.4.8.2. Forms for Facility Project Agreements

Facility project agreements require the following Canadian Construction Documents Committee (CCDC) forms:

- Agreement Between Owner and Contractor form, typically in the CCDC 2 Stipulated Price Contract document,
- Performance Bond form (CCDC 221), and
- Labour and Material Payment Bond form (CCDC 222)

and the following City’s standard forms:
- WSIB & Tax Statutory Declaration Form,
- Insurance Certificate form,
• Declaration of Compliance with Anti-Harassment/Discrimination Legislation & City Policy Form, and if applicable

• Statutory Declaration Form for OHSA.

The Performance Bond form and the Payment Bond form are usually supplied and completed by the Contractor’s surety company.

Three (four if Legal Services performs the execution) original copies of the completed Agreement and other forms mentioned above are forwarded to the successful bidder with a covering letter that outlines the execution requirements. Legal Services handles executions for Multi-Year Contracts and Special Contracts. If Legal is performing the execution, the letter shall indicate that Legal Services will be forwarding to them the appropriate documents for execution. Document ECS-CWP-13b is a template of the letter for vertical agreements.

It is imperative that the acceptance letter indicates the requirement for a construction schedule. The acceptance letter may be faxed or emailed to the successful bidder. The fax confirmation sheet is to be filed for record.

6.4.8.3. Execution of Agreement by the City

Prior to the execution of the agreement by the City, CT&P staff should ensure all required documents are executed and submitted. All documents should be checked to ensure that there are no unauthorized changes and all documents are properly completed, signed, sealed and where required, witnessed. Once this is done, an Order to Commence can be issued by the Project Lead.

The PMMD document Execution of Formal Agreements, available on the PMMD policies and procedures intranet site, sets out the procedures for the execution of formal agreements. Generally,

• Agreements with value less than $500,000 may be executed by the Division Head, Deputy City Manager or the City Manager in accordance with the delegated signing authority under the Financial Control By-law
• Agreements with value exceeding $500,000 must be executed by the Division Head having the delegated signing authority and the City Clerk

The date on the agreement (effective date) should be the date of the award if the contract is awarded by Bid Award Panel or a Standing Committee. If it is a staff awarded contract, the date should be the date that the Purchase Requisition is signed by the Division Head/Director.

For linear and vertical construction contracts over $500,000 in value, three sets of agreements (four if prepared by Legal) are prepared and sent to the following for internal signatures:

• Manager, Capital Markets, Corporate Finance
• Chief Engineer and Executive Director, ECS
• City Clerk

If the contract is under $500,000, City Clerks is not sent a copy. The original executed copies of the agreement are distributed, one copy to each of the following:

• 1 copy to the Vendor/Contractor
• 1 copy to Accounting Services
• 1 copy to Legal, if they prepared the agreement
• Payment File

Once the contract document/agreement has been successfully executed, a PO (Section 6.4.9) and an Order to Commence Work (Section 6.5.2.2) are to be issued.

6.4.9. Purchase Order

A Purchase Order (PO) is required for all construction contracts. Following the execution of the agreement where required, CT&P is to prepare a purchase requisition and request PMMD to issue a PO to the External Service Provider.

If the PO is issued to utility owners performing works on their own utilities, the template for additional terms and conditions in
Document ECS-CWP-14 shall be completed and attached to the PO request sent to PMMD.

Refer to Section 3.16 for additional information regarding PO's.

6.5. Administration of Construction Contracts

Following the execution of the contract and after the issuance of the PO and Order to Commence Work (Section 6.5.2.2), the project enters into the construction phase. This section describes the ensuing construction contract administration activities and procedures, and the Project Lead / Contract Administrator’s responsibilities, which are summarized in Figure 5.

For linear projects, the Project Lead is primarily accountable for the administration of construction contracts and is usually assigned the role of Contract Administrator (CA) which is defined in the General Conditions of Contract – Linear Infrastructure as “the person, partnership or corporation delegated by the Owner to be the Owner’s representative for the purposes of the Contract.” For contracts based on CCDC 2 Stipulated Price Contract (generally vertical contracts and bridge contracts), the External Service Provider takes on the role of CA, and as well provides inspection services.

The CA shall be familiar with all submissions, additional approvals, and other items specific to the contract that are to be completed to the satisfaction of the City at various stages of the construction phase, such as the completion of asbestos training.

In cases in which an External Service Provider is assigned the role of the CA, the External Service Provider, instead of the Project Lead, should perform those responsibilities/tasks identified in this section that are directly related to contract administration functions. The Project Lead is responsible for providing the necessary oversight and ensuring that the CA fulfills this role.

Poorly performing Contractors can be suspended from bidding on future City contracts. The Contract Administrator should therefore actively monitor Contractor performance throughout the contract period and take appropriate actions such as completing the necessary interim evaluations to correct and rectify unsatisfactory performances.
Detailed information about Contractor Performance Evaluations is available on the PMMD intranet site. The Contractor Performance Evaluation Procedure, available on the PMMD policies and procedures intranet site, should be used for evaluating the Contractor performance during and after the completion of construction. Refer to Section 8.8 for additional information on Contractor Performance Evaluations.

For additional information on the administration of construction projects in the field, refer to the Field Services Manual.
Figure 5: General Construction Contract Administration
6.5.1. Multiple Project Funding Accounts

For projects with multiple funding sources, it is imperative that each source is treated separately in accordance with Toronto Municipal Code Chapter 71 – Financial Control.

Portions of the work to be covered under a particular account must be paid solely from that account: the total funding available for a project does not represent a pool of funds that can be used for any portion of the work. If the cost of work exceeds the available funding for the designated account, funds cannot be taken from other sources within the same project. Exceeding of approved funds from an account requires a Purchase Order Amendment (POA) and proper authorization. Refer to Section 7.10 for additional details on the POA process.

6.5.2. Pre-Construction Tasks

Tasks to be performed by the Project Lead prior to the commencement of construction include:

- Holding a pre-construction meeting
- Issuing an Order to Commence Work
- Reviewing and confirming the construction schedule
- Notifying Toronto Water Laboratory for watermain projects
- Requesting Cut Permit from Transportation Services
- Issuance of Construction Notices (See Chapter 1)

6.5.2.1. Pre-construction Meeting

A pre-construction meeting should be held by the Project Lead after the award of the contract and before the start of the work.

Generally, the pre-construction meeting serves to identify, clarify and confirm the following:

- City's Health and Safety expectations from a Contractor (refer to Field Services Manual, Appendix H)
- Protocols for communication, quantity verification (e.g. material and truck weighing), inspection
• Progress payment requirements

• Change management procedures

• Claims and Dispute resolution procedures – both General Conditions of Contract – Linear Infrastructure (Section GC 3.14.04) and Supplementary Conditions to CCDC 2 (Section 8.3) provide for three escalating levels of negotiation for resolving disputes. The Project Lead should obtain the names of the Contractor’s staff who may be involved in such negotiations.

• Status of executed documents, bonding, insurance, and Order to Commence Work

• Construction schedule

• Pre-commencement activities: traffic management plans, shutdowns

• Required permits and approvals

• Occupation and use of site

• Emergency contacts information (names and phone numbers)

• Frequency of Contractor Performance Evaluations

The Contract Administrator shall prepare a project-specific agenda prior to the meeting to ensure that all relevant topics are covered. Document ECS-CWP-02a is a sample agenda for linear project, and Document ECS-CWP-02b is a sample agenda for a vertical project. For projects involving road resurfacing, a pre-pave meeting should be held. Document ECS-CWP-26 is a sample agenda including potential discussion items for a pre-pave meeting.

The Project Lead / Contract Administrator is to ensure that minutes of the meeting are recorded, distributed and filed. The minutes should include the time and location of the meeting, names of those in attendance and the organizations they represent, in addition to the decisions or actions taken/required for the agenda items.
6.5.2.2. **Order to Commence Work**

An Order to Commence Work letter (ECS-CWP-29) is to be issued by the Project Lead when all required documents have been submitted by the Contractor, and approved by ECS. Prior to issuing the Order to Commence Work letter to the Contractor, the Project Lead should:

1. Ensure that a PO is or has been issued by PMMD

2. Identify who is/are the Constructor(s) according to Occupational Health and Safety Act (typically the Contractor)

3. If the City is deemed to be the Constructor, provide a *Notice of Project* to the Ministry of Labour. The *Notice of Project* can be completed online through the [Ministry of Labour website](#), or by completing a hard copy of the form. A sample of the form is provided in Document ECS-CWP-27. (Note that ECS shall not permit the City to become the Constructor without written consent by Program Manager – Health & Safety and Emergency Planning, section Director and Chief Engineer and Executive Director)

4. Complete the appropriate *Registration of Constructors and Employers Engaged in Construction* form, also referred to as *Form 1000* (ECS form is available on the ECS intranet site, under "Health & Safety") and submit to the Constructor for posting at project site. Note that the box for the "Average Number of Employees on Project" on the form refers to the number of employees that will be at the site at any given time and not necessarily the total number that will visit or work at the site for its duration.

5. When the City is deemed to be the Constructor, each company that will be working on the site is required to submit a similar form to the City. Note that ECS shall not permit the City to become the Constructor without written consent by Program Manager – Health & Safety and Emergency Planning, Director and Chief Engineer and Executive Director
6. For vertical contracts, complete the Order to Commence Work checklist in ECS-CWP-28.

7. If all above items are in order, the Project Lead should then issue the Order to Commence Work letter. A template for a sample letter is provided in ECS-CWP-29. The Ministry of Labour does not require a copy of this letter.

8. The Contract Administrator should consult with Legal Services for actions to be taken if the Contractor has failed to commence work within the 14-day period as stipulated in “General Conditions of Contract – Linear Infrastructure”, or the period stipulated elsewhere in the contract with a higher order of precedence.

In situations where preliminary work can be done in advance of construction, an Order to Commence Site Work is issued to Contractors. The Order to Commence Site Work provides authorization to Contractors to begin preliminary work, such as the preparation of shop drawings, locating utilities on site, securing approvals, and ordering materials. Preliminary work on site is not permitted until an Order to Commence Site Work is issued by the Contract Administrator. The Order to Commence Site Work is currently used only by the Bridges, Structures & Expressways unit. A sample Order to Commence Site Work is presented in Document ECS-CWP-30.

6.5.2.3. Construction Schedule

The Contract Administrator should ensure that a construction schedule is submitted and updated by the Contractor according to the contract documents.

The schedule should be in the format specified in the Tender document. It should be reviewed carefully to ensure the information, particularly durations and Milestone dates, shown are in agreement with those in the contract where specified. Deviations should be clarified with the Contractor as soon as possible.

Generally, the following items may be included in the schedule, and should be verified:
• Start date corresponds to the date of Order to Commence Work or the Order to Commence Site Work

• Schedule duration matches the tender duration. (Even if the Contractor is indicating that the work will be completed earlier, the completion date on the schedule MUST be as indicated on the tender submission)

• Major tasks / Milestones and the completion dates are as specified in the Contract

• In weekly intervals, the sequence and timing of major activities, proposed start dates and estimated duration for activities

• Resource loading is appropriate to complete the work in the durations identified

• Requirement and constraints specified in the contract

• The project critical path is highlighted or identified in a contrasting colour from other activities

• The works to be performed by each specific subcontractor and where applicable, the specific location, labour, construction crews, plant and equipment to be employed

• Timing for shop drawing submission and review – ensure sufficient time is allotted for review

• Timing of testing and commissioning as specified in contract

• Timing for training

• Timing for submission of as-built drawings, record drawings and operations manuals

If the submitted schedule meets the requirements, an acceptable letter should be issued to the Contractor. Document ECS-CWP-18 provides sample wording for letter indicating the acceptance of the proposed schedule and reminding the Contractor to update the schedule.

The Contractor is required to update the construction schedule in accordance with the above mentioned GCs or provisions stated elsewhere in the contract documents.
6.5.2.4. Notification of Watermain Project Start

The Client Division is normally notified of the upcoming construction work by copy of the Notice of Construction letter. When the project involves watermain construction or relining, Toronto Water Laboratory should be notified and provided with relevant contact information. The notification, a template for which is provided as ECS-CWP-31, is to be copied to other affected parties.

6.5.3. Site Meetings

Site meetings should ideally be held at least once per month and more frequently as needed. The Contract Administrator shall determine the frequency of the meetings and call for a special meeting when necessary.

The meetings should generally be attended by the:

- Project Lead
- Contract Administrator
- Inspection staff
- Client Lead, if applicable
- External Service Provider, if one is engaged
- General Contractor’s representative
- Utility companies’ representatives, if applicable
- Subcontractors’ representative upon invitation by the General Contractor
- Third party representatives, such as TTC, Metrolinx, CNR

Prior to the meeting, an agenda shall be prepared and distributed by the Contractor Administrator. The agenda should include all issues to be discussed and may include the following:

- Review and update of health and safety issues (refer to Field Services Manual, Appendix H)
• General and special announcements, as well as opening remarks

• Acceptance of minutes of previous meeting by attendees

• Review and follow-up of items in minutes of last meeting

• Review of the issues log

• Review the latest updated schedule. Any slippage from the originally submitted construction schedule must be clearly identified, and recorded in the meeting minutes. It is important that an updated schedule is obtained from the Contractor and reviewed for accuracy as it can be used later to substantiate or deny a delay claim.

• Six (6) week look ahead

• Discussion of plan of action to meet contract requirements if there was any schedule slippage

• Review Request for Information (RFI) status

• Change Directive / Order status

• Shop drawing and as-built drawing status

• Record drawing status

• City restrictions i.e. shut down and/or plant support activities

• New business

The minutes of meetings should be kept in a consistent format. The Project Lead / Contract Administrator should ensure that the minutes are distributed to all invitees.

6.5.4. Daily and Weekly Reports

Inspectors are required to prepare daily and weekly reports documenting site activities, quantities of materials delivered and works performed.

Daily and weekly reports will be signed off by the Inspector, Contractor, and Contract Administrator for all contracts administered by External Service Providers as well as for internally managed construction contracts. If the Contractor
declines to sign the daily inspection report, the Inspector will record in the report, and in their daily log book, that the Contractor has been shown the report or advised of the contents of the report. The Inspector shall complete daily reports for changes in the work and the Inspector and Contractor Administrator shall sign off the same.

Daily and weekly report forms and preparation guidelines are included in the Field Services Manual.

It is important to note that the Inspectors’ reports can be used as evidence to substantiate or deny future claims made by the Contractor or the City. The Project Lead should add any Health and Safety issues observed to the observation checklist / matrix, and notify the Program Manager – Health & Safety and Emergency Planning.

6.5.5. **Authorized Representative on Project Site**

The City’s Project Lead must ensure that for internal and external contracts, Contract Administrators are in compliance with the various terms of the construction contract. This includes ensuring that the General Contractor has an authorized representative on site at all times. Insufficient work direction and delays could result due to absence of Contractor's representative on site for decision making purposes.

For externally managed contracts, the City's Project Lead and Contract Administrator must ensure that the General Contractor provides an authorized representative on the project site all times that is knowledgeable and has the authority for making decisions. On internally managed contracts, this is ensured by the Construction Supervisor.

The Contract Administrator must obtain from the Contractor, prior to the commencement of work, the name and contact phone number of the on-site Superintendent that has authority for making decisions and if necessary, an alternate from their team that is knowledgeable and competent to assume the role of the Superintendent when the on-site Superintendent is not available. The Contractor is to be advised at the pre-construction meeting that the Contract Administrator must be notified when an on-site Superintendent is not available and the delegated alternate including name and contact phone number.
6.5.6. Construction Material Reports

6.5.6.1. Material Documentation

Appropriate documentation is to be maintained for quantity control of materials on unit rate projects. All quantities of material delivered to the project site are to be documented, logged and placed in the project file. Proper rationale must be documented and maintained on file, including the written consent of the City, in the form of a Change Order for items outside the original Project Scope. Refer to Chapter 7 for additional details on how to deal with changes in scope.

To avoid overpayments for items not included in the original Project Scope, it is critical that material quantities are verified, supported with written consent of the City, properly documented, and filed. The Construction Supervisor is to be advised of any item overruns or added quantities initiated by the Project Lead or Inspector. The Construction Supervisor/Coordinator is to follow final measurement procedures identified in the FSM and associated SOP.

Refer to the Field Services Manual for additional detail on documenting materials brought to site.

6.5.6.2. Testing and Quality Assurance

Testing and quality assurance are performed to ensure and verify that construction materials, provided for construction contracts, are in accordance with contract specifications. The CA must verify that the minimum quality requirements for materials are correct on the testing forms by initialing the test result forms and ensuring that the appropriate commentary is provided for test results when exceptions are noted. The CA must ensure that the Construction Supervisor and inspection staff are advised of these actions. Construction Supervisors are responsible to ensure that inspection staff adhere to the above requirements.

Contract Administrators are required to verify that quality assurance of construction materials, performed by third party Consultants, are in accordance with contract specifications. The City's Project Lead is responsible for ensuring that the CA for Consultant managed contracts adheres to the above requirements.
Appropriate documentation is to be maintained for quality assurance and quality control of materials. All materials delivered to the project are to be documented, logged and placed in the project file. All action required/taken for construction materials that have been determined non-compliant with specifications must also be documented and placed in the project file. All materials delivered to site that are visibly defective or substandard must be immediately rejected and the Project Lead and/or CA notified. The City's Project Lead is responsible for ensuring that the CA for Consultant managed contracts adheres to these requirements.

The contract documents typically make reference to codes and standards. There may be exceptions where the contract is tailored specifying the type and frequency of sampling and testing of construction materials for quality assurance. In cases where batch or lot size of the material supplied and/or placed does not coincide with those specified in contract documents, the Contractor Administrator may revise the frequency of sampling and testing; however, the rationale for deviating from the contract specifications must be documented. The City's Project Lead is responsible for ensuring that the CA for Consultant managed contracts adheres to these requirements.

On internally managed projects, the Construction Inspector is responsible for requesting and coordinating Quality Assurance testing according to the Field Services Manual.

Additional information regarding material testing is available in the Field Services Manual.

6.5.7. Resident / Property Owner / Public Complaints and Claims

Complaints by residents, property owners or general public should be handled in a professional manner and managed fairly and effectively. The City's Complaint Handling Guidelines (posted on the City's intranet site) provides guidelines on complaint handling. Complaints related to capital construction projects can be submitted to the City according to the ECS Complaints Process posted on the City of Toronto external website.

All claims by the public against the City for injury or property damage should be referred to City Clerk’s Office. Staff should
not admit to any fault when contacted by the public about any
claims. A record of the contact should be kept in the project file.
The information to be documented may include:

- the claimant's name and contact information
- date of claim
- description and / or nature of claim, including the date of
  incident
- date and details of response and / or information provided
  (e.g. contact information for Clerk's Office)

ECS has developed a process for third party liability claims
involving Contractors. The process is included in Appendix C of
the Insurance & Risk Management Claims Manual, available
from the Insurance & Risk Management unit.

It should be noted that the Tender document includes a
provision that lays out the Contractor's responsibilities and
obligations in responding to third party claims as well as City's
responsibilities to ensure the claims are handled properly and in
a timely manner.

Detailed information on claims procedures can be found on the
Insurance & Risk Management intranet site at
http://insideto.toronto.ca/corporate_finance/insurance/index.htm

6.5.8. Progress Payments

Progress payments are typically made on a monthly basis.
Payments should only be approved if the supporting
documentation is accurate and it reconciles with the amount to
be paid.

For linear projects, General Conditions of Contract – Linear
Infrastructure, GC 8.02.03.01.04 requires that the payment be
made within 30 calendar days of the approval of the Progress
Payment Certificate by the Contract Administrator or
Project Lead for internally managed projects.

For Major Infrastructure projects, Supplementary Conditions to
CCDC 2 clause 3.19.2 requires that the payment be made within
30 calendar days "after the Consultant and the Contractor have
reached mutual agreement on the amount of the invoice
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6.5.8.1. Progress Payment for Linear Contracts

Progress payments for linear projects are based on quantities presented in the weekly reports (refer to Section 6.5.4 and the Field Services Manual for detailed information on weekly reports). The Project Lead authorizes the weekly report, then sends it to CT&P so that a progress payment can be generated. Progress payments are generated and tracked in PTP.

Prior to releasing the first progress payment, CT&P should verify that the following items are received where required under the terms of the contract:

- Construction schedule if required
- WSIB Clearance Certificate for the General Contractor (valid for 90 days, and is expected for each payment)

All payments to the Contractors are to be supported by proper documentation. Upon verification of quantities and / or progress with the supporting documentation (particularly Inspector’s reports) and / or information from the Contractor and after checking the accuracy of the calculations, CT&P is to prepare a payment certificate generated in PTP showing the:

- Description of each tendered item, the tendered quantity, unit bid price and total price (ensure that if the alternative
proposals mentioned in Section 6.4.5 is accepted, the prices for the alternative items and not the base items are applied.

- Description of contract change item (described in Change Directive and/or Change Order), the quantity, agreed unit price and total price/lump sum price. Note that there may be cost savings if the change is a reduction in the tendered work. The Inspector’s Daily Report form is required if the item is based on a negotiated lump sum price or negotiated unit price. Report of Extra Work Completed form is required if the item is based on Time and Material. Refer to the Field Services Manual for the Inspector’s Daily Report form and the Report of Extra Work Completed form.

- Previous payment quantity, current payment quantity and the cumulative quantity for each tendered and contract change item.

- Amount of previous payment, current payment and cumulative total for each tendered and contract change item.

- Amount of early release of statutory holdback pertaining to 100% completed sub-trade work, if any.

- Percentage of completion at cut-off date for each tendered and contract change item.

- Amount of statutory holdback.


- Amount of applicable tax.

- Deficiency holdback based on an estimate of the cost required to rectify the deficiency shall be established. The value of the deficiency holdback shall be deducted from the payment.

- Amount of assessed Liquidated Damages, if any, deducted from payment in accordance with the contract provision (found in Section 5A of the tender document).

The payment certificate, attached to the Capital Transmittal Form, also generated in PTP, is to be reviewed and signed off by the Contract Administrator (Project Lead to sign if Contract
Administrator is an External Service Provider) and the respective manager.

At the same time the progress payment is processed, invoices should be issued for costs to be recovered from third parties according to the *Cost Recovery Procedure* available on the **ECS Capital Works Procedures Manual intranet site**.

The following points should be noted when processing the payment for Changes in the Work that are on a Time and Material basis:

- If the Contractor has submitted a Contractor’s Payroll Burden Form (Document ECS-CWP-33 or ECS-CWP-34) as stipulated in the tender document and it is acceptable, the Payroll Burden rate indicated on the Form is to be applied for all Time and Material related works throughout the Contract as stipulated in the tender document. Note that different subtrades may have different payroll burden rates.

- If the Contractor has not submitted a Contractor’s Payroll Burden Form, the standard 40% rate is to be applied.

The Excel spreadsheet in Document ECS-CWP-35 may be used to facilitate the calculation of Time and Material payments.

### 6.5.8.2. Progress Payment for Vertical Contracts

Prior to releasing the first progress payment, CT&P should verify that the following items are received where required under the terms of the contract:

- Construction schedule, if required

- WSIB Clearance Certificate for the General Contractor (valid for 90 days, and is expected for each payment)

- Detailed breakdown of the lump sum prices, according to Supplementary Conditions 3.18.3 paragraph 5.2.9

- "A schedule of values for the parts of the Work, aggregating the total amount of the Contract Price", according to CCDC 2 GC 5.2.4
The following documents are required for each monthly payment:

- WSIB Clearance Certificate according to Supplementary Conditions 3.18.3 paragraph 5.2.

- Statutory Declaration of Progress Payment Distribution (CCDC 9A) according to Supplementary Conditions 3.18.3 paragraph 5.2.8

- Monthly projected/estimated payment schedule according to Supplementary Conditions 3.8.3 paragraph 5.2.13

Other than the above mentioned required documents, the payment is processed similar to the way linear contract payments are processed.

6.5.9. WSIB Clearance Requirements

A WSIB Clearance Certificate for the Contractor must be obtained prior to the commencement of any construction and prior to the release of every progress payment.

In compliance with the General Conditions of Contract – Linear Infrastructure, a WSIB Clearance Certificate is also required prior to the release of the following:

- Subcontract statutory holdback release payment (GC 8.02.03.03.01.c / CCDC2 5.6.1 + SC 3.22.1.c) – a WSIB Clearance Certificate relating to the subcontract

- Substantial Performance statutory holdback release payment (GC 8.02.03.05.04.c / CCDC2 5.5.1.2 + SC 3.21.1) - WSIB Clearance Certificate is required for the General Contractor

- Completion statutory holdback release payment (GC 8.02.03.07.03c) - a WSIB Clearance Certificate is required for the General Contractor

A WSIB Clearance Certificate is valid for 90 days. It is the responsibility of the Project Lead to ensure that the Contractor’s WSIB Clearance Certificate is valid. This can be checked with each progress payment; however, if the time that passes between invoices exceeds 90 days, the Project Lead must request a copy of the WSIB Clearance Certificate from the
contractor, or check with the WSIB office. A WSIB Clearance Certificate can be requested at any time during the course of the contract from the WSIB office (contact information available on the WSIB website) by providing the Contractor’s account number. WSIB also provides an online service for obtaining the clearances anytime. Details of using the service can be found on the WSIB website.

6.5.10. Bond Status Inquiries

Periodically, bonding companies request updates on the status of contract completion and payment. Such requests – typically a form to be filled out – may arrive via Legal Services or directly from the bonding company. When responding to an inquiry, a disclaimer must be included when completing the form provided by the bonding company. A sample of a contract status form that may be received from a bonding company, including the disclaimer, is provided in Document ECS-CWP-36.

6.5.11. Construction Lien

A construction lien is a right granted by law to persons who supply services or material to an improvement of a premises. The Construction Lien Act sets out the process by which lien claimants can enforce their various rights.

Generally, a construction lien is a change upon:

1. The interest of the owner in the premises improved (subject to certain exceptions such as when the premise is a public street or highway), and
2. The holdback required to be retained, and
3. Any additional amount owed in relation to the improvement subject to rights of set-off.

Construction liens provide some financial protection to parties supplying labour or materials for a construction project. This is especially important to subcontractors who have no direct contract with the Owner (and therefore no right to bring an action for payment under a contract).
The following subsections discuss how to deal with lien claims, what the limitation periods are on liens, and how to conduct a lien search. Note that the most recent version of the Construction Lien Act should be checked for revisions that may affect the following sections.

6.5.11.1. Dealing with Lien Claims

The Contractor, subcontractors or suppliers or their lawyers may notify the City of a claim for lien or intent to lien (i.e. a written notice of a lien). If the lien attaches to the premises, a lien claim may be registered on title, in which case, a title search at the land registry office will reveal the existence of a claim for lien. Figure 6: Construction Lien Process shows the procedures of handling lien claims.

Upon becoming aware of a lien claim or receiving a written notice of a lien, a letter to the Contractor under the Manager’s signature should be issued by the Project Lead, unless there is a particular legal issue or the Project Lead specifically asks Legal Services for assistance. The letter (Document ECS-CWP-37) shall advise the Contractor that the full amount of the lien claim, plus a security amount equal to 25% of the lien claim up to a maximum of $50,000, will be withheld from current or future payments. Note that this amount for lien claim security is in addition to the 10% statutory holdback. The letter is copied to the following, with a copy of lien or intent to lien documentation attached for recipients identified with a “*”:

- Legal Services *
- Lien Claimant
- Lien File *
- Payment File *
- External Service Provider project manager*
- Bonding company showing bond number*
- Project file copy *(circulated to Project Lead, and directors)

For the purpose of tracking, pertinent information of every lien claim or intent to lien such as the lien claimant, type of document (lien, intent, certificate of action, court order or
vacating of lien), instrument number (if registered), registration (Registry or Land Titles), date, amount of claim are to be summarized by CT&P staff in a table for each contract. The comment column can be used to identify actions taken in respect of the lien.

The payment withheld from the Contractor as security shall not be released until:

- Notice of a lien or intent to lien (i.e. written notice of a lien) is withdrawn in writing or
- Preserved or Perfected lien claim is discharged or vacated

Prior to releasing the security money to the Contractor, a lien search should be conducted to verify that a release in respect of the claim for lien or certificate of action has been registered for liens attached to premises or that any liens have been vacated by court order. The release of claims for liens in respect of public streets or highways must be given to the Clerk’s office. In either case, a lien search can be conducted as described in Section 6.5.11.3.

In any case, the 10% statutory holdback is not to be released prior to the expiry of the 45 day period following the publication of the certification of substantial performance or completion in accordance with appropriate sections of the Construction Lien Act (and then only released if there are no liens preserved prior to the expiry of this time period and if the City is not setting off any amounts from funds that are no longer statutory holdback funds).
Contractor, Subcontractor, Supplier conducts Lien Search

Lien Notification, Intent to Lien

Project Lead prepares letter, under Manager’s signature to General Contractor advising payment to be withheld as security (ECS-CWP-37)

Record in Lien File

Withhold from payment as security (claim plus 25% to a maximum of $50,000 – note that this is separate from 10% holdback)

Contractor informs of vacating or bonding off lien

Perform Lien Search

Has a lien been registered? Yes → Retain monies

No → Release monies on next progress payment

Copy of letter to:
- Lien Claimant
- Legal Services
- Bonding Company
- External Service Provider
- Lien File
- Payment File
- Central File

Figure 6: Construction Lien Process
6.5.11.2. Lien Limitation Periods

A lien of a contractor expires unless it is preserved within 45 days from the earliest of

- Date of a certificate or declaration of substantial performance is published in a construction trade newspaper (i.e. “Daily Commercial News”),

- Date that the contract is completed or abandoned, or

- Date the services of a sub-trade or supplier is certified complete under s. 33 of the Construction Lien Act (this condition does not apply to the Contractor’s lien claim)

A lien may be preserved during the construction or any time before it expires by registration in the land registry office of a claim for lien on the title of the premises. Where the lien does not attach to premises, for example public streets or highways, a copy of the claim for lien and affidavit of verification must be given to the Clerk’s office.

A preserved lien expires at the end of the 45 day period next following the last day the lien could have been preserved unless it is perfected. A preserved lien is perfected when the claimant commences an action to enforce the lien and registers a certificate of action in the land registry office on the title of the premises. Note that in the case where the lien is in respect of public streets or highways, the certificate of action must be given to the Clerk’s office.

A preserved or perfected lien can be discharged by the registration of a release on the title of the premises or by giving a release to the Clerk’s office if the lien is in respect of a public street or highway. A lien can also be vacated by posting security for the lien with the Court and a Court Order is obtained to vacate the registration of the claim. Once a vacating order is made, the lien is only a charge on the security posted with the Court and is not a charge against the premises, holdback or additional amounts owed.

A perfected lien can expire and the Litigation Section of Legal Services will provide advice in such circumstances.
6.5.11.3. **Lien Searches**

Before a progress payment is made and before the holdback funds are released, the Project Lead should initiate a lien search through CT&P to ensure that there are no registered liens against the property or facility.

For projects that are within public streets or highways, lien searches are conducted by CT&P by emailing the City Clerk’s Office at clerkmailreg@toronto.ca and providing the following information:

- Description of contract
- Contractor’s name
- Period to search (start and end dates of the project, or the start date and the date of publication of Substantial Performance)
- Date of Substantial Performance
- Date of publication of Certificate of Substantial Performance

For facilities and works that attach to property (whether private or City-owned, other than roads), lien searches can be conducted at the land registry office. The following is a general guide for conducting a lien search at the land registry office:

- Search should include new liens, outstanding liens and any vacated liens.
- Search should be done at least 1 day after the expiration of the 45-day lien period.
- Day Book should be checked for entries that have not yet been entered in the Abstract Book.
- Ensure that all registration in the Fee/Day Book as well as the Abstract Book, up to the end of the 45th day of lien period, has been searched.
- Ensure that the entire project area (all lots or blocks) involved by the work done or materials supplied are searched.
6.5.12. Changes During Construction

Contract changes should be minimized or avoided. Where changes are necessary, Change Directives and Change Orders formalize the agreement between the City and the Contractor where it is necessary to perform changes to the scope of the original contract, and must be approved prior to commencement of a Change in the Work.

To avoid any potential contractual disputes and delay in completing the original Project Scope on time, no significant change in Project Scope should be considered after contract award or issuance of the Purchase Order. Additional work outside the spatial limits of the contract (i.e. tendered contractual boundaries) should only be permitted in extraordinary cases and only with prior authorization of the Client Division and the Chief Engineer and Executive Director of ECS.

Refer to Chapter 7 for detailed discussion on the issuance of Change Directives and Change Orders.

6.5.13. Extension of Contract Time / Liquidated Damages

An extension of contract time may be considered according to GC 3.07 "Extension of Contract Time" for circumstances stated in GC 3.08 "Delays" and GC 3.11 "Changes in the Work" (correspondingly, the CCDC references are CCDC 6.5.6 for circumstances stated in CCDC 6.5 "Delays", CCDC 6.2 "Change Order" and 6.3 "Change Directive.") The Contractor shall apply to the Contract Administrator in writing for an extension if it is deemed necessary. The Contractor’s request should include the following:

• Cause of delay
• Number of additional days required
• Financial impact
• Impact to critical path
• Revised schedule with a new substantial performance and full and final contract completion date
Approval to extend the contract time where justified must be done in writing with the reasons and the new completion date clearly stated. Document ECS-CWP-38 is a template for the approval letter. Similarly, rejection to grant extension should also be in writing, stating the reasons. Refer to ECS-CWP-39 for a sample letter where an extension is rejected, and Liquidated Damages (LD) are applied.

Although the Contractor is required to apply to the City’s Contract Administrator for an extension of contract time where deemed necessary, as a matter of good contract management practice, Contract Administrators and Inspectors are advised to be proactive in monitoring the progress of the contract. The status of the schedule should be discussed at site meetings; any slip in the contract schedule should be followed up with the Contractor promptly and documented in the meeting minutes.

If the Contractor’s application to extend the contract time was rejected or the Contractor failed to apply for an extension of contract time and the completion of the contract is delayed, the Contract Administrator shall issue a “show cause” letter (ECS-CWP-40) requesting justification for the delay, reasons why LD should not be assessed, and a new completion date, noting that the Contractor should have applied for an extension at least 15 days prior to the expiration of the contract time.

If it is determined that the Contractor does not have valid reasons for the delay, LD may be assessed in accordance with GC 8.02.09 / CCDC 6.5.9 or as stated in other parts of the contract document with a higher order of precedence. The LD letter is to be issued under the Director’s signature and copied to the Division Head. Document ECS-CWP-39 is a sample letter applying the LD.

6.5.14. Dealing with Claims by Contractor

Construction claims can arise due to a variety of factors such as:

- Extensive number of Changes in the Work
- Unforeseen site conditions
- Hidden designated substances
- Archaeological finds
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- Inclement weather conditions
- Labour disputes
- Errors / omissions in contract documents
- Late delivery of critical materials or equipment

As discussed in Section 6.5.13, an extension of contract time may be considered pursuant to GC 3.07 (Extension of Contract Time) / CCDC 6.5.6 under certain circumstances, including some of the aforementioned factors. However, an extension of contract time may not prevent a Contractor from making delay claims for additional compensation.

It should be noted that GC 3.14.01 (Continuance of the Work) / CCDC 8.1.1 (Continuance of the Work) requires the Contractor to continue with the work after serving or receiving any notification of a claim.

Contractors pursuing a claim for extra compensation should follow the procedure in GC 3.14.03 (Claims Procedure) / CCDC 2 GC 8.2 (Claims Procedure). If the Contractor disagrees with the City's opinion given, the Contract Administrator should proceed to negotiate with the Contractor pursuant to GC 3.14.04 (Negotiations) / CCDC 2 GC 8.3 (Negotiations). If the claim is not successfully resolved through the negotiation process, the next step to be taken is through the mediation process given in GC 3.14.05 (Mediation) / CCDC 2 GC 8.4 (Mediation). If all preceding processes failed to resolve the claim satisfactorily, either the Contractor or the City may request to resolve the claim by arbitration process given in GC 3.15 (Arbitration) / CCDC 2 GC 7.7 (Arbitration).

6.5.14.1. Reviewing Contractor Claims

When the Contractor contacts the Contract Administrator identifying a problem or a potential problem on the project, either in writing or verbally then followed in writing, the Project Lead / Contract Administrator should take appropriate actions to investigate and follow up. Attempts should be made to resolve issues or disputes on site before allowing them to escalate to higher levels.

Upon receipt of a claim from the Contractor, the Project Lead / Contract Administrator should:
• Acknowledge the receipt of the notification of claim in writing

• Review the claim and documentation submitted by the Contractor ensuring that the item(s) or circumstance(s) that led to the claim and the basis for the claim are clearly defined

• Ensure that the cost associated with the claim is reasonable and in accordance with the terms of the contract

• Ensure that all calculations, supporting documentation, correspondence, and other records such as photographs, charts, copies of correspondence, and any other evidence that are relevant to the claim are complete and consistent

• Review the project records to assess and determine the validity of the claim, particularly the critical path shown on the original construction schedule submitted by the Contractor and the subsequent updated schedules received and reviewed at site meetings

• Request further information or clarification where necessary

• Review applicable contract documents including GC 3.14 (Claims, Negotiations, Mediation) for linear contracts, and Part 8.0 (Dispute Resolution) for CCDC contracts

The process may involve discussions with the Contractor in attempts to settle the claim. Where required, the appropriate Director and Legal Services shall be consulted during the review of Contractor claims and any resolution proposals.

6.5.14.2. Responding to Contractor Claims

Contractor claim for delay can either be compensable or non-compensable depending on the circumstance(s) causing the delay. Refer to the General Conditions for details on what constitutes a compensable and non-compensable delay.

Following the review and assessment of the delay claim and determination as to whether additional compensation is warranted or not, the Contract Administrator shall provide timely written response to the Contractor. The written response should indicate the validity of the claim and its rationale. If an agreement has been reached with the Contractor, the terms of
the agreement as well as the revised schedule and completion date should be clearly stated.

6.5.15. Dealing with Contractor Default

Pursuant to the provisions of contract documents, including the General Conditions (Linear GC 4.05 and CCDC 2 GC Part 7), the Contractor may be considered to be in default if the

- Contractor is in bankruptcy or insolvency;
- Contractor fails to commence work within the time limit following the order to commence work as stated in the contract; or
- Contractor fails to perform the work properly in accordance with the terms and conditions of the contract.

It is stated in GC 4.06 and in CCDC 2 GC 7.1.2 that failure to give timely notice of default “shall neither constitute nor be construed as waiver of the default.” Nevertheless, prompt actions to give notice will avoid any potential dispute with the surety company. If one of the above occurs, the Project Lead shall consult with Legal Services and give written notice to the Contractor promptly. In the case of Contractor bankruptcy, notice is given to the surety company with demands to fulfil its obligations in accordance with the terms and conditions of the surety bonds provided in the contract.

In the event of failure to commence work or failure to perform, a case must be prepared to formally declare the Contractor in default. In consultation with Legal Services, warning notification letters will be issued to the Contractor and copied to the surety company advising of failure to perform work and to have the work completed within associated timelines.

When dealing with Contractor default, the Project Lead should be aware of the Contractor’s right to correct a default, as provided in GC 4.07 for linear contracts and in CCDC 2 GC 7.1 for vertical contracts.

In the event that default leads to contract termination, the Project lead should consult Legal Services for guidance on further action required.
6.5.16. Subcontract Completion and Statutory Holdback Release

Under the provisions of Construction Lien Act s (25), GC 8.02.03.02, and CCDC 2 GC 5.6 as amended by SC 3.22, the Contractor may notify the Contract Administrator that a subcontract has been completed satisfactorily and request the CA to certify the completion of the subcontract before the substantial performance of the contract.

Upon receipt of the request from the Contractor, the CA is to verify that the:

- Subcontract work is 100% completed and it has been completed satisfactorily in accordance with the contract specification and the cost of the work completed
- Subcontractor has previously received Fair Wage clearance
- If both of the above conditions are satisfied, the CA shall certify the completion of the subcontract:
  - Within 7 days of certification, give a copy of the Certificate to the subcontractor
  - Complete Form 5, Declaration of Last Supply (available at [http://ontariocourtforms.on.ca/en/construction-lien-act-forms/](http://ontariocourtforms.on.ca/en/construction-lien-act-forms/)) if the appropriate Director and/or Legal Services has determined that it is required.
  - Section (33) of the Construction Lien Act provides for the release of the statutory holdback to the subcontractor 45 days after the Certification of Completion of the subcontract is issued. The Contractor is required to submit the following in accordance with GC 8.02.03.03 / CCDC 2 5.6.1 as amended by SC 3.22.1 prior to the release of the payment:
    - From the Subcontractor: a release and waiver (form SSHR-1 in Document ECS-CWP-41) and a statutory declaration (form SSHR-2 in Document ECS-CWP-42)
• From the Contractor: a release and waiver (form SSHR-3 in Document ECS-CWP-43) and a statutory declaration (form SSHR-4 in Document ECS-CWP-44)

• For lump sum and unit price contracts, a copy of the contract between the Contractor and the Subcontractor and a financial statement from the Contractor showing the amount of payment due the Subcontractor. *The Contract Administrator must be aware that holdback is based on progress payments issued by the City, or the value of the PO (whichever is less)*

• A Holdback Release & Closure Form (ECS-CWP-32) should be completed to process the holdback release payment.

6.5.17. Substantial Performance of Contract

Section 2(1) of the Construction Lien Act defines Substantial Performance as follows:

“a contract is substantially performed,

(a) When the improvement to be made under that contract or a substantial part thereof is ready for use or is being used for the purposes intended; and

(b) When the improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of not more than,

(i) 3 per cent of the first $500,000 of the contract price,

(ii) 2 per cent of the next $500,000 of the contract price, and

(iii) 1 per cent of the balance of the contract price.”

It should be noted that the cost value for evaluation with respect to part (b) above should be the total of both the value of the remaining work and the cost of correcting the defective work. Document ECS-CWP-45 may be used to determine whether or not a project has achieved Substantial Performance.

For plant or facility projects, work will not be deemed to be ready for its intended purpose until completion of all employee training, submission of Operations and Maintenance (O&M) manuals, redline drawings, successful testing and
commissioning of piping, equipment, devices and all automatic operation systems applicable to the project as stipulated in the contract documents.

On receipt of the Contractor’s application for Substantial Performance, the Project Lead shall:

- Confirm status of all deficiencies identified at the date of substantial performance. Advise the Contractor that outstanding deficiencies must be corrected before a Certificate of Substantial Performance can be issued.

- Determine if the completion of the contract is delayed or not, and if so, whether a claim for Liquidated Damages is warranted. Document the result of the review in a memo to file identifying rationale for either assessing or not assessing Liquidated Damages. A sample memo is included in Document ECS-CWP-46. If a Consultant is overseeing the construction phase, recommendations are required from the Consultant.

- Establish value of defective work.

- Establish value of remaining work.

- Notify the Client Division of the application and obtain concurrence for the Certificate of Substantial Performance, if applicable.

- Complete Form 6 - Certificate of Substantial Performance (available at http://ontariocourtforms.on.ca/en/construction-lien-act-forms/) if the Contractor has satisfied the requirement for substantial performance according to the Construction Lien Act.

- Send a copy of the completed Form 6 to the Contractor with a letter outlining their obligations for release of the holdback (CT&P sends Form 6 for linear projects only). According to GC 8.02.03.05.04 (CCDC 5.4 + SC 3.20 and CCDC 5.5 + SC 3.21) the Contractor is required to provide a release, a statutory declaration, WSIB Clearance Certificate and proof of publication of the Certificate of Substantial Performance. A template for the letter is included in ECS-CWP-47 together with the standard release form SP-1 (ECS-CWP-48a for linear contracts, and ECS-CWP-48b for CCDC contracts) and statutory declaration form SP-2 (ECS-CWP-49 for both linear and CCDC contracts).
• CT&P will conduct a lien search and check WSIB Clearance Certificate on the 46th day after publication (as indicated in Section 6.5.9 of this manual, WSIB Clearance Certificate is required for the General Contractor).

• Process payment on the 46th day if no lien and the Contractor has satisfied the requirement of GC 8.02.03.05.04 / CCDC 5.5 mentioned above. The payment is to be processed similar to the way a progress payment is processed, as described in Section 6.5.8 of this manual.

A Holdback Release & Closure Form (ECS-CWP-32) should be completed to process the holdback release payment.

6.5.18. Pre-Start Health and Safety Review

A Pre-Start Health and Safety Review (PHSR) is an assessment of any industrial apparatus, protective element, process, or structure, which may uncover deficiencies with respect to relevant sections of the Occupational Health and Safety Act and Regulations for Industrial Establishments O.Reg. 851. A PHSR typically applies to vertical contracts.

Under the Regulations for Industrial Establishments O.Reg. 851:

(2) Subject to subsections (5), (7), (8) and (9), a pre-start health and safety review is required if, in a factory other than a logging operation, a provision of this Regulation listed in the Table applies and the circumstances described in the Table will exist,

(a) because a new apparatus, structure or protective element is to be constructed, added or installed or a new process is to be used; or

(b) because an existing apparatus, structure, protective element or process is to be modified and one of the following steps must be taken to obtain compliance with the applicable provision:

1. New or modified engineering controls are used.

2. Other new or modified measures are used.

3. A combination of new, existing or modified engineering controls and other new or modified measures is used. O. Reg. 528/00, s. 2.
When applicable (typically vertical contracts), Consultants are required to prepare an initial PHSR report during the design stage of a project based on review of the final drawings and specifications. Prior to commissioning, the report must be finalized to reflect modifications to detailed tender drawings and specifications, changes during the construction phase, as well as the results of an on-site inspection of the as-constructed works. Requirements for PHSR's are discussed in the standard appendices to the RFP.

The PHSR shall be conducted by the designer (if the scope of work includes the review tasks) or a third party. A written report meeting the requirements of the requirements set out in Section 7 of O. Reg. 851, is then submitted to the City at the completion of the review, before testing and commissioning of the project.

6.5.19. Commissioning

Commissioning (typically applicable to vertical projects) shall only commence after, where applicable:

- The works have been completed and ready for the intended use
- The completion of the PHSR (where required) and all measures or actions identified during the review have been properly addressed
- Satisfactory completion of factory acceptance tests (FAT) and site acceptance tests (SAT), both involving the Client Division representative
- All other testing and training documents as required in the contract have been submitted.

During commissioning, the Project Lead is to ensure that the commissioning plan identified in the design phase is followed. Documentation of the commissioning of each individual piece of equipment and/or system shall be reviewed by the Project Lead, submitted to the City in the O&M manual, and filed for record.
Chapter 6: Construction Projects

6.5.20. Shop Drawings, Project Documents, As-built and Record Drawings

For projects that require the preparation and submission of shop drawings by the Contractor (typically vertical projects), the Contract Administrator must maintain a log of all shop drawings with the date received, reviewed and approved. The Contract Administrator shall adequately safeguard approved copies of shop drawings and copies of the same are to be provided to the City at the completion of contract.

External Service Providers acting as Contract Administrators may have maintained a file system for the project. The Project Lead should ensure that the files are turned over to the City at the end of the contract. Additional discussion on which documents must be retained is provided in Chapter 9.

Drawings should be updated and maintained during the course of a project; further detail is provided in the Field Services Manual.

As-built drawings are to be produced at the completion of the project unless record drawings are specifically required in the contract documents or for legislative purposes. Requirements for as-built drawings are discussed in the Field Services Manual, as well as the Design Criteria for Sewer and Watermain document. The process of producing the as-built drawings is described in the following sections.

6.5.20.1. Design & Construction – MI Projects

The Contractor is required to document all changes made to the design, including the works performed by the subcontractors, during construction. The Contract Administrator shall ensure that the changes are marked on a set of drawings as soon as the changes are made in a clear and accurate manner.

If an External Service Provider is engaged to oversee the construction project and the service includes producing the as-built drawings, the External Service Provider shall review the Contractor’s redline drawings as they are created and create a set of as-built drawings in the agreed format immediately after commissioning of the project and submitted within the time line stipulated in the terms of reference.
All as-built drawings are to be in the City’s standard format. The Project Lead is to ensure that the as-built drawings are forwarded to the supervisor of Utility Mapping for storage.

Other documents required for MI Projects may include but are not limited to:

- Operations and Maintenance Manual
- Process Control Narrative (PCN)
- Work Management System (WMS) Database

6.5.20.2. **Design & Construction – LUI and TI Projects**

The Contract Administrator must ensure that the site Inspector maintains a set of redline drawings documenting all revisions to the work. If such revisions pertain to underground plant or objects that would not be visible after backfilling, the redline drawing shall indicate both the horizontal and vertical references.

When the work is complete, the redline drawings shall be supplied to the supervisor of Utility Mapping. The supervisor of Utility Mapping shall digitize the redline drawings, upload the electronic copy to ImageSite for storage, and send the original redline drawings back to the Project Lead.

6.5.21. **Deficiency Holdbacks**

Deficiency holdbacks should not be released unless the deficiencies (documented in the Deficiency List form – refer to the Field Services Manual for detailed information on deficiency lists) have been rectified. In the event that a deficiency has not been corrected and has been deemed as not required to be rectified under the contract, the holdback amount shall be credited as credit Change Order under the appropriate delegated signing authority. CT&P should be advised by the Project Lead, so that they can arrange for the appropriate accounts to be credited. The signing limits for the credit change order are the same as those for approving Changes in the Work.
Chapter 7: Change Management

7.1. Introduction

Changes to the original contract scope (Changes in the Work) are managed and documented through the use of Change Directives (ECS-CWP-50) and Change Orders (ECS-CWP-51). These documents are the keys to financial control and accountability. Change Directives and Change Orders formalize the agreement between the City and the Contractor where it is necessary to perform changes to the scope of the original contract, and must be approved prior to commencement of a Change in Work.

Ideally, Change Directives and Change Orders should not occur frequently; however, changes do arise during the course of a project and must be accounted for. It is important that Contract Administrators, Consultants, and Contractors be open to resolving issues, that lines of communication be kept open, and that Contract Administrators understand the wording of their contracts.

This chapter discusses the differences between Change Orders and Change Directives, when Change Orders and Change Directives should be used, and how to manage changes to consulting agreements.

7.2. Purpose of Change Directives and Change Orders

Change Directives and Change Orders serve two different purposes. Change Directives are used to provide written direction to Contractors to proceed with performing changes to the original scope of the contract. Change Orders are used to amend the contract to reflect the Change in Work, specifying the terms of payment and extensions of time for the work. Change Orders are also used to amend contracts to reflect decreases or credits for deleted work scope.

The formal definitions of Change Directive and Change Order differ slightly depending on the General Conditions referenced by the contract: the linear template uses General Conditions of Contract – Linear Infrastructure and the vertical template uses CCDC 2 Stipulated Price Contract and the Supplementary
Conditions to CCDC 2. Definitions of each are provided in the referenced documents.

Project Leads should be aware that a Change Order is a mini contract within the overall contract, and is subject to the same terms and conditions of the overall contract. It is, therefore, critical to establish within a Change Order, the work scope, method of payment, and schedule impacts on the overall contract.

Change Orders or Change Directives should be issued as soon as possible after the change is identified and the appropriate documentation is compiled. This is required to prevent the City from being subject to further claims related to the issue for which the Change Order or Change Directive relates.

7.3. When to Use a Change Directive

A Change Directive shall be issued when:

- the change is related solely to an increase in quantity of a tendered unit price item (see 7.3.2, "Item Overruns").
- the change must be undertaken prior to agreement between the parties on the change in the Contract Price and/or Contract Time.

In general, each Change Directive is to be followed by a Change Order (see 7.3.2, "Item Overruns" for the exception). Until a Change Directive or a Change Order is issued by the City Project Lead, a Contractor is not obligated to proceed with a Change in the Work as described in the original contract.

The flowcharts in Appendix G summarize the process of monitoring Changes in Work through Change Directives. In cases of uncertainty, the Project Lead is to consult with their manager, and deal with the issue on a project-specific basis.

7.3.1. Time-Sensitive Changes

For situations where changes are required that may result in impacts to the critical path or result in lost time claims by the Contractor, the Project Lead may authorize an emergency change in the field. These must be immediately followed up with a phone call to the delegated signing authority, as well as an
email confirming the action. A Change Directive must then be issued by the City Project Lead as soon as possible, as well as a Change Order.

7.3.2. Item Overruns

Once a project is underway, unforeseen circumstances may arise that can result in an exceedance of an estimated quantity, resulting in an overrun. Similarly, some items of work may require less than the estimated quantity, resulting an underrun. In order to provide some degree of latitude and to reduce contract administration efforts required for small changes, a threshold of $5,000 has been implemented. This threshold excludes tax, and is included in the delegated signing authority limits.

When an item overrun is identified (flagged on the daily report, weekly report, or as advised by the Inspector through the use of an Over/Underrun Justification Report), the Project Lead should, in consultation with the Inspector / Construction Supervisor and to the best of their ability, estimate what the total cost of the overrun will be by the end of the project.

- If the estimated cost of the overrun is greater than $5,000, a Change Directive will be required prior to starting the work.
- If the item has already been adjusted by a Change Directive and the quantity is going to be further exceeded, a new Change Directive must be issued for the additional amount. However, the signing authority level will be based on the total amount over the original value of the item. The new Change Directive must make reference to the previous Change Directive.
- If the estimated cost of the overrun is equal to or less than $5,000, the Project Lead may authorize work to proceed without a Change Directive, with payment being processed under the original line item. If the Contractor requests a Change Directive for the sub-threshold work, the Project Lead is to comply with the request.

Project Leads are to continuously monitor item overruns and underruns. As Change Directives are issued, the Contract Change Summary Spreadsheet (ECS-CWP-65) is updated to maintain an ongoing awareness of where the current contract expenditures are relative to the PO amount. An item summary
of all overruns and underruns shall be maintained for tracking purposes.

If the PO amount is expected to be exceeded, the Project Lead must advise their manager and initiate steps towards a Purchase Order Amendment (section 7.10).

At final project completion, once the final quantities are known, the Project Lead is to evaluate the contract expenditures, including item overruns and underruns, to determine whether the Base Contract Value has been exceeded. If the Base Contract Value has not been exceeded, a Change Order is not required.

If the Base Contract Value has been exceeded, a Change Order is to be prepared to encompass all of the overruns and underruns, and approved under the appropriate delegated signing authority. This Change Order will attribute the increase in contract expenditures to Change Directives that were issued to address overruns above $5,000 (these Change Directives must be included as supporting documentation), and the minor exceedances in estimated quantities. The sub-threshold items need not be listed individually.

### 7.4. When to Use a Change Order

In general, a Change Order shall be issued when

- the Change in the Work does not relate solely to quantities of unit price work items in the tender call
- the Change in the Work exceeds the base contract approval and is within the overall contingency allowance contained in the contract
- one or more Change Directives were issued to address item overruns, and at the end of the project the Base Contract Value has been exceeded (see section 7.3.2)
- a provisional sum is utilized

If the Change in the Work will cause the available contingency allowance to be exceeded, a PO Amendment will need to be obtained prior to the Change Order (refer to Section 7.10).
If a Change in Work can have its work scope clearly defined with an agreed-to corresponding cost and time impact before the work needs to take place, a Change Order can be issued without the need for a Change Directive. This is generally the case with lump sum contracts. On unit rate (typically linear) contracts, Change Directives are often issued prior to Change Orders due to the time-sensitivity of Changes in Work.

The flowcharts in Appendix G summarize the process of monitoring Changes in Work through Change Orders. In cases of uncertainty, the Contract Administrator is to consult with their manager, and deal with the issue on a project-specific basis.

### 7.5. Requests for Quotation

Prior to the issuance of a Change Order, the Contract Administrator is to request a cost estimate from the Contractor through the use of a Request for Quotation (RFQ). The Contractor can quote the price of the work as lump sum, time and material, or unit cost, as best agreed by the Project Lead and Contractor.

The CA must provide sufficiently detailed information on the changes for the Contractor to fully understand the scope of work and to be able to submit a realistic price and time impact to perform the Change in the Work. This can be sent with an email message. Turnaround times for RFQs must be specified on each RFQ.

Caution should be used when asking for additional costing information in the lump sum quote provided by the Contractor. The Project Lead or CA may request that a lump sum quotation be broken down to provide additional detail as to what is included in the quotation. However, if the request is such that the Contractor breaks a lump sum quotation down into individual work items each with separate and associated cost components, the quote has then changed from a lump sum quotation to a unit price quotation. Acceptance of this by all parties relegates that the Change in Work will be performed on a unit price basis and paid as such.

The Contractor can provide a cost breakdown consisting of material and labour costs – this type of cost breakdown maintains the lump sum quote.
On linear projects, the RFQ shall be issued using form TS109, or via email provided that all the information conveyed in form TS109 is included in the email. The RFQ and the corresponding results are to be provided as part of the supporting documentation backing up the Change Order.

7.6. Preparing Change Directives and Change Orders

On internally managed projects, the preparation of Change Orders, Change Directives, and associated documentation is the responsibility of the Project Lead. Only the Project Lead may finalize Change Orders and Change Directives. The Project Lead is also responsible for the preparation of associated documentation such as briefing notes, and covering letters.

On externally managed contracts, the Contract Administrator is to provide details and recommendations regarding Changes in the Work to the Project Lead. The Consultant is also responsible for preparing the Change Order and accompanying documentation. The City Project Lead is responsible for ensuring that the Consultant completes these tasks, and ensuring that the Change Order is approved by the appropriate delegated signing authority. The Project Lead is also responsible for the preparation of associated documentation such as briefing notes, covering letters, and liability assessment.

Change Directives and Change Orders that require Director level approval or higher are to be forwarded to the appropriate Director.

7.6.1. Supporting Documentation for Change Orders

When the Change Order form is submitted for approval, sufficient documentation must be provided to substantiate the Change Order. The Change Order Checklist (ECS-CWP-52) itemizes the documentation required as part of a Change Order package. At a minimum, the following items must be included with each Change Order package:

- the Change Order form (ECS-CWP-51)
- the Change Order Checklist, as required (ECS-CWP-52)
• a briefing note (for Change Orders and Change Directives that require Director or Chief Engineer and Executive Director level approval)

• Contract Change Summary (spreadsheet itemizing contract changes and associated costs to date, and comparison of overall contract contingency and provisional allowances). Summaries for linear contracts to include an overrun/underrun summary. See Document ECS-CWP-55 for consulting projects, and ECS-CWP-65 for linear projects.

• for work that has already been completed, the signed Change Directive form (ECS-CWP-50), and a copy of the Report of Changes in the Work Completed (TS102 in Field Services Manual), including reference to daily reports where extra work was documented (where applicable)

• routing form, when delegated signing authority exceeds Manager level (ECS-CWP-53)

The documentation accompanying the Change Order form is meant to provide information on the following items (generally answering answers to the following inquiries):

• description of change to the base scope of work

• why it is essential to complete the change under the current contract

• how the scope of work for the change is going to be performed

• how the change will affect the schedule and other contract impacts

• what will be the cost to complete the change to the Scope of Work

• what other options were explored or investigated, and what was the rationale for the recommended course of action

When the Change Order has been approved, the supporting documentation is not included when circulated to Contractors or Consultants. These items are summarized in Appendix H, “Change Order Management Quick Reference Guide.”
7.6.2. Additional Documentation

In order to verify progress and facilitate Contractor progress payments, for all Changes in Work performed on a time and material basis, the Inspector must document manpower, materials, and equipment (including hours worked) on a daily basis. For linear contracts, this is done using the Report of Changes in the Work Completed form (TS102 in the Field Services Manual).

As Change Directives and Change Orders are issued, the Contract Change Summary (Document ECS-CWP-65) must be updated by the Project Lead to maintain an ongoing awareness of where the current contract expenditures are relative to the Purchase Order amount.

7.7. Authorizing Changes in Work

The Project Lead is responsible for signing Change Orders and Change Directives. Higher signing authority must be obtained when the value of the Change Order or Change Directive exceeds the Project Lead's delegated signing authority level. Project Leads are to refer to the most recent schedule of signing authority for their division, which is updated annually.

Change Orders must be signed by all involved parties:

• Contract Administrator / Consultant
• City Project Lead, Division Head (or as required by delegated signing authority level)

On certain program management assignments, Consultants may be authorized to act as agents for the City, as approved by City Council, for the purposes of approving, committing the City to and signing on behalf of the city, construction contract Change Orders.

Following are steps and information requirements for the authorization of additional work or changes to the project:

1. Description of the additional work or changes
2. Rationale for the additional work or changes required
3. If the additional work is proposed by the External Service Provider, acceptance of its proposal by the Project Lead and if necessary, in consultation with the Client Division

4. Obtain price quotation for the additional work

5. If the cost for the additional work can be accommodated within the awarded value of the contract (original PO value), it can be approved according to the division's delegated signing authority. The delegated signing authority limits are updated on an annual basis and are specific to each division. Refer to the current year’s signing authority schedule. In general:
   • Costs up to $10,000 may be signed off by a Project Lead
   • Costs up to $25,000 may be signed off by a Senior Project Lead
   • Costs up to $50,000 may be authorized by the Unit Manager
   • Costs up to $100,000 may be signed off by the Director
   • Costs greater than $100,000 to the limit of the approved PO may be approved by the Chief Engineer and Executive Director

6. If the cost for the additional work requires additional funding, confirm if it is available. As this will increase the PO value, completion of a PO Amendment form and accompanying briefing note are required (the form and report template are available on the PMMD Bylaws, Policies and Procedures intranet site). The approval and documentation requirements are described in the Purchase Order or Blanket Contract Amendment(s) Procedure, also available on the PMMD Bylaws, Policies and Procedures intranet site. The approval and documentation requirements are summarized in Table 3.

7. Obtain sign off by all appropriate Client Divisions on the need for the additional work
8. Confirm with the External Service Provider in writing. A sample letter authorizing additional scope of work pertaining to external study / design services assignment is provided in Document ECS-CWP-54

9. Maintain a summary spreadsheet of the additional works authorized as in Document ECS-CWP-55 for Consultant projects, or ECS-CWP-65 for linear projects

10. Update the project deliverable checklist where necessary

Once a Change Directive or Change Order has been issued, the Project Lead should inform the Inspector to ensure that all parties are aware of the changes to the contract.

7.8. Exceedance in Change Order Value

As the total costs associated with a CO/CD may not always be known or accurate, the existing CO/CD must be revised and re-issued once the original estimate or quote is expected to be exceeded. The appropriate delegated signing authority must be obtained based on the revised total cost of the Change in Work.

7.9. Invoices for Changes in the Work

Invoices are not required for overruns on existing unit rate items. However, Contractors are required to submit invoices for new items of work performed under a CO for payment based on unit quantities, lump sum, or time and material. Tracking work performed under a CO separately from original base contract items will ensure that the total cost of the CO is known, and that the appropriate level of delegated signing authority is obtained. Clearly separating the additional costs will highlight the reason for the CO instead of being paid through the original contract line items, which could result in the original contract exceeding the approved budget.

If the invoice contains errors, requires corrections or if the final amount of work performed is different from the invoice provided, the Contract Administrator must advise the Contractor of the corrections required, and an updated invoice must be submitted by the Contractor. The Contract Administrator must not make manual adjustments to invoices since it increases the risk of fraud and can potentially result in overpayments.
The following are the typical payment mechanisms used to address Changes in the Work:

- **Item Overruns**: For overruns exceeding $5,000, issue a CO approved by the appropriate delegated signing authority for the work. Overruns below $5,000 do not require a CO. Refer to section 7.3.2 for information on item overruns.

- **Lump Sum**: If the work extends over more than one payment period, partial payments shall be made as the work progresses.

- **Time and Material (T&M)**: For Changes in the Work carried out on a T&M basis, issue a CD with an estimated amount approved by the appropriate delegated signing authority. Once the work is finalized, issue a CO that reflects the actual costs. If the work extends over more than one payment period, partial payments shall be made as the work progresses.

- **Unit Rate**: Contract and negotiated unit rates are used in a CD with estimated quantities and an estimated total approved by the delegated signing authority. A CO is issued at the completion of the work that captures the final quantities. If the work extends over more than one payment period, partial payments shall be made as the work progresses.

### 7.10. PO Amendment Procedure

When the proposed contract change will result in an increase in the awarded PO value, a PO Amendment must be processed prior to carrying out the changes. As soon as the Project Lead is aware that contract value is approaching the PO amount, management and the Client Division should be notified so that preparations can be made for a PO Amendment if required.

Payment for the changes cannot be made without the PO Amendment.

Under exceptional circumstances when time is of the essence and the changes must proceed without delay, the Project Lead may proceed once authorization, via email, has been received from the Director. The Director will then proceed to immediately notify the Division Head of the requirement of a POA. A Change
Directive/Order must be issued under proper authorization for the work to proceed while a PO Amendment is being initiated or processed. In which case, the reasons must be clearly stated in the PO Amendment documentation.

Following are procedures to process a PO Amendment:

1. Obtain funding commitment from the Client Division(s) prior to issuance of Change Order. If the contract changes involve cost sharing with 3rd parties, their written confirmation should be forwarded together with the copy of approved forms to CT&P.

2. The Project Lead will complete the PO Amendment form and briefing note (form and report template are both available on the PMMD Bylaws, Policies and Procedures intranet site) and / or Standing Committee report according to the Purchase Order or Blanket Contract Amendment(s) procedures posted at insideto.toronto.ca/purchasing/policies&procedures.htm (the approval and documentation requirements are summarized in Table 3).

3. The briefing note and Standing Committee report should include the details of the work and clear rationale as to why it is needed.

4. Obtain approval from appropriate Division Head

5. For linear and Toronto Water projects, CT&P will forward the approved PO Amendment form and required documentation to PMMD with a request that the sender be notified upon approval of the PO Amendment. Should the Project Lead wish to receive a copy of the approved PO Amendment, PMMD should be advised. For facility projects, the aforementioned tasks are performed by the Project Lead.

6. The Project Lead will forward the approved PO Amendment to the Contractor (note that supporting items of documentation are not to be provided to the Contractor).
### Table 3 - PO Amendment Approval and Documentation Requirements*

<table>
<thead>
<tr>
<th>Increase of Amendment ** (exclusive of taxes)</th>
<th>Approval Requirements (in order of signing)</th>
<th>Documentation Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Up to the maximum of 10% of the original amount of the commitment but shall not exceed $500,000 exclusive of taxes***</td>
<td>1. Division Head or delegate approval; plus 2. Director of Purchasing and Materials Management or delegate.</td>
<td>1. Approved Amendment form containing details as to why increase is required; and 2. Briefing Note providing clear rationale and details as to why increase is required; and 3. Any other relevant documentation.</td>
</tr>
<tr>
<td>B. Over 10% of the original amount of the commitment to a maximum of $250,000 exclusive of taxes***</td>
<td>1. Division Head or delegate approval; plus 2. Director of Purchasing and Materials Management.</td>
<td>1. Approved Amendment form; and 2. Briefing Note providing clear rationale and details as to why the increase is required; and 3. Any other relevant documentation.</td>
</tr>
<tr>
<td>C. Over 10% of the original amount of the commitment and between $250,000 and $500,000 exclusive of taxes***</td>
<td>1. Division Head or delegate approval; plus 2. Director of Purchasing and Materials Management; plus 3. City Manager.</td>
<td>1. Approved Amendment form; and 2. Briefing Note providing clear rationale and details as to why the increase is required; and 3. Any other relevant documentation.</td>
</tr>
<tr>
<td>D. Over 10% of the original amount of the commitment and over $500,000 exclusive of taxes***</td>
<td>1. Division Head or delegate approval; plus 2. Standing Committee.</td>
<td>Report to appropriate Standing Committee (report requires review and approval by PMMD and Financial Planning).</td>
</tr>
<tr>
<td>E. Under 10% of the original amount of the commitment and greater than $500,000 exclusive of taxes***</td>
<td>1. Division Head or delegate approval; plus 2. Standing Committee.</td>
<td>Report to appropriate Standing Committee (report requires review and approval by PMMD and Financial Planning).</td>
</tr>
</tbody>
</table>

* Source: Purchase Order or Blanket Contract Amendment(s) Procedure at [http://insideto.toronto.ca/purchasing/procedures.htm](http://insideto.toronto.ca/purchasing/procedures.htm)

** The Increase of Amendment is determined from the cumulative total of all amendments, for a given award / agreement

*** Gross amount exclusive of taxes, not the net costs after deductions, refunds or credits
Chapter 8: Project Closure

8.1. Introduction

This section discusses the forms and certificates that must be completed as part of the project closure process.

8.2. Substantial Performance and Completion

Substantial Performance is defined in the Construction Lien Act (CLA). Generally, it is achieved when a contract is near completion. Issuance of the Certificate of Substantial Performance is issued once the Contractor has met the requirements for Substantial Performance, as defined under the CLA. Refer to Section 6.5.17 for additional discussion on substantial performance.

Section 6.5.17 details tasks that the Project Lead shall complete upon receipt of the Contractor’s application for Substantial Performance. Notably, the Project Lead must determine if the completion of the contract is delayed or not, and if so, whether a claim for Liquidated Damages is warranted. The Project Lead must document the result of the review in a memo to file identifying rationale for either assessing or not assessing Liquidated Damages. If a Consultant is overseeing the construction phase, recommendations are required from the Consultant.

The Project Lead / Contract Administrator should complete a Contractor Performance Evaluation prior to issuance of the Certificate of Substantial Performance.

When substantial performance has been achieved, a certificate should be issued to the Contractor confirming substantial performance. The Contractor is then required to publish in a construction trade newspaper (Daily Commercial News).

8.3. Project Completion

8.3.1. Linear Projects

At the completion of linear contracts, a Certificate of Completion (ECS-CWP-56) shall be issued in accordance with GC 8.02.03.06.
after an inspection of the works. For external services provider led projects, the Project Lead should obtain their recommendation to certify or not to certify.

If the Contractor had not previously applied for the Certification of Substantial Performance, it may be necessary to undertake such certification as described in Section 6.5.17.

The Certificate of Completion is not to be issued until all deficiencies known up to that point have been corrected by the Contractor. Advise the Contractor that all deficiencies must be corrected before the Certificate of Completion can be issued. Sample wording for this correspondence is available in ECS-CWP-18.

As described in Section 8.8, the Project Lead / Contract Administrator should complete a final Contractor Performance Evaluation prior to issuance of the Certificate of Completion.

The Project Lead shall notify the Client Divisions of the completion and acceptance of the works (a template is provided in ECS-CWP-57). As per the template, the Client Divisions are also requested to contact the Project Lead / Contract Administrator should any defects be discovered during the warranty period. If there is no objection from the Client Divisions and there are no known deficiencies at this time, a Certificate of Completion is to be issued to the Contractor indicating the date of completion and the start date of the warranty period.

Project Leads should be aware that there can be multiple warranty periods depending on when the components of the project are placed into operational use. Refer to Section 8.6 for information on warranty monitoring.

The certificate should be copied to the Client Divisions and provided to the Contractor within 7 days. Document ECS-CWP-58 is a template letter accompanying the Certificate of Completion to the Contractor.
8.3.2. Vertical Projects

For vertical (facility) projects, the determination and subsequent application of Liquidated Damages must be performed prior to the release of statutory holdbacks at Substantial Performance (Form 6, available at http://ontariocourtforms.on.ca/en/construction-lien-act-forms/). In general, the warranty period is also based on the date of Substantial Performance. The Project Lead should be aware that there can be multiple warranty periods, depending on when a component of a facility is placed into operational use (see Section 8.6).

8.4. Completion Payment and Statutory Holdback Release

The processing of a completion payment is similar to the processing of a progress payment, as described in Section 6.5.8. If there is any claim for Liquidated Damages (this would have occurred at Substantial Performance, prior to the release of the statutory holdbacks – see also Section 6.5.17), the amount is to be deducted from the completion payment. If the claim for Liquidated Damages exceeds the amount of the completion payment, the Project Lead should ensure that any shortfall after the deduction from the completion payment is recovered from the Contractor in a timely manner. Refer to sections 6.5.13 and 6.5.17 for information on Liquidated Damages.

The statutory holdback release payment is due 46 days after the certification of completion. Submission of the following documents in accordance with GC 8.02.03.07.03 is required prior to releasing the statutory holdback release payment:

- A release and waiver from the Contractor (form CP-1 in Document ECS-CWP-59)
- A statutory declaration by the Contractor (form CP-2 in Document ECS-CWP-60)
- WSIB Clearance Certificate for the General Contractor (as mentioned in Section 6.5.9)

In addition, the Project Lead should ensure that all warranty documentation, where applicable, is submitted and forwarded to the Client Divisions.
For Linear Infrastructure projects, the Project Lead will first provide to the Contractor a draft payment certificate together with a letter (ECS-CWP-61) requesting their review and response by a set deadline. The letter also notifies the Contractor to submit the required documents.

8.5. Document Submission – Toronto Water Projects

On Toronto Water projects, the Project Lead must ensure that specific items of documentation are submitted to Toronto Water. This section outlines the documentation required. Any additional submission requirements should be confirmed with Toronto Water at the project initiation stage.

At the completion of a linear infrastructure project, the Project Lead must ensure that the following documents are submitted to Toronto Water as applicable:

- Water / Sewer Service Cards – submit to Manager, Watermain Asset Planning or Sewer Asset Planning (Metro Hall, 18th Floor)
- All pre- and post-CCTV inspections of existing sewers, manholes, and laterals are to be carried out as per NASSCO PACAP/MACP/LACP standard. Digital copies of the inspection database and videos – submit to Manager Sewer Asset Planning (Metro Hall, 18th Floor)
- Tracer wire certification – submit to Manager, Program Maintenance
- Disinfection Plan (signed), Disinfection Record / Checklist and sample results (TS115) including all bacteriological test results – submit to Manager, Program Maintenance
- Hydrostatic leak test record (TS116) – submit to Manager, Program Maintenance

For Linear Asset projects the following must be submitted to Toronto Water WIM and District Operations prior to acceptance, and within 6 months of completion from construction:

- Redline or as-built drawings in MicroStation, Auto-CAD, or as agreed-upon native format, and in PDF format
- Design sheet in Excel or PDF format (if available)
For construction of stormwater management facilities and/or other non-linear infrastructure, the following must be submitted to Toronto Water WIM and District Operations at acceptance of services:

- As-built drawings reflecting any changes made during the warranty period, in the agreed upon native format and in PDF format
- Environmental Compliance Approval (ECA) with proponent name transferred to the City of Toronto, in PDF format
- O&M manual (if not already submitted at substantial performance) and monitoring report (if available) in PDF format, if applicable
- Notification of acceptance or assumption

8.6. Warranty Monitoring

The commencement and expiry dates of warranties must be monitored to ensure any known defects are corrected prior to the expiry of the warranty period. Document ECS-CWP-62 is a spreadsheet that can be used for such warranty monitoring. It includes the basic contract information, commencement date (i.e. date of substantial performance) and expiry date of warranty as well as a proposed warranty inspection deadline as well as proposed deadlines for issuing letters to the Contractor and bonding company regarding defects and deficiencies and final acceptance.

According to GC 7.15 / CCDC2 12.3 + SC 3.40, the City’s 24-month standard warranty period commences from the date of Substantial Performance. However, the warranty provision for “certain equipment, materials or components of work” may vary for any of the following reasons:

- Equipment manufacturer’s standard warranty provisions
- Contract requires extended warranties
- Commencement of the warranty period for certain component is advanced because its beneficial use has been initiated; this is especially applicable on facility type contracts
In cases where there are multiple warranty expiry dates, the Project Lead shall:

- Secure all individual warranty documents from the Contractor
- Prepare a summary list of warranty commencement and expiry dates for all applicable equipment, materials and components of the work. Document ECS-CWP-62 is a spreadsheet that may be used to summarize this information.
- Update the summary list where necessary
- Provide the updated summary list to the Client Division

On vertical projects, whenever a facility is occupied or major piece of equipment is put into operation, the summary sheet should be provided to Insurance & Risk Management. This is done to ensure that the facility or equipment is added to the City's insurance policies, and to ensure that the appropriate insurance coverage has been identified for the facility and/or equipment.

With linear projects, GC 7.15 requires the Contractor to promptly correct any defects or deficiencies during the 24-month period and the Project Lead / Contract Administrator to give written notice to the Contractor of any observed defects or deficiencies. For vertical projects, this requirement is stipulated in the contract documents.

For additional information regarding roles and responsibilities pertaining to warranty monitoring in the field, refer to the Field Services Manual.

8.6.1. Expiration of Warranty during Winter Season Impacting Work Rectification

A scenario can develop where the expiry of the warranty period will coincide with the onset of inclement weather/winter season such that the correction of deficient work or completion of remaining work will be impacted. Such a scenario may cause the Contractor to request completion of the work under the warranty period to occur in the spring.
Delayed warranty work can be performed beyond the warranty expiration date based on the following criteria being met:

- Contractor to request a time extension to the contract in accordance with GC 3.07 or CCDC 6.5.6
- Request for time extensions to encompass insurance and liabilities requirements; and
- Contractor to obtain a bonding extension/amendment to both the Performance, and Payment and Labour Bonds at no additional cost to the City

8.6.2. **Design & Construction – MI Projects**

The general duties of the Project Lead during the warranty period include:

- Monitoring of multiple warranty expiry dates
- Inspection and reporting of the works every 6 months and at least 90 days prior to the expiry of the warranty - the inspection is to be carried out by all parties concerned including the Project Lead, designer, Contractor and the Client Division
- Prepare a list of deficiencies and forward to the Contractor in a timely manner
- Coordinate with the Contractor so that the rectification work is inspected
- Ensure the identified deficiencies are rectified by the Contractor to the City’s satisfaction
- Upon completion of satisfactory rectification, notify the Contractor in writing, that all of its contractual obligations under the terms of the warranty have been fulfilled

In situations where the City could make a claim on a performance bond (any scenario where the Contractor is not in compliance with the contract, including significant delays that are the Contractor’s fault), the Project Lead should consult Legal for direction on whether or not to include the bonding company on warranty-related correspondence. In such situations, the deficiency list should be copied to the bonding company.
company when it is forwarded to the Contractor. This will ensure that the bonding company has advance notice of a potential claim against the performance bond. The bonding company should also be copied on correspondence to the Contractor upon completion of satisfactory rectification of the deficiencies.

8.6.3. Design & Construction – LUI and TI Projects

All works must be inspected at least once prior to the expiry date of the warranty period. The warranty inspection should be initiated and set up by the Contract Administrator with an invitation to representatives from internal and external Client Divisions, as appropriate. Site reviews are typically conducted jointly by Construction Inspection staff and Client representatives to identify deficiencies. Refer to the Field Services Manual for detailed information on warranty inspections. A complete list of all defects and deficiencies shall be provided to the Project Lead at least 90 days prior to the expiry date.

A letter, “Warranty Letter No. 1” under the manager’s signature, requesting the Contractor to correct the defects and deficiencies should be issued to the Contractor at least 60 days before the warranty expiry date. Legal Services has advised that this letter should not be routinely copied to the bonding company unless there is a particular reason to do so. A template for this letter is provided in Document ECS-CWP-63.

If the defects and deficiencies remain outstanding 30 days after the issuance of Warranty Letter No. 1, the bonding company should be notified by “Warranty Letter No. 2” (sample in Document ECS-CWP-64) advising that the Contractor has not corrected all defects and deficiencies as requested. The letter is to be issued under the Manager’s signature.

8.7. Final Acceptance

At the expiry of the warranty and after all known deficiencies have been corrected, a final acceptance letter should be issued in accordance with GC 8.02.05. The letter should state the date the warranty expired, and advise the Contractor that the contract is considered complete. CT&P, the bonding company and the Client Divisions should be advised of the final acceptance by a copy of the letter.
8.8. Performance Evaluations

For Consultant's performance evaluations, the Professional Services Performance Evaluation (PSPE) form, available on the ECS intranet site, is to be used. Detailed instructions on how to complete the form can be found on the "PSPE Instructions" tab of the worksheet.

For Contractor's performance evaluations, the Contractor Performance Evaluation form found on the PMMD site (http://insideto.toronto.ca/purchasing/cpe_tool.htm) is to be used. Information on the Contractor's performance evaluation can be found on the “User Instructions” page of the form.

Refer to Section 3.7 for additional discussion on performance evaluations.
Chapter 9: File Retention

9.1. Introduction

This chapter summarizes how the files are to be stored and which files are to be retained at the end of each project.

Information must be properly classified and stored so it can be retrieved when needed. File retention is required to preserve the integrity of the procurement process, meet audit requirements, and to complete contract administration requirements by maintaining accurate records from the design, tendering, construction, and warranty phases of a project.

Information held by the City is expected to be public, except for limited and specific reasons, such as protecting the privacy of individuals.

9.2. Types of Files

9.2.1. General Files

All correspondence related to a project undertaken by the City should be kept except in certain circumstances, for example when correspondence is considered to be transitory. Transitory records are those with temporary usefulness that do not need to be kept. Transitory records may include convenience duplicate record copies for personal reference and records that have no bearing on the City's functions, activities, and transactions.

Additional clarification on transitory records can be found at: http://insideto.toronto.ca/clerks/cims/transitory_records.htm

9.2.2. Procurement Files

Both PMMD (Corporate Buyer) and ECS are responsible for retaining documents from the call stage of the procurement process. The procedure Level of Documentation Required to Support Procurement Decision and Responsibility for Retention, available on the PMMD Bylaws, Policies and Procedures intranet site, details the items to be retained from the call process by PMMD as well as the project delivery group.
For ECS projects, the Project Lead is expected to retain the following, for eventual transfer to CT&P for archiving (see Appendix I):

- Evaluation records for all bidders/engineering Consultants
- Drafts of specifications, reports, contracts, agreements and other key documents in competitive bidding processes.

### 9.2.3. Design Files – Consulting Assignments

On design projects delivered by External Service Providers (Consultants), all project documentation inclusive of documentation during the pre-design phase is to be turned over to the City Project Lead at the conclusion of the detailed design phase of the project, before the final payment is processed. All materials and goods purchased in connection with the project and paid for by the City should also be turned over to the Project Lead. The Project Lead should take necessary steps to deduct from the final payment any cost of materials and goods that were not turned over to the City. Examples of types of files generated during a consulting assignment are listed in Section 2.5.1.

Refer to Chapter 4 for additional information on the management of external study and design services.

### 9.2.4. Design Files – Internally Designed Projects

For internally-designed projects working drawings, draft documents, preliminary estimates should all be kept as well as any correspondence related to decisions made regarding the design. Examples of types of files generated during the internal design process are listed in Section 2.5.2.

Refer to Chapter 5: Internally Designed Projects for additional information on the steps undertaken for projects designed in-house.

### 9.2.5. Construction Files

All documents related to a project should be filed during the various phases of a construction project. Examples of types of
files generated for a construction project are listed in Section 2.5.3.

Refer to Chapter 6 for additional information on the management of construction projects.

9.3. Centralized Filing

Within ECS, project files are stored within ProjectWise and/or in hardcopy format. Refer to Section 2.4 for information on project filing.

Once final payment is completed and the PO is closed, the project files are to be transferred to CT&P. This process is detailed in Appendix I: Centralized Filing.

9.4. Off-Site Storage

Off-site storage may be used for paper records that have not reached the end of their retention period, but are no longer needed on a regular basis. These are referred to as inactive records, and are stored at central records centres. Responsibility for stored records remains with the Division that transferred them.

Documents sent to off-site storage can be retrieved by contacting the records management for your area. Generally two business days are required for delivery. If there is an emergency need or if the records are needed for a freedom of information request, the Project Lead is to inform records services staff. Contact information for the Records Centres are available at http://insideto.toronto.ca/clerks/cims/offsite.htm.

Documents sent to off-site storage must be labelled with the appropriate Record Classification System (RCS) Code so that the appropriate measures are taken for file retention. Appendix J contains the most commonly used RCS codes for capital works projects and the full list of codes can be found at: Record Classification System Codes.
Once a file has reached the end of the retention period as specified by the RCS code, then files are either transferred to archives or destroyed. As such it is important that the appropriate RCS code is used. For example, Final Engineering Drawings should always be categorized separately from the construction documentation as the retention period for the Final Engineering Drawings is permanent whereas the retention period for construction documentation may be as little as seven years.

Final Engineering Drawings may also be filed within ECS for quick and easy access reference for future and adjacent projects that may have the need of the drawings. This will also facilitate updating the drawings with changes that may be necessary in the future.
Appendix A: Glossary of Terms

The following definitions apply to the Capital Works Manual:

**As-built drawing**: documentation created by or based solely on information provided by a third party that reflects the installed, constructed, or commissioned conditions of a device, machine, equipment, apparatus, structure, system, or other outcome of an engineering project. Since the engineer has not verified that the information is compete or accurate, as-built drawings must not be sealed (see *Record drawing*).

**Base Contract Value**: The value of the contract excluding the contingency amount and provisional items.

**Bid Award Panel**: An administrative committee that awards contracts under limits established by Council and set out in Municipal Code Chapter 195. Formerly known as "Bid Committee."

**Call Document**: Solicitation from the City to external suppliers or providers to submit a tender, quotation, proposal, pre-qualification submission or expression of interest

**Capital Projects**: Infrastructure replacements, rehabilitations or installations that are planned and coordinated by MCIC through the Coordinated Capital Program.

**Capital Works Program**: The list of planned capital projects assembled by MCIC (with input from various divisions within the City) that are to take place each year. ECS delivers projects on the Capital Works Program through design, procurement, project management, and contract administration.

**Change in the Work**: The deletion, extension, increase, decrease or alteration of lines, grades, dimensions, quantities, methods, drawings, changes in the character of the Work to be done or materials of the Work or part thereof, including changes in geotechnical, subsurface, surface or other conditions.

**Contingency Allowance**: When specified, the Contingency Allowance is the fixed amount specified in the Contract documents which the External Service Provider carries to cover increases in cost for Changes in the Work. As these changes are not defined, the External Service Provider cannot be expected to know in advance, the overhead cost requirements.
Work performed under a Contingency Allowance is authorized and conducted through change management procedures.

**Contract:** A Contract is an undertaking between two or more parties for an exchange of goods or services, or to refrain from performing a specific action. CCDC 2 defines a Contract as "the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the contract documents and represents the entire agreement between the parties."

**Deliverable:** A tangible or intangible product or service produced as a result of the project. Examples of deliverables include drawings, reports, and design documents.

**Earned Value:** A performance measurement that integrates scope, time, and cost data. As work is accomplished, it is “earned” and compared with actual cost and the planned value. A variance to the plan is noted as a schedule or cost deviation. This type of analysis can also be applied to the review of the Contractor's billing.

**Environmental Assessment Study:** Proposed municipal transportation or water related projects may, by law, require an environmental assessment study. These studies assess the possible positive and negative impacts a project may have and determine a preferred option. This process is governed by the Environmental Assessment Act, R.S.O. 1990.

**Linear Projects:** Construction projects involving roads, bridges, retaining walls, sewers, watermains, and sidewalks. Contracts for linear projects are usually based on unit price, although certain contracts (such as those for trunk watermains and sewers) can be based on a lump sum price.

**Vertical Projects:** Construction projects involving buildings and facilities. Contracts for vertical projects are usually based on a lump sum price.

**Liquidated Damages:** A per-day, project-specific sum of money set by the City at the time of tendering. This sum represents an estimate of the direct costs that would be incurred by the City for each day the contract is delayed beyond the completion date.
Lump Sum Contracts: Contracts that establish a single, pre-determined fixed price, or lump sum, for work performed, regardless of the Contractor’s actual costs.

Milestone: A tool used in project management to mark specific points during the course of a project, serving as project markers. These points may signal events such as a project start and end date, a need for external review or input and budget checks, among others. In many instances, milestones do not impact project duration.

Notice of Intended Procurement: A written notice published by the City, inviting interested suppliers to submit a bid in response to a solicitation. Includes a detailed description of an intended procurement project and its planned date of publication.

Program Management: The management of multiple, related projects.

Project Charter: A document that formally authorizes the existence of a project, and provides the Project Lead with the authority to apply organizational resources to project activities. The Project Charter serves as the contract between the Client Division and the Project Lead. It is a high-level planning document with a general description of project scope, timeline, costs and risks.

Project Scope: The work that needs to be accomplished to deliver a product, service, or result with the specified features and functions. The boundaries of a project, responsibilities for each team member, and required deliverables are documented in the Project Scope.

Record Drawing: A document created to accurately reflect as-constructed, as-built, or as-fabricated conditions and that has been sealed by a Professional Engineer after verifying that the document is accurate. Record drawings are usually retained to meet business or regulatory requirements.

Request for Supplier Qualifications: A solicitation that is issued to gather submission information on supplier capabilities and qualifications with the intention of creating a list of pre-qualified suppliers for future selective solicitations, including a one-time future solicitation or a multi-use list for solicitations of a predefined scope and duration. Refer to Chapter 195 of the Toronto Municipal Code for further information.
Shop Drawings: Drawings, diagrams, illustrations, schedules, performance charts, brochures, product data, and other data which the Contractor provides to illustrate details of portions of the Work. Shop drawings are typically provided at the start of a project.

Standing Policy Committee: Also referred to as Standing Committee. There are seven Standing Policy Committees within the City, each discussing specific services and issues, making recommendations to City Council. For example, the Public Works and Infrastructure Committee's primary focus is on infrastructure, with a mandate to monitor, and make recommendations on Toronto's infrastructure needs and services.

Summary Notice: A written notice published by the City, that summarizes the information contained in a Notice of Intended Procurement as required by applicable trade agreements.

Unit Price Contracts: Contracts in which completed work is paid according to a pre-determined, fixed amount for each specified unit of work performed. The total price is determined by multiplying the unit price by the actual, measured quantity of work performed for each specified unit.
Appendix B: Acronyms and Abbreviations

**ABC's**: Agencies, Boards and Commissions

**BIA**: Business Improvement Area

**CA**: Contract Administrator

**CAAF**: Capital Project Contract Award Authorization form

**CADD**: Computer Aided Design and Drafting

**CCDC**: Canadian Construction Documents Committee

**CD**: Change Directive

**CETA**: Canada-European Union Comprehensive Economic and Trade Agreement

**CFTA**: Canadian Free Trade Agreement

**CNR**: Canadian National Railway

**CO**: Change Order

**COR**: Certificate of Recognition

**CPO**: Chief Purchasing Official

**CS&IMPM**: Customer Services & Issues Management Program Manager

**CSO**: Combined Sewer Overflow

**CT&P**: Contracts Tenders & Payments

**DIN**: Design Initiation Notice

**DPO**: Divisional Purchase Order

**EA**: Environmental Assessment

**EASR**: Environmental Activity and Sector Registry

**ECA**: Environmental Compliance Approval
**ECS:** Engineering & Construction Services

**FAT:** Factory Acceptance Test

**GC:** General Conditions of Contract

**IAM&P:** Transportation Infrastructure Asset Management & Programming unit

**IHSA:** Infrastructure Health and Safety Association

**LD:** Liquidated Damages

**MCEA:** Municipal Class Environmental Assessment

**MCIC:** Major Capital Infrastructure Coordination

**MI:** Major Infrastructure

**MOECC:** Ministry of the Environment and Climate Change

**OHSA:** Occupational Health and Safety Act

**O&M:** Operations and Maintenance

**PCS:** Process Control System

**PCU:** Public Consultation Unit

**PCN:** Process Control Narrative

**PHSR:** Pre-Start Health and Safety Review

**PMMD:** Purchasing Materials Management Division

**PO:** Purchase Order

**PPFA:** Policy, Planning, Finance & Administration

**PSPE:** Professional Services Performance Evaluation

**PTP:** Project Tracking Portal

**RACS:** Road Allowance Control System

**RCS:** Record Classification System

**REOI:** Request for Expression of Interest
**Appendix B – Acronyms and Abbreviations**

**RFI**: Request for Information

**RFP**: Request for Proposal

**RFQ**: Request for Quotation

**RFT**: Request for Tender

**RoDARS**: Road Disruption Activity Reporting

**RTP**: Request to Pre-qualify

**SAT**: Site Acceptance Test

**SC**: Supplementary Conditions to CCDC 2 Stipulated Price Contract

**SGQ**: Soil and Groundwater Quality Unit

**SLD**: Single Line Diagrams

**SUE**: Subsurface Utility Engineering Investigation

**TCAF**: Transportation Capital Authorization Form

**TI**: Transportation Infrastructure

**T&M**: Time and Material

**TRCA**: Toronto and Region Conservation Authority

**TPUCC**: Toronto Public Utilities Coordinating Committee

**TTC**: Toronto Transit Commission

**WIM**: Water Infrastructure Management

**WMS**: Work Management System

**WSIB**: Workplace Safety & Insurance Board
### Appendix C: List of Forms, Templates, and Samples

The documents listed below are available for download at http://insideto.toronto.ca/ecs/ess/cptemplates.htm:

<table>
<thead>
<tr>
<th>Document No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ECS-CWP-01</td>
<td>Initiation Meeting, Sample Agenda</td>
</tr>
<tr>
<td>ECS-CWP-02a</td>
<td>Pre-Construction Meeting, Sample Agenda – Linear</td>
</tr>
<tr>
<td>ECS-CWP-02b</td>
<td>Pre-Construction Meeting, Sample Agenda – Vertical</td>
</tr>
<tr>
<td>ECS-CWP-03</td>
<td>Pre-Design Report</td>
</tr>
<tr>
<td>ECS-CWP-04</td>
<td>Liquidated Damages Calculation Spreadsheet</td>
</tr>
<tr>
<td>ECS-CWP-05</td>
<td>Pre-Tender Approval Form</td>
</tr>
<tr>
<td>ECS-CWP-07</td>
<td>Tender Document Checklist – Unit Rate</td>
</tr>
<tr>
<td>ECS-CWP-08</td>
<td>Tender Document Checklist – Lump Sum</td>
</tr>
<tr>
<td>ECS-CWP-09</td>
<td>Sample Addendum</td>
</tr>
<tr>
<td>ECS-CWP-10a</td>
<td>Memo – Unbalanced Bid Analysis</td>
</tr>
<tr>
<td>ECS-CWP-10b</td>
<td>Memo of Recommendation – Construction Project</td>
</tr>
<tr>
<td>ECS-CWP-11</td>
<td>Memo of Recommendation – Consulting Project, Single PO</td>
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<tr>
<td>ECS-CWP-12</td>
<td>Memo of Recommendation – Consulting Project, Multiple PO's</td>
</tr>
<tr>
<td>ECS-CWP-13a</td>
<td>Letter of Acceptance – Linear</td>
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<td>ECS-CWP-13b</td>
<td>Letter of Acceptance – Vertical</td>
</tr>
<tr>
<td>ECS-CWP-14</td>
<td>Additional Terms and Conditions for PO's to Third Parties</td>
</tr>
<tr>
<td>ECS-CWP-15</td>
<td>Sample Memo to PMMD Requesting Issuance of RFP</td>
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<td>ECS-CWP-16</td>
<td>Sample Project Deliverable Checklist</td>
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<td>ECS-CWP-17</td>
<td>Sample Letter Approving Consultant Staff Change</td>
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<td>ECS-CWP-18</td>
<td>Sample Wording</td>
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<td>Final Statutory Declaration for Consultants</td>
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<td>ECS-CWP-20</td>
<td>Survey Request Form</td>
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<td>Utility Design Initiation Notice</td>
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<td>SGQ Form 1 and Form 2, Request for Geotechnical Investigation</td>
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<td>ECS-CWP-23</td>
<td>Pre-Award Checklist</td>
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<td>ECS-CWP-24</td>
<td>Follow-up Letter for Execution of Documents</td>
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<tr>
<td>ECS-CWP-25a</td>
<td>Memo to Finance – Execution of Agreement – under $500k</td>
</tr>
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<td>ECS-CWP-25b</td>
<td>Memo to Finance – Execution of Agreement – over $500k</td>
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<td>ECS-CWP-26</td>
<td>Pre-Pave Meeting, Sample Agenda</td>
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<tr>
<td>ECS-CWP-27</td>
<td>Sample Notice of Project</td>
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<td>ECS-CWP-28</td>
<td>Order to Commence Work Checklist – Vertical</td>
</tr>
<tr>
<td>ECS-CWP-29</td>
<td>Order to Commence Work – Contractor as Constructor</td>
</tr>
<tr>
<td>ECS-CWP-30</td>
<td>Order to Commence Site Work</td>
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<tr>
<td>ECS-CWP-31</td>
<td>Notification of Watermain Project Start</td>
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<td>ECS-CWP-32</td>
<td>Holdback Release and Closure Form</td>
</tr>
<tr>
<td>ECS-CWP-33</td>
<td>Payroll Burden Form (for unit price tender template Revision 4.3 and older)</td>
</tr>
<tr>
<td>ECS-CWP-34</td>
<td>Payroll Burden Form (for unit price tender template Revision 4.4 and later)</td>
</tr>
<tr>
<td>ECS-CWP-35</td>
<td>Time and Material Summary</td>
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<td>ECS-CWP-36</td>
<td>Sample Bond Status Form with Disclaimer</td>
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<td>ECS-CWP-37</td>
<td>Letter to Contractor – Lien Holdback</td>
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<tr>
<td>ECS-CWP-38</td>
<td>Letter to Contractor – Approving Extension of Contract Time</td>
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<td>ECS-CWP-39</td>
<td>Letter to Contractor – Applying LD</td>
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<td>ECS-CWP-40</td>
<td>Letter to Contractor – Show Cause for Not Applying LD</td>
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<td>ECS-CWP-41</td>
<td>Subcontract Statutory Holdback Release – Release and Waiver of Subcontractor</td>
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<td>ECS-CWP-42</td>
<td>Subcontract Statutory Holdback Release – Statutory Declaration of Subcontractor</td>
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<td>ECS-CWP-43</td>
<td>Subcontract Statutory Holdback Release – Release and Waiver of Contractor</td>
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<td>ECS-CWP-44</td>
<td>Statutory Declaration, Contractor – Subcontract Statutory Holdback Release</td>
</tr>
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<td>ECS-CWP-45</td>
<td>Substantial Performance Calculation Spreadsheet</td>
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<tr>
<td>ECS-CWP-46</td>
<td>Memo to File, Show Cause for Not Applying LD</td>
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<td>ECS-CWP-47</td>
<td>Cover letter re. Certificate of Substantial Performance</td>
</tr>
<tr>
<td>Document No.</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
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<td>ECS-</td>
<td>Release and Waiver, Contractor – Linear – Substantial Performance Statutory Holdback Release</td>
</tr>
<tr>
<td>ECS-CWP-49</td>
<td>Statutory Declaration, Contractor – Statutory Holdback Release</td>
</tr>
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<td>ECS-CWP-50</td>
<td>Change Directive Form</td>
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<td>ECS-CWP-51</td>
<td>Change Order Form</td>
</tr>
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<td>ECS-CWP-52</td>
<td>Change Order Checklist</td>
</tr>
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<td>ECS-CWP-53</td>
<td>Routing Form</td>
</tr>
<tr>
<td>ECS-CWP-54</td>
<td>Letter Authorizing Additional Consulting Work</td>
</tr>
<tr>
<td>ECS-CWP-55</td>
<td>Change Order Summary, Consulting Work</td>
</tr>
<tr>
<td>ECS-CWP-56</td>
<td>Completion Certificate</td>
</tr>
<tr>
<td>ECS-CWP-57</td>
<td>Completion and Acceptance of Work</td>
</tr>
<tr>
<td>ECS-CWP-58</td>
<td>Letter to Contractor – Completion of Work</td>
</tr>
<tr>
<td>ECS-CWP-59</td>
<td>Release and Waiver, Contractor – Completion Payment Statutory Holdback Release</td>
</tr>
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<td>ECS-CWP-60</td>
<td>Statutory Declaration, Contractor – Completion Payment</td>
</tr>
<tr>
<td>ECS-CWP-61</td>
<td>Cover Letter for Draft Completion Payment Certificate</td>
</tr>
<tr>
<td>ECS-CWP-62</td>
<td>Warranty Tracking Table</td>
</tr>
<tr>
<td>ECS-CWP-63</td>
<td>Warranty Letter No. 1 – Requesting Correction of Deficiencies</td>
</tr>
<tr>
<td>ECS-CWP-64</td>
<td>Warranty Letter No. 2 – Advising of Outstanding Deficiencies</td>
</tr>
<tr>
<td>ECS-CWP-65</td>
<td>Change Order Summary, Unit Price Items</td>
</tr>
</tbody>
</table>
Appendix D: CT&P Processes
Appendix E: Design Milestones for Watermain, Sewer and Road Projects

This appendix contains sample design milestones for the 30%, 60%, 90% and 100% stages of development for watermain, sewer and road projects. These Milestones are to be used as a guide, and are not to be considered an exhaustive list of the design details required.
<table>
<thead>
<tr>
<th>30%</th>
<th>60%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Watermain Projects</strong>&lt;br&gt;Complete Surround (title block). Show property lines, street names, chainage/stationing, north arrow, key plans</td>
<td>Resolution of outstanding issues from 30% design review to be resolved and comments implemented</td>
<td>Resolution of outstanding issues from 60% design review to be resolved and comments implemented</td>
<td>Final drawings to be printed on film and stamped / signed by Engineer</td>
</tr>
<tr>
<td>Base plan drawings to be established in plan &amp; profile with all existing information including utilities. Ensure information from Utility Circulation &amp; Survey is incorporated. Identify and show size and material of existing mains, water services and valve chambers and show fire hydrants</td>
<td>Final horizontal alignment determined</td>
<td>Final vertical alignment established</td>
<td>Final prints to be ordered</td>
</tr>
<tr>
<td>Finalize project limits</td>
<td>Preliminary vertical alignment established</td>
<td>Drawing notes completed</td>
<td>Final quantities required</td>
</tr>
<tr>
<td>Identify borehole information on plan</td>
<td>Confirm whether by-pass is required</td>
<td>Drawings finalized. Confirm match lines, title blocks, sheet numbers., bar scales, datum elevations, stationing, watermain profile, connection details, elevations (WM invert), minimum cover, bedding / cover/backfill details, type and class of pipes, vertical and horizontal bends, encasing pipes, removals or plugging abandoned infrastructure, protect existing utilities, identify sensitive pipelines/utilities</td>
<td></td>
</tr>
<tr>
<td>Evaluate curve radii per City guidelines</td>
<td>Identify / show service connections to be upgraded</td>
<td>Paper copies available to submit for final review and approvals.</td>
<td></td>
</tr>
<tr>
<td>Analyze horizontal alignment based on 5 watermain design criteria choices</td>
<td>Show all proposed watermain, valves, tees, chambers, hydrants, water services (specify size and material)</td>
<td>Forward to Construction Supervisor for final review allowing 2-3 weeks for comment.</td>
<td></td>
</tr>
<tr>
<td>Preliminary horizontal alignment to be established with 1 or 2 alternatives</td>
<td>Show removal / relocation of any existing hydrants, water services, watermain</td>
<td>Forward to alternate Project Lead for peer review allowing 2-3 weeks for comment.</td>
<td></td>
</tr>
<tr>
<td>Confirm property requirements have been satisfied, such as widenings and easements</td>
<td>Confirm fire hydrant coverage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify any conflicts with Utilities and confirm any utility relocation plans</td>
<td>Confirm valve and box spacing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make initial submission to approval agencies for comments (MOE, TRCA, MTO, CPR, CNR, Pipeline Crossing permits, etc.)</td>
<td>Confirm whether drain and air chambers are required at any low points</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify horizontal and vertical bends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirm alignment and controls (stationing, offset, N/E)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show all proposed adjustments (valve chambers and water valves)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label and show crossings in profile. Confirm connection details</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label all existing chambers and proposed chambers plan/profile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label either crown or centreline of WM in profile</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second submission to Utilities</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### Appendix E2: Sample 30%, 60%, 90% and 100% Design Milestones for SEWER Projects

<table>
<thead>
<tr>
<th>Milestone Description</th>
<th>30%</th>
<th>60%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base plan drawings to be established in plan &amp; profile with all existing information including utilities.</td>
<td>Resolution of outstanding issues from 30% design review to be resolved and comments implemented</td>
<td>Resolution of outstanding issues from 60% design review to be resolved and comments implemented</td>
<td>Final drawings to be printed on film and stamped / signed by Engineer</td>
<td></td>
</tr>
<tr>
<td>Complete Surround (title block), Show property lines, street names, chainage/stationing, north arrow, key plans</td>
<td>Final horizontal alignment determined</td>
<td>Final vertical alignment confirmed</td>
<td>Final prints to be ordered</td>
<td></td>
</tr>
<tr>
<td>Finalize project limits</td>
<td>Preliminary vertical alignment established</td>
<td>Drawing notes completed</td>
<td>Final quantities required</td>
<td></td>
</tr>
<tr>
<td>Identify borehole information on plan</td>
<td>Confirm design criteria</td>
<td>Drawings finalized. Confirm match lines, title blocks, sheet nos., bar scales, datum elevations, stationing, sewer profile, elevations (sewer invert), minimum cover, bedding/cover/backfill details, type &amp; class of pipes, encasing pipes, removals or plugging abandoned infrastructure, protect existing utilities, identify sensitive pipelines/utilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluate curve radii per City guidelines</td>
<td>Identify high points</td>
<td>Paper copies available to submit for final review and approvals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preliminary horizontal alignment to be established with 1 or 2 alternatives</td>
<td>Layout CB and low points for secondary drainage</td>
<td>Forward to Construction Supervisor for final review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirm property requirements have been satisfied, such as widenings and easements</td>
<td>Layout manholes based on manhole placement criteria.</td>
<td>Forward to alternate Project Lead for peer review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify any conflicts with Utilities and confirm any utility relocation plans</td>
<td>Design calculations to size pipes, determine slope, bedding, backfill</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stormwater management review (quantity and quality) and identification of drainage area</td>
<td>Confirm whether by-pass is required (sanitary)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanitary servicing requirements</td>
<td>Identify/show service connections to be upgraded (CB leads, sanitary laterals)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make Initial submission to Approval agencies for comments (i.e. MOE, TRCA, MTO, CPR, CNR, Pipeline Crossing permits, etc.)</td>
<td>Show all proposed sewers, services (specify size and material), manholes and catch basins (show ID numbers)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show sewer sizes and flow arrows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show any ditches and flow arrows</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Show any culverts (station, size, type, class)</td>
<td></td>
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<td></td>
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<tr>
<td>Show any headwalls and grates</td>
<td></td>
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<tr>
<td>Show any rip rap (include dimensions)</td>
<td></td>
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<tr>
<td>Show all proposed adjustments (MH, CB)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label and show crossings in profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label all existing chambers and proposed chambers on plan/profile</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>30%</td>
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<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
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<tr>
<td><strong>Sewer Projects (cont.)</strong></td>
<td>Label either crown or centreline of roadways in profile, or centreline of sewer in profile</td>
<td>Show removals of all sewers, services, manholes, etc.</td>
<td>Alignment and controls (stationing, offset, N/E).</td>
<td>Second submission to Utilities.</td>
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<tr>
<td></td>
<td>Drainage</td>
<td>Confirm drainage area and prepare plan</td>
<td>Confirm secondary drainage</td>
<td>Confirm any storm water management controls (i.e. quality, quantity)</td>
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## Appendix E3: Sample 30%, 60%, 90% and 100% Design Milestones for ROAD Projects

<table>
<thead>
<tr>
<th>30%</th>
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<th>100%</th>
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<tbody>
<tr>
<td><strong>Road Projects</strong></td>
<td><strong>Base plan drawings to be established in plan &amp; profile with all existing information including utilities. (Ensure information from Utility Circulation &amp; Survey is incorporated)</strong></td>
<td>Resolution of outstanding issues from 30% design review to be resolved and comments implemented</td>
<td>Resolution of outstanding issues from 60% design review to be resolved and comments implemented</td>
</tr>
<tr>
<td>Complete Surround (title block), Show property lines, street names, chainage / stationing, north arrow, key plans</td>
<td>Final horizontal alignment determined</td>
<td>Final vertical alignments confirmed</td>
<td>Final prints to be ordered</td>
</tr>
<tr>
<td>Finalize project limits</td>
<td>Preliminary vertical alignment established</td>
<td>Final driveway replacement limits confirmed accounting for any grade changes</td>
<td>Final quantities required</td>
</tr>
<tr>
<td>Identify borehole information on plan</td>
<td>Confirm alignment (horizontal and vertical) meets design criteria</td>
<td>Drawing notes completed</td>
<td></td>
</tr>
<tr>
<td>Evaluate curve radii per City guidelines</td>
<td>Show proposed curb, sidewalk, subdrain and pavement</td>
<td>Drawings finalized including pavement marking drawings. Confirm match lines, title blocks, sheet nos., bar scales, datum elevations, stationing, profiles, typical cross sections, removals or plugging abandoned infrastructure, protect existing utilities, identify sensitive pipelines / utilities</td>
<td></td>
</tr>
<tr>
<td><strong>Preliminary horizontal alignment to be established</strong></td>
<td>Cross sections showing existing and proposed road grades and match points</td>
<td>Paper copies available to submit for final review and approvals</td>
<td></td>
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<tr>
<td>Confirm property requirements have been satisfied, such as widenings and easements</td>
<td>Generate top of pavement, gutter and top of curb elevations</td>
<td>Forward to Construction Supervisor for final review</td>
<td></td>
</tr>
<tr>
<td>Identify any conflicts with Utilities and confirm any utility relocation plans</td>
<td>Confirm vertical clearance at any structures</td>
<td>Forward to alternate Project Lead for peer review</td>
<td></td>
</tr>
<tr>
<td>Make initial submission to approval agencies for comments (i.e. MOE, TRCA, MTO, CPR, CNR, Pipeline Crossing permits, etc.)</td>
<td>Prepare ‘typical’ cross sections showing depths of new pavement structure</td>
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<tr>
<td>Identify limits of cut and fill</td>
<td>Show any proposed retaining walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirm limits at sidestreets</td>
<td>Show any guide rail requirements or modification to existing (confirm length, end treatment and barrier selection)</td>
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<td></td>
</tr>
<tr>
<td>Identify any fencing requirements or modification to existing fence</td>
<td>Identify erosion and sediment controls if required (i.e. location of silt fence, check dams, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirm all lane configuration requirements, lane widths, storage lengths, tapers</td>
<td>Confirm layout based on design speed</td>
<td></td>
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</tr>
<tr>
<td>Identify Traffic Signals work required and prepare signal design/layout drawings</td>
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</table>
### Appendix E3: Sample 30%, 60%, 90% and 100% Design Milestones for ROAD Projects

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<tr>
<th>Road Projects (cont.)</th>
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<tr>
<td>Check turning radii</td>
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<tr>
<td>Show removals (curb, sidewalk, road, etc.)</td>
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<tr>
<td>Show all proposed adjustments (e.g. manholes, utility valves, etc.)</td>
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<tr>
<td>Label and show any crossings in profile</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label either crown or centreline of roadways in profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second submission to Utilities</td>
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</tr>
</tbody>
</table>
Appendix F: Health and Safety
Appendix F – Health and Safety

Introduction

The City is committed to providing and maintaining safe and healthy working conditions for all members of the Toronto Public Service. It has committed to a continuous safety improvement program with a goal of Targeting ZERO Together – achieving a zero injuries workplace.

Making health and safety a top priority while Targeting ZERO Together, the Engineering & Construction Services (ECS) division has developed a comprehensive health and safety program committed to improving the safety of all staff, regardless of the type of work carried out or where the work is completed.

The ECS Health & Safety & Emergency Planning webpage provides division-specific H&S strategies, policies, procedures, best practices, guidelines, forms and various tools to help support employees in performing their duties safely and effectively.

Purpose

The purpose of this appendix is to guide staff involved in the procurement, delivery, or support of capital works as to what health and safety documentation is required during the procurement and delivery of a capital works project. For health and safety considerations to be made by staff working in the field, on construction sites, facilities, or areas of similar nature, refer to Appendix H in the Field Services Manual.

All employees are responsible for familiarizing themselves with and fully complying with applicable legislation, the City’s and ECS’s health and safety policies, procedures, guidelines or best practices, as well as the site specific health and safety requirements of the constructor.

For additional and more in depth information, ECS comprehensive Health and Safety Program is available on the City’s intranet at http://insideto.toronto.ca/ecs/index.htm.
Certificate of Recognition

The City of Toronto has endorsed and adopted the Certificate of Recognition (COR) program as a mandatory requirement for companies bidding on future construction contracts. COR is a comprehensive health and safety audit tool with an accredited certification program in Ontario that is granted by the Infrastructure Health and Safety Association (IHSA). IHSA is the designated body for certifying contractors in Ontario's construction industry who demonstrate their standards of health and safety management systems through a structured audit process.

COR provides validation that a contractor has demonstrated an understanding of health and safety and has made a commitment to continuous monitoring and application of its program when delivering construction activities. Achieving COR is an in-depth process requiring a high level of commitment by companies seeking this certification. As such, a phased implementation approach has been proposed, based on contract value to help ensure that the City receives competitive and balanced bids for future projects.

Effective January 1, 2017, the requirement for COR certification only applies to bidders for contracts valued at greater than $25 million.

Additional information regarding COR is available on the City of Toronto website, as well as on the IHSA website.

OHSA Statutory Declaration

Completion of an OHSA Statutory Declaration is required by all Contractors bidding on a City tender document. By providing an OHSA Statutory Declaration form, a Contractor formally declares that they have a health and safety policy and a program in place to implement the Occupational Health and Safety Act, and that their policy does not conflict with the health and safety policy of the City.

Depending on the nature of the project, a supplementary Statutory Declaration may be required to enable Contractors to formally declare that they have provided to its supervisors and all personnel (including but not limited to employees and
workers as well as the employees and workers of all sub-contractors) training with respect to asbestos abatement or asbestos awareness.

**Notice of Project**

The Constructor - typically the Contractor - must provide a Notice of Project to the Ministry of Labour prior to starting projects that meet the standards set out in section 6(1) of the Regulation for Construction Projects, O. Reg 213/91.

ECS shall not permit the City to become the Constructor without written consent by Program Manager – Health & Safety & Emergency Planning, the appropriate section Director and Executive Director.

**WSIB Clearance Certificates**

A WSIB Clearance Certificate confirms that a Contractor or Subcontractor is registered with the WSIB and that its account(s) is/are in good standing. A WSIB Clearance Certificate is valid for 90 days.

A WSIB Clearance Certificate is required prior to the commencement of any construction, and prior to the release of:

- every progress payment
  - Subcontract statutory holdback release payment (GC 8.02.03.03.01.c) – a WSIB Clearance Certificate relating to the subcontract
  - Substantial Performance statutory holdback release payment (GC 8.02.03.05.04.c) - WSIB Clearance Certificate is required for the General Contractor.
  - Completion statutory holdback release payment (GC 8.02.03.07.03c) - a WSIB Clearance Certificate is required for the General Contractor only.

It is the responsibility of the Project Lead to ensure that the Contractor’s WSIB Clearance Certificate is valid throughout the course of a contract. Validity can be checked with each
progress payment; however, if the time that passes between invoices exceeds 90 days, the Project Lead must request a copy of the WSIB Clearance Certificate from the contractor, or check with the WSIB office.

A WSIB Clearance Certificate can be requested at any time from the WSIB office (http://www.wsib.on.ca) by providing the Contractor’s account number. WSIB has also provided an online eClearance service for obtaining the clearances anytime. Details of using the service can be found on the the WSIB website at www.wsib.on.ca/en/community/WSIB by selecting eWSIB from the menu.

Pre-Start Health and Safety Review

Training

For details of health and safety training requirements, refer to the document titled "Roles and Responsibilities in the Operations Sector – ECS-MAN-102-01", available on the ECS intranet site.

References

- OHSA – Occupational Health & Safety Act
- Regulation 213/91 – Construction Projects
- Roles and responsibilities in the Operations Sector – ECS-MAN-102-01
- Roles and responsibilities – Construction Sites & Facilities Sector, ECS-MAN-102-01
- Infrastructure Health & Safety Association – Construction Health & Safety manual
Appendix G: Change Management Flowchart