

A.7 – SERVICES DURING CONSTRUCTION

A.7.1 General

A.7.1.1 The Consultant shall provide general engineering services for administering the contract and site inspection of the work during the construction phase.

A.7.1.2 The Contractor is responsible for carrying out his obligations under the terms and conditions of the construction contract. The Contractor is also responsible for the quality of the work. The Consultant is neither responsible for the construction of the work, nor are his review services rendered for the Contractor's benefit.

A.7.1.3 It is the Consultant's responsibility to ensure through site inspection, verification reports, etc. that the Contractor carries out the work as designed per the contract specifications, and to confirm that the rehabilitated structure will perform and function as intended.

A.7.1.4 It is the Consultant's responsibility to assume the duties and responsibilities of payment certifier.

A.7.1.5 It is the Consultant's responsibility to issue RoDARS Description Forms and Restriction Notices to Toronto Transportation Central Dispatch.

A.7.1.6 It is the Consultant's responsibility to verify through his Quality Assurance and Quality Control programs that the Contractor carries out his obligations according to the contract documents and specifications.

A.7.2 Quality Assurance and Quality Control Programs during Construction

A.7.2.1 The Quality Assurance (QA) program provided by the Consultant for the City of Toronto for construction projects, shall consist of planned and systematic actions to verify that the works are being constructed as specified in the contract documents and specifications in accordance with applicable codes, guidelines and standards. The QA program includes, but not limited to the following:

- (a) Inspect all layout and construction work to ensure conformance with design drawings and specifications, and that all works are completed in a good workmanship like manner.
- (b) Maintain proper daily records of the progress of the construction work, noting unusual or unforeseen events that may have caused delays or impacts to the construction schedule.
- (c) Review shop drawings to verify that contractual requirements are met for materials and equipment.
- (d) Issue site instructions and clarification drawings in a timely manner when necessary to confirm the intent of contract requirements.
- (e) Provide technical specialists to carry out inspection of work constructed or installed to verify its compliance with contractual requirement, codes, regulations, etc.
- (f) Arrange for external specialist testing firms to verify work when necessary.
- (g) Ensure that all regulatory agencies have been notified of completed work and that the required inspections have been performed.

A.7.2.2 The Quality Control (QC) program provided by the Consultant for the City of Toronto shall consist of the examination of services and work performed by the Contractor. The QC shall include management and documentation necessary to demonstrate that these services and

work provided by the Contractor meet contractual and regulatory requirements during the construction phase.

A.7.3 General Engineering Services during Construction

A.7.3.1 The consultant will hold project site review meetings with the City and the Contractor on a bi-weekly basis during the construction phase. The meetings will review the construction progress, the procurement of items with long lead-time, sub-contract status, and scheduling and milestone goals.

A.7.3.2 Issue supplementary details and instructions to clarify the intent of the design to the Contractor as required.

A.7.3.3 Construction Schedule:

- a) Review the proposed construction schedule submitted by the Contractor. Comment on the procedures, methods and sequence of work that may have conflict with the road operation in the vicinity of the structure. Consult with Transportation Operation Staff to assist in identifying any conflicts.
- b) At each site meeting, advise the Contractor to provide a rolling schedule of the construction work proposed for the next 2 week period which is between the present and the next site meeting.
- c) Advise the Contractor to update the construction schedule when the rolling schedules are out of sequence with the proposed construction schedule.

A.7.3.4 Shop Drawings:

- a) Advise the Contractor in the pre-construction meeting to prepare and submit a Shop Drawings List highlighting materials and equipment that have long delivery time. The Shop Drawings List must be submitted at the first site meeting.
- b) Review the Shop Drawing List with the contractor and identify materials and equipment that have long delivery time frame and installation time that may impact the construction schedule and completion date.
- c) Review shop drawings submitted for general compliance with the design requirements. **The Consultant shall return all shop drawings to the Contractor no later than 7 calendar days after receipt. Do not retain any shop drawings pending the submission of additional information. Return shop drawings to Contractor indicating what information is required.**
- d) Maintain a log of all shop drawings received for review; Shop Dwg No.; Spec. Sec. No.; Shop Dwg. Title & Description; Originator; No. Copies received; date received; date reviewed & approved; Date reviewed and Not Approved; No. Copies returned; Remark.
- e) The updated shop drawings log shall be reviewed at each site meeting and also included with each site meeting minutes until all the required shop drawings have been submitted, reviewed and returned to the Contractor.

A.7.3.5 Consider and advise on alternative methods, equipment and materials proposed by the Contractor as permitted by the terms and conditions of the contract.

A.7.3.6 Changes in Site Conditions & Scope of Work:

- a) Investigate, report and advise on unforeseen circumstances that come to the Consultant's attention during construction such as differing underground soil condition, claims from Contractor for whatever reasons in a timely manner so that appropriate actions may be taken to mitigate damages or claims by the Contractor.

- b) Review and advise on the validity of extra charges for additions or deletions, and extension of time to the contract. Change Orders (CO) to be issued only upon the written approval of the City of Toronto's Project Manager. All COs issued to the City for authorization shall be on the City's Standard Extra Work Order (EWO) Form and be accompanied by a letter of recommendation.
- c) Maintain a log of EWOs issued and approved; the date approved; the amount approved with all applicable taxes included; description and rational of the changes required; the party that requested the change/extra work.

A.7.3.7 Progress Payments:

- a) Review, verify and process Contractor's progress and final payment requisitions, and forward the processed payment requisitions to the City's Project Manager no later than 3 working days after receiving the requisition from the Contractor. Note date of meetings with contractor to resolve payment claims on the payment certificate.
- b) Issue Substantial Performance Certificate in accordance with Construction Lien Act. Issue Lien Holdback payment certificate to City of Toronto one week prior to expiry of the 45 days waiting period. Review with Project Manager prior to issuance.

A.7.4 Resident Staff Engineering Services during Construction

A.7.4.1 Resident staff services may consist of a Project Manager and Inspector who shall be provided by the Consultant on a full time or part time basis. Requirements for Resident Staff services during the construction phase will be specified in the Request for Proposal.

A.7.4.2 If the Consultant determines that the Contractor is not carrying out his work in accordance with the Contract Documents, or the work does not satisfy the intent of the design, or does not conform with the plans and specifications, or does not continue to conform to the proposed schedule, the Consultant shall report to the City of Toronto's Project Manager, and at the same time providing recommendations on the course of action to rectify the problem(s).

A.7.4.3 Review and discuss, at least weekly, with the Project Manager the progress of the construction works and advise/update Project Manager, noting any contractual problems, schedules or claims and recommended strategy for resolving these issues.

A.7.4.4 Provide effective communication through field memos or discussions with Transportation Operations Staff to ensure that Contractor and Transportation Operations requirements are properly coordinated. Any actions resulting from the discussion with Transportation Operations Staff shall be confirmed in writing by a field memo.

A.7.4.5 Arrange for all necessary field testing, inspections or verification by specialist consulting or inspection firms to determine that the work conforms with intent of design requirements i.e. geotechnical investigations, etc. The City has open purchase order with several testing companies to perform granular material and compaction testing, welding inspection and testing, concrete testing, asphalt mix design and testing of asphalt and membranes, and material testing of plain and steel-laminated elastomeric bearings. Coordinate with the City's Project Manager if such testing services is required.

A.7.4.6 Carry out site inspection to verify that the construction works are in accordance with the drawings, contract document and specifications.

A.7.4.7 Maintain adequate data and records in a Site Diary with a consistent daily report format and provide reports to the City on a monthly basis. Provide a CD copy at the end of the project. Site

diary to document progress of the work, which must include at minimum the following daily information:

- (h) Weather conditions
- (i) Temperature - maximum & minimum
- (j) Number of workers - by company and trades
- (k) Heavy equipment and tools on site
- (l) Work performed - by company and trades, and start and end time
- (m) Unusual and/or significant events
- (n) Visitors
- (o) Testing
- (p) Delivery dates of major items
- (q) Hardcopy and Digital photos of work in progress
- (r) Others

A.7.4.8 Ensure that the contractor provides proper protection of all existing structures, roadways and buildings, which are adjacent to or may be affected by the work areas. Ensure that the conditions of all existing facilities are appropriately recorded, photographed before, during and after construction, and that at the end of the contract these are returned to the same or better condition.

A.7.4.9 Ensure that the contractor has obtained all permits that are required for the project.

A.7.4.10 The production and maintenance of a Deficiency List throughout the progress of the work, prepare a deficiency list and update at appropriate milestones.

A.7.4.11 Generate and maintain a non-conformance log to identify non-conforming issues and their resolution.

A.7.4.12 Maintain a "marked-up" set of drawings to show "Record" works. The "Record" drawings shall be updated weekly.

A.7.5 Consultant's Cost Control of Project during Construction

A.7.5.1 City of Toronto requires that the Consultant be fully responsible for cost control of the project with respect to engineering fees and construction contract cost. City of Toronto will require timely reports of impending overrun of fees, or construction contract cost.

A.7.5.2 Timely report is defined as a reasonable period for which it will permit the Project Manager to report to Committee and Council **PRIOR** to the expected overrun in either engineering fees or construction contract cost. Where the Consultant does not exercise proper cost control and has incurred additional cost, City of Toronto will not be obliged to honour payment for such services.

A.7.5.3 The Consultant shall submit update reports on the project construction contract cost control sheets to the Project Manager on a monthly basis with respect to the following:

- a. Tender amount with contingency amount including all applicable taxes.
- b. Payment to Contractor to-date – i.e. the latest copy of payment certificate.
- c. Approved EWO issued to-date – i.e. the EWO log.
- d. Value of Contract to-date, including the projection of any additional cost to complete the construction works.
- e. Description of work performed to-date and advice on progress to-date versus schedule submitted by Contractor.

- f. Recommend any action to be taken by City of Toronto to mitigate cost overrun.
- g. Any changes to the contract must be made by the issuance of EWO to the Contractor, includes changes to the contract even where there is no change in the contract value, i.e. extension of time to the contract.

A.7.5.4 Issue EWOs that are required to meet the intent of the contract, with written approval from the City's Project Manager, so that the work may be completed in a fully functional manner.

A.7.5.5 Issue EWOs for additional work that deviates from the intent or requirement of the contract only when approved by the City's Project Manager.

A.7.5.6 City of Toronto **accepts no responsibility** for any such EWOs where the Consultant has issued the EWOs without first obtaining the written City's Project Manager approval.

A.7.5.7 All EWOs must be approved and signed by the City's Project Manager and include support documentation as follows:

- (s) A RFI or RFQ or Change Directive/Notice identifying the additional scope of work to be performed;
- (t) The Contractor's response shall include scope of work to be performed, and the cost. The cost shall include impact cost, overhead and profit and all applicable taxes;
- (u) Consultant's letter noting the rational of the recommendation to the Contractor's response along with signed EWO

A.7.6 As-Built Drawings

A.7.6.1 Provide drafting services to provide As-Built drawing information, including the As-Built survey information.

A.7.6.2 Complete As-Built drawings no later than 3 months after completion of work.

A.7.6.3 Issue one set of full size As-Built mylar drawings and one set of reduced 11" by 17" drawings on vellum to the City's Project Manager.

A.7.6.4 Provide one complete set on CD-ROM. Drawings shall have .dwg and .dwf extension format. All CD shall be properly labelled and dated.

A.7.6.5 As-Built documentation includes the submittal of as-installed software for all components of the project. This documentation is to include a CD-ROM containing a copy of the HMI application as at the end of the project, and all field controller software.

A.7.6.6 Allow 60 days for City review to confirm acceptability of files before final payment will be issued.

A.7.7 Consultant's Cost Control of Project during Construction

A.7.7.1 The City requires that the Consultant be fully responsible for cost control of the project with respect to engineering fees and construction administration. The City will require timely reports of impending overrun of fees, or construction contract cost.

A.7.7.2 Timely report or manner is defined as a reasonable period for which it will permit the Project Manager to report to Committee and Council **PRIOR** to the expected overrun in engineering fees. Where the Consultant does not exercise proper cost control and has incurred additional cost, the City will not be obliged to honour payment for such services.

**SUMMARY OF DELIVERABLES
FOR SERVICES DURING CONSTRUCTION**

ITEM	CONSTRUCTION PHASE
1	CONSTRUCTION PHOTOGRAPHS AT ALL KEY STAGES OF THE WORKS, FILED AND TITLED, AND DAILY PROGRESS REPORT
2	ISSUANCE OF PAYMENT CERTIFICATES ON A MONTHLY BASIS TO COMPLETION
3	ISSUANCE OF EWOS WITHIN 15 CONSECUTIVE WORKING DAYS
ITEM	AT SUBSTANTIAL PERFORMANCE
1	LISTING OF ALL SUB-CONTRACTORS, NAME OF CONTACT PERSON, TELEPHONE & FAX NUMBERS, & E-MAIL ADDRESS
2	LISTING OF ALL SUPPLIERS, NAME OF CONTACT PERSON, TELEPHONE & FAX NUMBERS, & E-MAIL ADDRESS
3	ALL WARRANTY & GUARANTEE CERTIFICATES
4	"AS-BUILT" DRAWINGS & SOFTWARE (if applicable)
5	DEFICIENCY LIST
6	ALL APPROVALS & PERMITS
7	CERTIFICATE OF SUBSTANTIAL PERFORMANCE
8	PAYMENT CERTIFICATE FOR HOLDBACK RELEASE

ITEM	CONTRACT COMPLETION
1	LETTER CONFIRMING COMPLETION
2	CONTRACTOR'S PERFORMANCE REPORT

END OF APPENDIX A.7