Client

National Capital Commission
Gatineau Park

33 Scott Rd, Gatineau, QC

Type of Document:

Construction Specifications

Project Name:

Structural Rehabilitation of the Gatineau Park Fire Tower

Project Number:

DC3000-17

Prepared By:

National Capital Commission
202-40 Elgin Street
Ottawa, ON K1P 1C7
Canada

Date Submitted:

May 12, 2017

List of Specifications

List of Drawings	Dwg. No.
Cover Sheet	
General Notes and Scope of Work	01
General Arrangement	02
Items to be removed (South and East Elevations)	03
Items to be removed (North and West Elevations)	04
Rehabilitation – Typical Tower Elevation	05
Structural Steel Details	06
HSS Frame and Footing Reinforcement Details	07
Suspended Timber Platform Bracing and Ladder Extension Details	08

END OF SECTION

1. References

.1 Section 01 11 01 - Pay Item Descriptions

.2 National Capital Commission (NCC) Standard Drawings

2. Invitation

.1 The National Capital Commission (NCC) is requesting bids from qualified firms for the rehabilitation of the fire tower located in Gatineau Park near Luskville, QC.

3. Description of Work

.1 All work shall be performed in an environmentally sensitive and sustainable manner, maximizing the reuse and/or recycling of materials.

.2 All work shall be carried out in accordance with the requirements contained herein.

.3 Work under this contract covers the following but is not limited to:

Structural Rehabilitation of the Gatineau Park Fire Tower:

.1 Establish site access, including trail modifications as required;
.2 Install construction enclosures;
.3 Supply and install new HSS steel frame at top of tower to anchor new guy wires;
.4 Brace suspended timber platform to resist lateral movements;
.4 Remove existing equipment on tower (antennas, solar panels, shed at base of tower, windmill at top of tower, etc.);
.6 Rehabilitate / repair existing timber structures on the tower (as directed by NCC project manager);
.7 Remove and replace existing steel cable guy wires and hardware; re-use existing ground anchors;
.8 Remove and replace existing concrete slab at base of ladder and extend legs of ladder to bear on new concrete slab. Ensure that sag in horizontal members is eliminated by modifying ladder connections;
.9 Supply and install new structural steel elements;
10. Encase existing concrete footings;
11. Repair damaged panels on existing chain link fence surrounding tower;
12. Remove construction enclosures;
13. Restore site to existing conditions, including access trails.

.4 All work / fabrications / installations shall be based off of the Contractor's field measurements. Should a discrepancy between the details / dimensions provided in the Contract

Drawings and the Contractor's field measurements occur, the NCC Project Manager shall be notified for review.

.5 Prior to commencing any work / fabrication / installation, fabrication and erection drawings (based on the Contractor's field measurements) shall be prepared and submitted for review as per 01 33 00 – Submittals. All drawings shall be signed and sealed by a professional engineer licensed in the province of Quebec.

.4 All work shall be performed in an environmentally sensitive and sustainable manner, maximizing the reuse and/or recycling of materials.

4. Site Access and Storage Areas

.1 The site shall be accessed via Trail 1 in Gatineau Park, beginning at Champlain Lookout in Luskville, QC. The total length of trail is approximately 12.1 km, and may only be travelled with a truck or off-road vehicle.

.2 The access trail is rough, narrow, and provides limited visibility. The Contractor may need to modify the existing trail to access the construction site / deliver equipment and materials.

.3 Pedestrian and bike traffic on the access trail is common, and the following measures shall be taken at a minimum when using the access trail:

.1 Vehicles shall have functioning and adequate lighting, lighting signals, mirrors, and horn.
.2 Low speeds shall be used.
.3 Horns shall be used at intersections and when there is limited visibility in the case of oncoming pedestrian / bike traffic.

4. In addition to at the construction site, storage areas for supplies / equipment may be used at the Champlain Lookout parking lot.

5. Codes

.1 Perform work in accordance with the contract drawings and specifications, National Capital Commission Standards, and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Meet or exceed requirements of:

.1 contract documents,
.2 specified standards, codes and referenced documents.

6. Documents Required

.1 Maintain at job site, one copy each of following:
- .1 Contract drawings
- .2 Specifications
- .3 Addenda
- .4 Approved work schedule
- .5 Reviewed shop drawings
- .6 Change orders
- .7 Other modifications to Contract
- .8 Field test reports
- .9 Manufacturers' installation and application instructions
- .10 Safety and Environmental protection documentation as required by Federal and Provincial legislation and regulations.

7. Work Schedule

.1 Provide in a form acceptable to the NCC Project Manager, within 5 working days after Contract award, a detailed schedule that complies with timings required by Contract documents and shows at a minimum mobilization date(s), start of work, delivery of equipment and materials, anticipated progress stages if appropriate, and final completion of work. Any work by subcontractors shall be shown in similar detail.

.2 Construction works shall be done within the hours of 7h00 and 19h00 Monday to Friday understanding that NCC and Gatineau Park staff will only be available for consultation during the hours of 08h00 to 16h30 Monday to Friday.

.3 Interim reviews of work progress based on work schedule will be conducted as decided by NCC Project Manager and schedule updated by Contractor in conjunction with and to approval of NCC Project Manager.

.4 Site work shall not commence until the Contractor has received a copy of the Certificate of Authorization from the NCC.

.5 Site work shall commence mid-August, 2017 and shall last three weeks.

.6 Work for fabrication shall not commence prior to contract award.

8. Contractor's Use of Site

.1 Within the confines of site described within this specification, on the drawings provided, and in additional written direction from NCC, propose and seek pre-approval

of the location and extent of all project related activities from the NCC Project Manager.

.2 Use areas as directed by the NCC Project Manager for storage.

.3 Contractor's vehicles and equipment will remain on designated parking, trail, and staging areas; no incursion onto naturalized areas is permitted except where specified in the scope of work. Main access to the work area will be from trails through Gatineau Park, beginning at the Gatineau Park Visitor's Centre in Chelsea, QC.

.4 Limit construction activity to the limits identified on the contract drawings.

9. Project Meetings

.1 Hold project meetings at times and locations approved by NCC Project Manager.

.2 Provide 48 hour notice to participants of date and time of meetings.

.3 Record minutes of meetings, and distribute to participants within 7 days of meeting. NCC Project Manager

10. Existing Utilities

.1 Where unknown services are encountered, immediately advise NCC Project Manager and confirm findings in writing.

.2 The Contractor is responsible for any damage to any existing and temporary utility.

11. Additional Drawings

.1 NCC Project Manager may furnish additional drawings for clarification. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract Documents.

12. Payment

.1 Any minor or miscellaneous items indicated on the drawing as being part of the work of this Contract and for which there are no specific pay items listed on the unit price table must be included by the Contractor in his overhead and indirect charges and incorporated into the unit prices which are listed on the unit price tables.

.2 No separate payment will be made for work performed in respect to any of the specifications for which there is no specific pay item on the unit price table. The cost of these works must be appropriated among, and included in, the unit

prices bid for the pay items listed.

.3 Included in the unit prices bid for the respective items shall be, in addition to the actual cost of construction, all other items of work required to complete the Contract to the extent indicated on the drawings and specified herein.

.4 Unit prices shall not be adjusted regardless of quantities of work done on site (+ or -).

13. Damages

.1 Existing plant material, landscaping, roadways, curbs, pathways, structures, finishes and public utilities damaged during the execution of the work of this Contract will be restored to their original condition, replaced, or adequate compensation made to affected parties by the Contractor.

.2 It is understood that restored or replaced work includes labour, equipment and material costs.

14. Permits and By-Laws

.1 The Contractor shall make himself fully acquainted with all Provincial, Local and other By-laws relating to the work of this Contract, as he will be required to comply with such by-laws without extra compensation of any nature.

.2 Obtain and pay for permits, factory inspector's approval, and other licenses required for this project and also pay any other charges incidental to such permits.

15. Taxes

.1 Include in the tender amount all sales taxes and other taxes levied by the Federal, Provincial and Municipal Government or other Authority. There will be no refunds made by the National Capital Commission to the Contractor for taxes paid by him.

16. Measurement for Payment

.1 The NCC Project Manager shall take measurements prior to commencement in all areas and additional measurements as required to determine pay quantities. The NCC Project Manager and Contractor shall take measurements at the same time (when practical) and endeavour to agree on all quantities prior to the submission of invoices.

.2 The Contractor shall ensure that the NCC Project Manager has received the necessary measurements prior to commencement of subsequent operations.

17. Addenda

.1 Answers to questions directed to the NCC Project Manager, and any amendments to the drawings and specifications during the Tender period will be communicated in the Form

of "Addenda" to all General Contractors tendering. Such "Addenda" to be considered as and read as part of the specifications, and thereby included in the Contract Documents.

18. Interpretation of Bilingual Documents

.1 If the two (2) language versions of these specifications differ, the preference shall be given to the version thereof, that according to the true spirit, intent and meaning of the text best insures the attainment of its objective.

19. Relics and Antiquities

.1 Protect relics, archaeological evidence, antiquities, items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during course of work.

.2 Give immediate notice to NCC Project Manager and await NCC Project Manager's written instructions before proceeding with work in this area.

.3 Relics, antiquities and items of historical or scientific interest remain her Majesty's property.

20. Setting Out of Work

.1 Assume full responsibilities for, and execute complete layout of work to locations, lines, and elevations indicated.

.2 Provide devices needed for lay out, construction, and demolition work including means of collecting and removing debris.

21. Written Warranties

.1 Contractor will warranty installation and material such as geotextiles, fencing, vegetation, stone, etc, required to return site to original use or natural condition and stabilize the site against erosion for a period of twelve (12) months from receipt of substantial completion of the work by the Departmental Representative.

22. Interpretation of "Engineer"

.1 Unless otherwise distinguished, the designation "Engineer" in subsequent Sections is interchangeable with "NCC Project Manager".

23. Environmental Protection

.1 The Fire Tower area hosts the highest number of endangered or threatened plant species in all of the province of Quebec. The Contractor shall take extreme care working within this area to minimize damage to existing vegetation. The NCC Project Manager is to be consulted regarding any site disturbance to ensure that significant species are not damaged.

END OF SECTION

0. General

.1 The cost of the work shown on the drawings or implicitly required without items in the tender price table must be included in the cost of the items in the tender price table or be in the site organization cost.

.2 There will be measurement for payment in accordance with the Unit Price Table submitted. Payment at the contract unit or lump sum prices tendered shall be full compensation for all labour, materials, and equipment to do the work.

1. Mobilization, Sitework, and Demobilization

.1 As shown in the Contract Specifications and Drawings, this item includes the following mobilization, sitework, and demobilization activities:

- Supplying and installing site protection / construction enclosures;
- Securing the work area and staging area;
- Transporting all equipment necessary to complete the work;
- Supplying and installing any temporary infrastructure required to complete the work (scaffolding, etc.);
- Improving the project area, if required, to suit the Contractor's operations;
- Completing detailed field measurements for all work to be based on;
- Collection and transportation off-site of all demolition materials, debris, and construction waste to the proper waste management facilities (except as specifically noted in other sections);
- Removal and transportation off-site of all construction equipment, temporary infrastructure, and construction enclosures.

.2 An allowance for costs that may be required to modify existing access trails is considered under the item *Establish Site Access*.

.3 Any proposed modifications to the existing site or any NCC owned property shall be requested by the Contractor prior to commencing work. Only upon written approval by the NCC Project Manager (PM), shall any of the aforementioned modifications be made.

.4 The cost of the work shown on the drawings or implicitly required without items in the tender price table must be included in the cost of the items in the tender price table under the Mobilization, Sitework, and Demobilization.

.5 There will be no measurement for payment. This item will

be paid on a lump sum basis at the price included in the Form of Tender and summarized in the Unit Price Table. Payment at the contract lump sum price shall be full compensation for all labour, materials, and equipment to do the work.

2. Removal of Storage Shed and Existing Equipment / Utilities

.1 As shown in the Contract Specifications and Drawings, this item includes all work required to remove the following from site and transport offsite to the proper waste management facilities:

- Storage shed at base of tower;
- Solar panels attached to tower / storage shed;
- Utilities attached to the tower (antennas, security cameras, cables, conduits, etc.);
- Windmill on the roof of the timber hut, at the top of the tower;
- Any other similar equipment / items on the tower not noted in the Contract Documents, at the request of the NCC project manager.

.2 As directed on-site by the NCC Project Manager, protect items during removal and salvage for future re-use.

.3 There will be no measurement for payment. This item will be paid on a lump sum basis at the price included in the Form of Tender and summarized in the Unit Price Table. Payment at the contract lump sum price shall be full compensation for all labour, materials, and equipment to do the work.

3. Support Existing Ladder on New Concrete Slab

.1 As shown and described in the Contract Specifications and Drawings, this item includes all work required to support the existing ladder on the new concrete slab, including but not limited to:

- Remove existing concrete slab
- Remove sag in horizontal members of the fire tower (as directed on-site by the NCC Project Manager)
- Install new reinforced concrete slab and compacted granular base
- Fabricate, supply, and install extensions for existing ladder legs

.2 There will be no measurement for payment.

.3 Payment shall be full compensation for all labour, equipment, and materials necessary to complete the work.

4. Supply and Install New Structural Steel

.1 As shown on the Contract Specifications and Drawings, this item includes supplying and installing new structural steel

elements on the existing steel fire tower structure and all associated work, including:

- Fabricating, supplying, and installing all new structural steel elements, including but not limited to: new HSS frame for guy-wire connection and new vertical and horizontal angles to strengthen existing fire tower structure
- Anchoring new structural steel angles to the existing concrete footings, including supplying and installing base plates and chemical anchors
- Tightening existing loose diagonal tension rod connections on the fire tower, as indicated on-site by the NCC Project Manager (PM)

.2 This item does not include the cost to fabricate, supply, or install any new guy-wires.

.3 There will be no measurement for payment.

.4 Payments shall be full compensation for all labour, equipment, and materials necessary to complete the work.

5. Encase Existing Concrete Footings

.1 As shown in the Contract Specifications and Drawings, this item includes all work required to encase / reinforce the existing concrete footings of the fire tower, including:

- Supplying and installing new reinforcing steel cage around existing footings
- Minor excavation around existing footings
- Supplying and installing formwork required to encase the existing footings in new concrete
- Supplying and installing new concrete
- Providing the necessary protection / measures to properly cure the new concrete

.2 The method of payment for this item will be based on each footing encased / reinforced.

.3 Payment shall be full compensation for all labour, equipment, and materials necessary to complete the work.

6. Remove and Replace Existing Guy Wires

.1 As shown in the Contract Specifications and Drawings, this item includes all work required to remove and replace the existing steel guy wires at the fire tower, including:

- Remove existing guy wires
- Supply and install new guy wires and hardware; existing anchors at ground level shall be re-used

.2 The method of payment for this item will be based on each

guy wire removed and replaced.

.3 Payment shall be full compensation for all labour, equipment, and materials necessary to complete the work.

7. Brace Suspended Timber Platform

.1 As shown in the Contract Specifications and Drawings, this item includes all work required to brace the existing suspended timber platform to resist lateral movement, including:
- Supply and install two (2) new 89mm x 89mm timber beams between existing joists of the suspended timber platform
- Positively anchor the new timber beams to existing horizontal steel members of the fire tower

.2 There will be measurement for payment.

.3 Payment shall be full compensation for all labour, equipment, and materials necessary and all associated works.

8. Remove and Replace Damaged Fence Panels

.1 This item includes all work required to remove and replace two (2) sections of existing chain link fence around the tower (approx. 3m x 1.8m each).

.2 Sections of fence and fence components that require removal and replacement shall be determined on site by the NCC Project Manager.

.3 There will be no measurement for payment.

.4 Payment shall be full compensation for all labour, equipment, and materials necessary and all associated works.

9. Site Restoration

.1 This item includes restoring any damaged or modified areas, paths, or roadways to their original (or better) condition.

.2 There will be no measurement for payment.

.3 Payment shall be full compensation for all labour, equipment, and materials necessary and all associated works.

10. Establish Site Access

.1 This item includes all work required to modify the existing access trail such that it may be used to transport construction material and equipment to the work site.

.2 Any proposed modifications to the existing access trails, paths, or roadways shall be requested by the Contractor prior to commencing work. Only upon written approval by the

NCC Project Manager (PM) shall any modifications be made.

.2 There will be no measurement for payment.

.3 This item is provisional; a monetary allowance shall be provided by the NCC to complete any work under this item, should it be required.

11. Rehabilitate / Repair Timber Structures

.1 This item includes all work required to repair / rehabilitate the following items located on the fire tower:

- Timber hut;
- Upper timber platform and guardrail;
- Lower (suspended) timber platform and guardrail;
- Timber stairs between lower and upper platform;
- Any associated steel elements / fasteners.

.2 Work under this item will be as indicated on site by the NCC project manager and may include, but is not limited to:

- Remove and replace damaged shingles on roof of timber hut;
- Stain / paint existing timber elements;
- Provide general repairs / replacement of damaged and weathered elements, members, and components of the aforementioned timber structures

.3 There will be no measurement for payment.

.4 This item is provisional; a monetary allowance shall be provided by the NCC to complete any work under this item, should it be required.

END OF SECTION

1. Related Requirements Specified Elsewhere

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by NCC Project Manager are specified under various sections.

2 Appointment and Payment

.1 The NCC will appoint and pay for services of testing laboratory. Where tests or inspections by designated testing laboratory reveal work not in accordance with contract requirements, the Contractor shall pay costs for additional tests or inspections as NCC Project Manager may require to verify acceptability of corrected work.

3 Contractor's Responsibilities

.1 Furnish labour and facilities to:

- .1 Provide access to work to be inspected and tested.
- .2 Facilitate inspections and tests.
- .3 Make good work disturbed by inspection and test.
- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify NCC Project Manager sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by NCC Project Manager.

END OF SECTION

1. Section Includes

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates and transcripts.

2. References

.1 Canadian Construction Documents Committee (CCDC)
.1 CCDC 2-08, Stipulated Price Contract.

3. Administrative

.1 Submit to NCC Project Manager submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to NCC Project Manager. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify NCC Project Manager, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by NCC Project Manager's review of submittals.

.9 Contractor's responsibility for deviations in submission from

requirements of Contract Documents is not relieved by NCC Project Manager review.

.10 Keep one reviewed copy of each submission on site.

4. Shop Drawings and Product Data

.1 Refer to CCDC 2 GC 3.11.

.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.3 All shop drawings shall be signed and stamped by a competent engineer licensed to perform work in the province of Québec and in good standing with the Ordre des ingénieurs du Québec.

.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Allow five days for NCC Project Manager’s review of each submission.

.6 Adjustments made on shop drawings by NCC Project Manager are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to NCC Project Manager prior to proceeding with Work.

.7 Make changes in shop drawings as NCC Project Manager may require, consistent with Contract Documents. When resubmitting, notify NCC Project Manager in writing of any revisions other than those requested.

.8 Accompany submissions with transmittal letter, in duplicate, containing:

.1 Date.
.2 Project title and number.
.3 Contractor's name and address.
.4 Identification and quantity of each shop drawing, product data and sample.
.5 Other pertinent data.

.9 Submissions shall include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.10 After NCC Project Manager 's review, distribute copies.

.11 Submit three hard copies and one electronic copy of shop drawings for each requirement requested in specification Sections and as NCC Project Manager may reasonably request.

.12 Submit one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by NCC Project Manager where shop drawings will not be prepared due to standardized manufacture of product.

.13 Submit one electronic copy of test reports for requirements requested in specification Sections and as requested by NCC Project Manager.
- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.

.14 Submit one electronic copy of certificates for requirements requested in specification Sections and as requested by NCC Project Manager.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.15 Submit one electronic copy of manufacturer’s instructions for requirements requested in specification Sections and as requested by NCC Project Manager.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.16 Submit one electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by NCC Project Manager.

.1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by NCC Project Manager.

.18 Delete information not applicable to the project.

.19 Supplement standard information to provide details applicable to project.

.20 If upon review by NCC Project Manager, no errors or omissions are discovered or if only minor corrections are made, transparency will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

5. Samples

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to NCC Project Manager's business address.

.3 Notify NCC Project Manager in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by NCC Project Manager are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to NCC Project Manager prior to proceeding with Work.

.6 Make changes in samples which NCC Project Manager may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

6. Certificates and Transcripts .1 Immediately after award of Contract, submit Workers' Compensation Board status.

END OF SECTION

1. Related Sections

.1 Section 01 33 00 - Submittal Procedures

2. References

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Province of Québec
.1 Act Respecting Occupational Health and Safety, R.S.Q. 1997 (updated December 1, 2016) and the corresponding regulations.

.3 CSA S269.1-16 Falsework and Formwork.

.4 CSA S269.2-16 Access Scaffolding for Construction Purposes.

.5 FCC No. 301-1982 Standard for Construction Operations.

.6 NBCC-15, National Building Code of Canada.

3. Submittals

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
.1 Results of site specific safety hazard assessment.
.2 Results of safety and health risk or hazard analysis for site tasks and operation.

.3 NCC Project Manager will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to NCC Project Manager within 5 days after receipt of comments from NCC Project Manager.

.4 NCC Project Manager's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.5 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.

.6 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to NCC Project Manager.

.7 Submit immediately upon receipt or completion:
.1 construction safety checklists,
.2 reports or directions issued by Federal and Provincial health and safety inspectors,
.3 incident and accident reports,
.4 Material Safety Data Sheets (MSDS), and
.5 health and safety training records including names of personnel and alternates responsible for site safety and health, hazards present on site, and use of personal protective equipment.

.8 Submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports at least once every two (2) weeks to NCC Project Manager.

4. Filing of Notices .1 File Notice of Project with Provincial authorities prior to commencement of Work.

5. Safety Assessment .1 Perform site specific safety hazard assessments related to project.

6. Meetings .1 Schedule and administer Health and Safety meeting with NCC Project Manager prior to commencement of Work.

7. General Requirements .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 NCC Project Manager may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

8. Responsibility .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with

safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

9. Compliance Requirements

.1 Comply with the Act Respecting Occupational Health and Saferty, R.S.Q. 1997 (updated December 1, 2016) and the corresponding Acts and Regulations for Construction Projects.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations

10. Unforeseen Hazards

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction. Advise NCC Project Manager verbally and in writing.

11. Health and Safety Coordinator

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator must:
.1 have minimum two (2) years' site-related working experience specific to activities associated with the work.
.2 have basic working knowledge of specified occupational safety and health regulations,
.3 be responsible for completing health and safety training session and ensuring that personnel not successfully completing the required training are not permitted to enter site to perform Work,
.4 be responsible for implementing, enforcing daily and monitoring site-specific Health and Safety Plan, and

.5 be on site during execution of Work.

12. Posting of Documents

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of the Province of Quebec, and in consultation with NCC Project Manager.

13. Correction of Non-Compliance

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by NCC Project Manager.

.2 Provide NCC Project Manager with written report of action taken to correct non-compliance of health and safety issues identified.

	.3	NCC Project Manager may stop Work if non-compliance of health and safety regulations is not corrected.
14. Work Stoppage	.1	Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
15. Construction Safety Measures	.1	Observe construction safety measures of National Building Code 2015 Part 8, Provincial Government, Workers'/Workmen's Compensation Board and municipal authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.
	.2	Comply with requirements of FCC No. 301.
16. WHMIS	.1	Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.
	.2	Deliver copies of WHMIS data sheets to NCC Project Manager on delivery of materials.
17. Construction Safety Checklist	.1	Obtain NCC Construction Safety checklist from PM and incorporate into checklist for site.
	.2	Review and implement applicable health and safety checklists provided by NCC Project Manager in collaboration with NCC Construction Safety personnel.
18. Overloading	.1	Ensure no part of Work is subjected to loading that will endanger its safety or will cause permanent deformation.
	.2	No point of the existing structure may be used as an anchor point for workers / to support any fall arrest loads.
19. Structural Stability	.1	Ensure components of new structure and Contractor’s temporary structures are braced adequately to ensure stability during work (loss of supporting material or members) and in the event of inclement weather (snow or wind loading).
20. Scaffolding	.1	Design and construct scaffolding in accordance with CSA S269.2-16.

21. Falsework	.1	Design and construct falsework in accordance with CSA S269.1-16
22. Fall Arrest	.1	Design, construct and employ fall arrest systems in accordance applicable federal and provincial regulations.
	.2	No point of the existing structure may be used as an anchor point for workers / to support any fall arrest loads.
23. Traveller Cables / Winching	.1	Design, construct, and operate traveller cables, anchors, and winch systems in accordance with federal and provincial safety regulations and manufacturer specifications.
24. Power Actuated Fasteners	.1	Use power actuated devices only after receipt of written permission from NCC Project Manager.

END OF SECTION

1. General

.1 All Work is to be carried out while respecting established Environmental Procedures.

.2 In order of priority Environmental Procedures are undertaken first to protect the environment from the effects of the work, then the protection of the existing heritage structures, followed by the mitigation or lessen the effects of the work, and finally to restore the environment to its original state.

2. Jurisdiction, Enforcement, and Notification

.1 If human archeological items or human remains are discovered during activities related to project, all works in the affected area shall stop immediately and Contractor shall immediately contact Ian Badgley, Archeologist, NCC Heritage and Archeology Program, (613-239-5678, ext. 5751, ian.badgley@ncc-cnn.ca. No work shall be done near discovery site of human remains.

.2 In the event of finding patrimonial artefacts, contact the NCC Project Manager.

3. Fires

.1 Fires and burning of rubbish on site are not permitted.

4. Disposal of Wastes

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

.3 All construction debris shall be transported off-site at contractor's cost. No debris or concrete shall be introduced to the natural environment. All such debris, materials, or products shall be removed from site as soon as possible.

5. Site Clearing and Plant and Wildlife Protection

.1 Protect trees and plants on site and adjacent properties.

.2 No trees or shrubbery shall be cut or removed without explicit consent from the NCC project manager and Gatineau Park biologist.

.3 If trees are accidentally damaged or removed as a result of the works, the contractor will plant two trees for each tree damaged or removed (a 2:1 ratio). Contractor shall get A planting plan approved by NCC before the planting of trees. Contractor will monitor the success of all plantings and re-vegetation for two years and will undertake any remedial

actions that may be required.

.4 Minimize stripping of topsoil and vegetation.

.5 Any wildlife spotted during work must be able to leave the site safely on its own. Unless an animal is in immediate danger or is hurt and no qualified personnel can arrive in a reasonable time, workers shall not attempt to catch or handle most animals. In such cases, the animal shall be collected alive and transported immediately to another similar environment that will not be affected by the work.

.6 If active bird nets are observed during construction, the immediate area around the nest must be avoided and work shall be stopped. Gatineau Park biologists shall be contacted to discuss the appropriate steps and measures to follow. Additional mitigation measures may then be identified to protect existing and active bird nests in the work area. In the case of species at risk, work may be stopped or delayed.

6. Pollution Control

.1 Maintain temporary pollution control features installed under this contract.

.2 Control emissions from equipment to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and construction site.

.5 Refuel, maintain, and repair machinery at a minimum distance of 60 metres from any body of water. Place protective fabric under machinery if filling with fuels, oils, or other products as required.

.6 All handling of fuels, oil, and other petrol products or contaminants shall be completed under constant surveillance in order to mitigate accidental spills.

.7 The Contractor shall devise and implement an emergency plan, known and understood by all workers, in the case of an accidental spill.

.8 An emergency oil spill kit shall be available on-site at all times.

.9 In case of spill, the Contractor shall immediately execute the emergency spill plan and contact NCC Emergency Services (613-239-5353) and, when possible, the site supervisor and NCC Project Manager, as well as Urgence environnement Québec (1-866-694-5454) if necessary.

.10 Once contained, spilled hydrocarbons and contaminated soils shall be removed by a contractor specialised to do so and who is approved by the NCC project manager.

7. General Protection

.1 All motorized vehicles and machinery shall stay in the designated road or pathways to avoid perturbing the fauna habitat.

.2 Provide site with proper necessary amenities (portable chemical toilets, garbage cans, bins, etc) to prevent any debris dispersion in the environment.

.3 Gather and dispose of waste and debris in conformity with regulations in force. All debris shall be collected and eliminated each day, or stocked in safe containers to prevent effects on garbage consuming animals.

.4 Vehicles, equipment and machinery shall be cleaned before entering Gatineau Park and shall not be cleaned on site, or within the confines of Gatineau Park. The contractor is to use machinery and equipment in good working order and without fluid or petroleum product leaks of any kind.

.5 Frequent inspections of heavy machinery and equipment will have to be done to ensure good working order and to detect leaks of fuel, oil, grease, etc. Proper corrective measures will have to be taken and maintenance done immediately if a problem is detected.

.6 Use the smallest equipment possible. Constrain vehicular traffic to approved and clearly identified roads and pathways. Keep travel and operation of equipment and machinery to a minimum. Shut off any motorized equipment on site when not in use.

7. Limit movement of vehicles and machinery. Stop the operation of any power equipment on site when not in use.

8. At all times, machinery and equipment shall be kept on-site in the delineated construction area.

.9 Use protocol for clean equipment as per the following guideline on the internet: http://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf

8. Mitigation

.1 Limit clearing, excavation, earth works and levelling to the absolute minimum necessary for the success of the Work.

.2 If an oil leak or problem is detected, immediate spill response corrective measures shall be taken and the cleaning of machinery or defective machineries shall be done immediately.

9. Restoration

.1 Contractor shall remove all temporary signage. Contractor shall remove debris and garbage before leaving the construction site.

.2 Contractor shall be responsible for the re-instatement of all areas of fauna habitat in and around the site that has been degraded as a result of the Work.

.3 Re-instate to original condition all damaged ditches by machinery (damage to drainage slope, shoulders of embankments, etc).

.4 Areas disturbed during construction shall be restored / reinstated at the end of work.

.5 Restoration / reinstatement of vegetation shall be carried out as soon as possible, at a time that is favourable for recovery of vegetation.

.6 Restore / reinstate disturbed areas with topsoil and seeded with a mix approved for Gatineau Park (percentages may vary but any substitutions must be approved):

.1 For paths and trails:

- 50% *Phleum pratense* (Timothy Grass)
- 25% *Poa trivialis* (Rough Bluegrass)
- 10% *Agrostis alba* (Redtop)
- 8% *Trifolium repens* (White Clover)
- 7% *Medicago lupilina* (Black Medic)

.2 For trail surfaces and edges:

- 40% *Poa compressa* (Canada Bluegrass)
- 35% *Poa trivialis* (Rough Bluegrass)
- 10% *Agrostis alba* (Redtop)
- 8% *Trifolium repens* (White Clover)
- 7% *Medicago lupilina* (Black Medic)

10. Methods of Construction .1 Contractor shall use methods of construction approved by the NCC.

END OF SECTION

PART 1 – GENERAL

1.1 Inspection

.1 Allow NCC Project Manager access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by NCC Project Manager's instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 NCC Project Manager will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, NCC Project Manager shall pay cost of examination and replacement.

1.2 Access to Work

.1 Allow inspection/testing agencies access to Work, off site manufacturing, and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.3 Procedures

.1 Notify appropriate agency and NCC Project Manager in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.4 Rejected Work

.1 Remove defective Work, whether result of poor workmanship, use of defective products, or damage and whether incorporated in Work or not, which has been rejected by NCC Project Manager as failing to conform to Contract Documents. Replace

or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of NCC Project Manager it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by NCC Project Manager.

1.5 Reports

.1 Submit 4 copies of inspection and test reports to NCC Project Manager.

.2 Provide copies to subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.6 Tests and Mix Design

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by NCC Project Manager and may be authorized as recoverable.

1.7 Mock-Ups

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations acceptable to NCC Project Manager.

.3 Prepare mock-ups for NCC Project Manager to review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, NCC Project Manager will assist in preparing schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work or when acceptable to NCC Project Manager.

1.8 Mill Tests .1 Submit mill test certificates as requested.

END OF SECTION

1. Related Sections	.1	Section 01 11 01 - Pay Item Descriptions.
2. Access	.1	Provide and maintain adequate access to project site.
	.2	If authorized to use existing roads, parking and paths for access to project site, maintain these for duration of Contract and make good damage resulting from Contractors' use.
	.3	Clean all areas used by Contractor's equipment.
3. Sanitary Facilities	.1	Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
	.2	Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
4. Parking	.1	Do not park vehicles on grassed surfaces except where designated and previously authorized by the NCC Project Manager. Do not park on or block trails, paths, or roadways except where authorized by the local authorities and the NCC Project Manager.
5. Temporary Facilities	.1	Remove temporary facilities from site when directed by NCC Project Manager.
6. Water	.1	Contractor is to procure or provide their own source of water.
7. Electrical Power	.1	Contractor is to procure or provide their own source of electrical power.
8. Scaffolding	.1	Secure approval of scaffolding and all temporary structures erected during construction.
9. Staging Areas	.1	Establish staging and temporary work areas in locations approved by NCC Project Manager. Secure staging and temporary work areas from public access and operate in a manner that ensures public safety.
	.2	Remove or relocate staging areas as directed by NCC Project Manager.
	.3	When work on site is stopped for a period of time Contractor may, with the approval of the NCC Project Manager, close or relocate staging areas.

.4 Contractor is responsible for security of material, equipment, and structures left on or near site.

END OF SECTION

1. General

.1 Use new material unless otherwise specified.

.2 Within 5 days of written request by NCC Project Manager, submit following information for materials and equipment proposed for supply:
- .1 Name and address of manufacturer;
- .2 Trade name, model and catalogue number;
- .3 Performance, descriptive and test data;
- .4 Manufacturer's installation or application instructions;
- .5 Evidence of arrangements to procure.

.3 Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified.

2. Section Includes

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Manufacturer's instructions.

.3 Quality of Work, coordination, and fastenings.

.3 References

.1 Canadian Construction Documents Committee (CCDC)
- .1 CCDC 2-94, Stipulated Price Contract.

.2 Within text of each specifications section, reference may be made to reference standards.

.3 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.4 If there is question as to whether any product or system is in conformance with applicable standards, NCC Project Manager reserves right to have such products or systems tested to prove or disprove conformance.

.5 Cost for such testing will be borne by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.6 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

4. Quality

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work

shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with NCC Project Manager based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

5. Availability

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify NCC Project Manager of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify NCC Project Manager at commencement of Work and should it subsequently appear that Work may be delayed for such reason, NCC Project Manager reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

6. Storage, Handling and Protection

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store material and equipment in accordance with suppliers instructions.

.5 Store cementitious products clear of earth.

.6 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.7 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.8 Store and mix paints in heated and ventilated enclosure. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.9 Remove and replace damaged products at own expense and to satisfaction of NCC Project Manager.

.10 Touch-up damaged factory finished surfaces to NCC Project Manager's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

7. Transportation

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products.

8. Manufacturer's Instructions

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify NCC Project Manager in writing, of conflicts between specifications and manufacturer's instructions, so that NCC Project Manager may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes NCC Project Manager to require removal and re-installation at no increase in Contract Price or Contract Time.

9. Quality of Work	.1	Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify NCC Project Manager if required Work is such as to make it impractical to produce required results.
	.2	Do not employ anyone unskilled in their required duties. NCC Project Manager reserves right to require dismissal from site, workers deemed incompetent or careless.
	.3	Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with NCC Project Manager, whose decision is final.
10. Co-Ordination	.1	Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision.
	.2	Be responsible for coordination and placement of openings, sleeves and accessories.
11. Remedial Work	.1	Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
	.2	Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.
12. Fastenings	.1	Provide fastenings as described in Contract Specifications and Contract Drawings.
	.2	Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
	.3	Prevent electrolytic action between dissimilar metals and materials.
	.4	Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section or Contract Drawings.
13. Fastenings - Equipment	.1	Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished, unless otherwise specified. Use No. 304 stainless steel for exterior areas unless otherwise specified.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

.5 Seek authority from NCC Project Manager prior to using explosive actuated tools and ensure trades are appropriately trained and licensed for these tools.

14. Protection of Work in Progress

.1 Prevent overloading of any part of the work. Do not modify, cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of NCC Project Manager.

15. Existing Utilities

.1 With the assistance of authorities having jurisdiction, locate and mark underground and overhead services at the work site and associated areas.

.2 Tie-in to local utilities must be pre-approved by authorities having jurisdiction.

.3 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work and pedestrian and vehicular traffic.

.4 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

16. Contractor's Options for Selection of Materials for Tendering

.1 Materials specified by referenced standard, select any material that meets or exceeds the specified standard.

.2 Where materials are required to be listed on the "Canadian General Standards Board, Qualified Products List" select any manufacturer so listed.

.3 Materials specified by "Prescriptive" or "Performance" specification, select any material meeting or exceeding specification.

.4 Materials specified by naming one or more materials, select any material named. For the purpose of these specifications, the term "Acceptable Material" is deemed to be a complete and working commodity as described by a manufacturer's name, catalogue number, trade name or any combination thereof.

.5 When materials are specified by a Standard, Prescriptive or Performance specifications, upon request of the NCC Project Manager, obtain from manufacturer an independent testing laboratory reporting, showing that the material or equipment meets or exceeds the specified requirements.

17. Substitution

.1 No substitutions will be permitted without prior written approval of NCC Project Manager.

.2 Proposals for substitution may only be submitted after award of Contract. Such request must include statements of respective costs of items originally specified and the proposed substitution.

.3 Proposals will be considered by NCC Project Manager if:

.1 materials selected by tenderer from those specified are not available;

.2 delivery date of materials selected from those materials specified would unduly delay completion of contract, or

.3 alternative material to those specified, which are brought to the attention of and considered by NCC Project Manager as equivalent to the material specified and will result in a credit to the Contract amount.

.4 Should proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as result of substitution.

.5 Amounts of all credits arising from approval of substitutions will be determined by NCC Project Manager and Contract Price will be reduced accordingly.

18. Construction Equipment and Plant

.1 On request, prove to the satisfaction of NCC Project Manager that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

.2 Maintain construction equipment and plant in good operating order.

END OF SECTION

1. General	.1	Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
	.2	Store volatile waste in covered metal containers, and remove from premises at end of each working day.
2. Materials	.1	Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
3. Cleaning During Construction	.1	Provide on-site containers for collection of waste materials, and debris.
	.2	Dispose of waste materials, and debris off site.
	.3	Remove grease, dust, dirt, stains, and other foreign materials from timber stairs, concrete and asphalt parking areas, and associated structures on a daily basis and always before staining occurs.
4. Final Cleaning	.1	Remove grease, dust dirt, stains, labels, and other foreign materials from exterior finished surfaces.
	.2	Broom clean paved surfaces; rake clean other surfaces of grounds.
	.3	Remove debris and surplus materials from site.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Text, schedules and procedures for systematic Waste Management Program for construction, deconstruction, demolition, and renovation projects, including:
- .1 Diversion of Materials.
- .2 Waste Audit (WA).
- .3 Waste Reduction Workplan (WRW).
- .4 Demolition Waste Audit (DWA).
- .5 Materials Source Separation Program (MSSP).

1.2 Definitions

.1 Demolition Waste Audit (DWA): relates to actual waste generated from project.

.2 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.3 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.

.4 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.5 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.6 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
- .1 Salvaging reusable materials from re-modeling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
- .2 Returning reusable items including pallets or unused products to vendors.

.7 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for

purpose of reuse or recycling.

.8 Separate Condition: refers to waste sorted into individual types.

.9 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

.10 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill.

.11 Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.12 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA.

1.3 Documents

.1 Maintain at job site, one copy of following documents:
- .1 Waste Audit.
- .2 Waste Reduction Workplan.
- .3 Material Source Separation Plan.

1.4 Submittals

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Prepare and submit the following:
- .1 Completed Waste Audit (WA).
- .2 Completed Waste Reduction Workplan (WRW).
- .3 Completed Demolition Waste Audit (DWA).
- .4 Materials Source Separation Program (MSSP) description.

1.5 Waste Audit (WA)

.1 Conduct WA prior to commencing work on site.

	.2	Record, on WA, extent to which materials or products used consist of recycled or reused materials or products.
1.6 Waste Reduction Work Plan (WRWP)	.1	Prepare WRW prior to commencing work.
	.2	Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
	.3	Describe management of waste.
	.4	Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.
	.5	Post WRW or summary where workers are able to review content.
1.7 Demolition Waste Audit (DWA)	.1	Prepare DWA prior to start of demolition.
1.8 Materials Source Separation Program (MSSP)	.1	Processing of waste will not be permitted on site due to space limitation and ongoing operations. Contractor to truck out debris daily and process off site for source separation.
	.2	Prepare MSSP and have ready for use prior to commencing work on site.
	.3	Implement MSSP for waste generated on project in compliance with approved methods and regulations.
	.4	Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
	.5	Provide containers to deposit reusable and recyclable materials.
	.6	Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
	.7	Locate separated material(s) in area(s) which minimize material damage.

.8 Collect, handle, and transport off-site, salvaged materials in separate condition.
.1 Transport to approved and authorized recycling facility or to users of material for recycling.

.9 Collect, handle, and transport off-site, salvaged materials in combined condition.
.1 Ship materials to site operating under Certificate of Approval.
.2 Materials must be immediately separated into required categories for reuse or recycling.

1.9 Storage, Handling, and Protection

.1 Store, materials to be reused, recycled and salvaged in locations as directed by NCC Project Manager.

.2 Unless specified otherwise, materials for removal become Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures. If safety of building is endangered, cease operations and immediately notify NCC Project Manager.

.7 Separate and store materials produced during dismantling of structures in designated areas.

1.10 Disposal of Wastes

.1 Do not bury rubbish or waste materials.

.2 Keep records of construction waste including:
.1 Number and size of bins.
.2 Waste type of each bin.
.3 Total tonnage generated.
.4 Tonnage reused or recycled.
.5 Reused or recycled waste destination.

.3 Remove materials from deconstruction daily. No stock piling on site allowed.

.4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.11 Use of Site and Facilities .1 Execute work with least possible interference or disturbance to normal use of premises.

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 Application .1 Do Work in compliance with WRW.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 Cleaning .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.3 Construction & Demolition Waste .1 Carefully deconstruct and source separate materials/equipment and divert waste destined for landfill to maximum extent possible. Reuse, recycle or sell material off site for reuse except where indicated otherwise. On site sales are not permitted.

.2 Submit a waste reduction Workplan indicating the materials and quantities of material that will be recycled and diverted from landfill.
.1 Indicate how material being removed from the site will be reused or recycled.

.3 Submit proof that all waste is being disposed of at a licensed land fill site or waste transfer site. A copy of the disposal/waste transfer site's license and a letter verifying that said landfill site will accept the waste

must be supplied to NCC Project Manager prior to removal of waste from the demolition site.

END OF SECTION

PART 1 - GENERAL

1.1 Recording Actual Site Conditions

.1 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
- .1 Measured dimensions of elements.
- .2 Changes made by change orders.
- .3 References to related shop drawings and modifications.

.2 Specifications: legibly mark each item to record actual construction, including:
- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
- .2 Changes made by Addenda and change orders.

1.2 Warranties and Bonds

.1 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.2 Obtain warranties executed in duplicate by subcontractors, suppliers, and manufacturers, within 5 days after completion of the applicable item of work.

.3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Certificate of Substantial Performance is determined.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 74 21 – Waste Management and Disposal

1.2 References

.1 Canadian Standards Association (CSA)
- .1 CAN/CSA-A23.1-14, Concrete Materials and Methods of Concrete Construction.
- .2 CAN/CSA-O86-14, Engineering Design in Wood (Limit States Design).
- .3 CSA O121-08 (R2013), Douglas Fir Plywood.
- .4 CSA O151-09 (R2014), Canadian Softwood Plywood.
- .5 CSA S269.1-16, Falsework for Construction Purposes.
- .6 CAN/CSA-S269.3-M92 (R2013), Concrete Formwork.

1.3 Shop Drawings

.1 Submit shop drawings for formwork and falsework in accordance with Section 01 33 00 – Submittal Procedures.

.2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1-16,for falsework drawings. Comply with CAN/CSA-S269.3-M92(R2013) for formwork drawings.

.3 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.

.4 Indicate sequence of erection and removal of formwork/falsework as directed by NCC Project Manager.

.5 Each shop drawings shall be signed and sealed by a qualified NCC Project Manager licensed to practice in Canada, in the province of Quebec.

1.4 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 – Waste Management and Disposal and the Waste Reduction Workplan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

.4 Use sealers, form release and stripping agents that are non-toxic, biodegradable, and have zero or low VOC's.

PART 2 - PRODUCTS

2.1 Materials

.1 Formwork materials:
.1 Use new plywood and wood formwork materials or reusable formwork approved by the NCC Project Manger in accordance with CSA-O121-08 (R2013) and CAN/CSA-O86-14 requirements.

.2 Form ties:
.1 Use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.3 Form release agent: chemically active release agents containing compounds that react with free lime in concrete resulting in water insoluble soaps.

.4 Form stripping agent: colourless mineral oil, free of kerosene, with viscosity between 70 and 110s Saybolt Universal at 40°C, flashpoint minimum 150°C, open cup.

.5 Falsework materials: to CSA-S269.1-16.

PART 3 - EXECUTION

3.1 Fabrication and Erection

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Obtain NCC Project Manager’s approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1-16.

.5 Formwork shall be new or undamaged.

.6 Fabricate and erect formwork in accordance with CAN/CSA-

S269.3-M92 (R2013) to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1-14.

.7 Align form joints and make watertight. Keep form joints to minimum.

.8 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.9 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive other pieces of the Work unless otherwise indicated.

.10 Clean formwork in accordance with CAN/CSA-A23.1-14, before placing concrete.

3.2 Removal and Reshoring

.1 Leave formwork in place for minimum 7 days after placing concrete.

.2 Re-use formwork and falsework subject to requirements of CSA-A23.1-14/A23.2-14.

END OF SECTION

PART 1 – GENERAL

1.1 Related Sections

.1 01 11 01 – Pay Item Descriptions.

.2 01 33 00 – Submittal Procedures.

.3 01 74 21 – Waste Management and Disposal.

1.2 Measurement Procedures

.1 No measurement will be made under this Section.
.1 Include reinforcement costs in price to Encase Existing Concrete Footings as specified in Section 01 11 01 – Pay Item Descriptions.

1.3 References

.1 American Society for Testing and Materials (ASTM):
.1 ASTM A1064 / A1064M – 16b, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

.2 Canadian Standards Association (CSA International)
.1 CAN/CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.
.2 CAN/CSA-G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement.

.3 Reinforcing Steel Institute of Canada (RSIC)
.1 RSIC-[2004], Reinforcing Steel Manual of Standard Practice.

1.4 Submittals

.1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit shop drawings including placing of reinforcement and indicate:
.1 Bar bending details.
.2 Lists.
.3 Quantities of reinforcement.
.4 Sizes, spacings, and locations of reinforcement with identifying code marks to permit correct placement without reference to structural drawings.

.3 Detail lap lengths and bar development lengths to CSA-A23.3-14, unless otherwise indicated.

.4 Quality Assurance: in accordance with Section 01 45 00 - Quality Control and as described in Section 2.3 – Source

Quality Control.

.1 Mill Test Report: upon request, provide NCC Project Manager with certified copy of mill test report of r reinforcing steel, prior to beginning reinforcing work

.2 Upon request, submit in writing to NCC Project Manager proposed source of reinforcement material to be supplied.

1.5 Delivery, Storage, and Handling

.1 Waste Management and Disposal:

.1 Separate waste materials for recycling in accordance with Section 01 74 21 – Waste Management and Disposal.

PART 2 – PRODUCTS

2.1 Materials

.1 Substitute different size bars only if permitted in writing by NCC Project Manager.

.2 Reinforcing steel: Grade 400W, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.

.3 Cold-drawn annealed steel wire ties: to ASTM A1064 / A1064M – 16b.

.4 Welded steel wire fabric: to ASTM A1064 / A1064M – 16b.

.5 Chairs, bolsters, bar supports, spacers: to CSA-A23.1-14/A23.2-14.

2.2 Fabrication

.1 Fabricate reinforcing steel in accordance with CSA-A23.1-14/A23.2-14 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.

.2 Obtain NCC Project Manager’s approval for locations of reinforcement splices.

2.3 Source Quality Control

.1 Upon request, provide NCC Project Manager with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis.

.2 Upon request, inform NCC Project Manager of proposed source of material to be supplied.

PART 3 – EXECTUTION

3.2 Field Bending

.1 Do not field bend or field weld reinforcement except where

indicated or authorized by NCC Project Manager.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars, which develop cracks or splits.

3.2 Placing Reinforcement

.1 Place reinforcing steel as indicated on Contract Drawings and in accordance with CSA-A23.1-14/A23.2-14.

.2 Prior to placing concrete, obtain NCC Project Manager's approval of reinforcing material and placement.

.3 Ensure cover to reinforcement is maintained during concrete pour.

END OF SECTION

PART 1 – GENERAL

1.1 Related Sections

.1 01 11 01 – Pay Item Descriptions.

.2 01 33 00 – Submittal Procedures

.3 01 35 29.06 - Health and Safety Requirements

.4 01 45 00 – Quality Control

.5 01 74 21 – Waste Management and Disposal

.6 03 20 00 – Concrete Reinforcing

1.2 Measurement Procedures

.1 No measurement will be made under this Section.

.1 Include concrete costs in price to Encase Existing Concrete Footings as specified in Section 01 11 01 – Pay Item Descriptions.

1.3 References

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A23.2-14, Methods of Test for Concrete.

.3 CAN/CSA-A3000-13, Cementitious Materials Compendium

.4 CAN/CSA-G30.18-09(R2014), Carbon Steel Bars for Concrete Reinforcement.

1.4 Design Requirements

.1 Performance: in accordance with CSA-A23.1-14/A23.2-14, and as described in Part 2.2 – Mixes.

1.5 Submittals

.1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 – Submittal Procedures.

.3 Concrete pours: submit accurate records of poured concrete items indicating date and location of pour, quality, air temperature, and test samples taken as described in Part 3.4 – Field Quality Control.

.4 Concrete hauling time: submit for review by NCC Project Manager deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and

discharged after batching.

1.6 Quality Assurance

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Submit to NCC Project Manager, minimum 4 weeks prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

.3 When plant does not hold valid certification, provide test data and certification by qualified independent inspection and testing laboratory that materials used in concrete mixture will meet specified requirements.

.4 Quality Control Plan: submit written report, as described in PART 3 - VERIFICATION, to NCC Project Manager verifying compliance that concrete in place meets performance requirements of concrete as established in PART 2 - PRODUCTS.

.5 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.7 Delivery, Storage, and handling

.1 Concrete hauling time: maximum allowable time for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching. The same time limit from batching to discharge applies to concrete mixed on site.

.1 Modifications to maximum time limit must be agreed to by NCC Project Manager and concrete producer as described in CSA A23.1-14/A23.2-14.

.2 Deviations to be submitted for review by NCC Project Manager.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1-14/A23.2-14.

.3 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 – Waste Management and Disposal.

.2 Divert unused concrete materials from landfill to local facility approved by NCC Project Manager.

.3 Provide an appropriate area where concrete trucks / mixing equipment can be safely washed.

.4 Use trigger operated nozzles for water hoses.

.5 Designate cleaning area for tools to limit water use and runoff.

.6 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved by the NCC Project Manager.

.7 Unused admixtures and additive materials must not be disposed of into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.

.8 Prevent admixtures and additive materials from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with inert, noncombustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

PART 2 – PRODUCTS

2.1 Materials

.1 Cement: to CAN/CSA-A300, Type GU.

.2 Water: to CSA A23.1-14.

.3 Aggregates: to CAN/CSA-A23.1/A23.2.

.4 Reinforcing bars: to CAN/CSA-G30.18, Grade 400W.

.5 Welded steel wire mesh: to ASTM-A1064/A1064M

.6 Other concrete materials: to CAN/CSA-A23.1.

2.2 Mixes

.1 Performance Method for specifying concrete: to meet NCC Project Manager performance criteria in accordance with CAN/CSA-A23.1/A23.2.

.1 Ensure concrete supplier meets performance criteria as established below and provide verification of compliance as described in Part 3.4 – Verification.

.2 Provide concrete mix to meet following hard state requirements:

.1 Durability and class of exposure: F-2 to CAN/CSA-A23.1

.2 Minimum compressive strength at 28 days age: to CAN/CSA-A23.1.

.3 Nominal maximum size of coarse aggregate: to CAN/CSA A23.1.
.4 Slump: to CAN/CSA-A23.1.
.5 Air content: concrete to contain purposely entrained air in accordance with CAN/CSA-A23.1.
.6 Admixtures: to CAN/CSA-A23.1.
.7 Proportion concrete in accordance with CAN/CSA-A23.1.
.8 Intended application: Footings and Slab.

.3 Provide quality management plan to ensure verification of concrete quality to specified performance.

.4 Concrete supplier's certification.

PART 3 – EXECTUTION

3.1 Preparation

.1 Obtain NCC Project Manager’s approval before placing concrete.
.1 Provide 24 hours notice prior to placing of concrete.

.2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.

.3 During concreting operations:
.1 Development of cold joints not allowed.
.2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.4 Pumping of concrete is permitted only after approval of equipment and mix.

.5 Ensure reinforcement and inserts are not disturbed during concrete placement.

.6 Prior to placing of concrete obtain NCC Project Manager’s approval of proposed method for protection of concrete during placing and curing.

.7 Protect existing Work from staining.

.8 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, and air temperature and test samples taken.

.9 Do not place load upon new concrete until authorized by NCC Project Manager.

3.2 Construction

.1 Do cast-in-place concrete work in accordance with CSA-

A23.1/A23.2.

.2 Anchor bolts:
.1 To be placed in holes drilled after concrete has reached 75% of maximum design compressive strength (f'c) unless otherwise approved by NCC Project Manager.

.3 Finishing and curing:
.1 Finish concrete in accordance with CSA-A23.1/A23.2.
.2 Use procedures as reviewed by NCC Project Manager or those noted in CSA-A23.1/A23.2 to remove excess bleed water. Ensure surface is not damaged.

.4 Finish top of concrete footings to meet requirements of CSA-A23.1/A23.2. Class F-2.

.5 Exposed site concrete:
.1 Screed to plane surfaces and use wood floats.
.2 Provide round edges and joint spacings using standard tools.
.3 Trowel smooth to provide lightly brushed non-slip finish.

.6 Cure and protect concrete in accordance with CAN/CSA-A23.1 as amended by the contract documents.
.1 Do not use curing compounds where bond is required by subsequent topping or coating.

3.3 Surface Tolerance .1 Concrete slab finishing tolerance in accordance with CAN/CSA-A23.1

3.4 Field Quality Control .1 Concrete testing: to CAN/CSA-A23.2 by testing laboratory designated by NCC Project Manager.

.2 Site tests: conduct the following tests in accordance with Section 01 45 00 – Quality Control and submit report as described in Part 1.5 – Submittals:
.1 Slump tests.
.2 Air Tests.

3.5 Verification .1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established in PART 2 - PRODUCTS, by NCC Project Manager and provide verification of compliance as described in Part 1.6 – Quality Assurance.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Waste Management And Disposal.

1.2 References

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM F3125 / F3125M - 15a, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

.2 ASTM F594-09(R2015), Standard Specification for Stainless Steel Nuts.

.3 ASTM A240M-16a, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications (Metric Version).

.4 ANSI B18.22.1-65(R1998), American National Standard Type A Plain Washers – Preferred Sizes.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-G12-14, Zinc-Coated Steel Wire Strand.

.2 CAN/CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.3 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 CAN/CSA-S16-14, Design of Steel Structures.

.5 CAN/CSA-S37-13, Antennas, Towers, and Antenna Supporting Structures.

.6 CSAW59-13, Welded Steel Construction (Metal Arc Welding).

1.3 Shop Drawings

.1 Submit shop drawings including fabrication and erection documents and materials list in accordance with Section 01 33 00 - Submittal Procedures.

.2 Erection drawings: indicate details and information necessary for assembly and erection purposes including:

.1 Description of methods.

.2 Sequence of erection.

.3 Type of equipment used in erection.

.4 Temporary bracings.

.3 Ensure Fabricator drawings showing designed assemblies,

components and connections are stamped and signed by qualified professional engineer licensed in the province of Quebec, Canada.

1.4 Quality Assurance

.1 Submit 2 copies of mill test reports 4 weeks prior to fabrication of structural steel.

.1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.

.2 Provide mill test reports certified by metallurgists qualified to practice in province of Quebec, Canada.

1.5 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Waste Management And Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal all types of packaging material for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by NCC Project Manager.

.5 Divert unused paint material from landfill to official hazardous material collections site approved by NCC Project Manager.

.6 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 Materials

.1 Structural steel angles and HSS sections: to CAN/CSA-G40.20/G40.21; Grade 350W; shop painted.

.2 Structural steel plates: to CAN/CSA-G40.20/G40.21; Grade 300W

.3 Anchor bolts:

.1 Chemical adhesive: HILTI HIT-HY 100

.2 Threaded rods: HILTI HAS 304 Stainless Steel

.3 Nuts to: ASTM F594-09(R2015) and AISI Type 304 Stainless Steel.

.4 Washers to: ASTM A240M-16a, ANSI B18.22.1Type A Plain, and AISI Type 304 Stainless Steel.

.4 Bolts, nuts, and washers: to ASTM F3125 / F3125M - 15a; Grade A325/A35M; hot-dipped galvanized.

.5 Welding materials: to CSA W59-13 and certified by Canadian Welding Bureau (CWB).

.6 Hot dip galvanizing: galvanize steel, as indicated, to CAN/CSA-G164.

.7 Steel Guy Wires to: CAN/CSA-G12-14.

2.2 Fabrication

.1 Fabricate structural steel in accordance with CAN/CSA-S16-14 and in accordance with reviewed / approved shop drawings.

.2 Bolt holes should be drilled 2mm larger than the bolt diameter unless noted otherwise.

.3 Shop weld members as indicated. Grind smooth.

PART 3 - EXECUTION

3.1 General

.1 Structural steel work: in accordance with CAN/CSA-S16-14.

.2 Welding: in accordance with CSA W59-13.

.3 Companies and individuals to be certified for all welding work by the Canadian Welding Board (CWB).

3.2 Connection to Existing Work

.1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Engineer for direction before commencing fabrication.

3.3 Marking

.1 Mark materials in accordance with CAN/CSA G40.20/G40.21. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.

.2 Match marking: shop mark for fit and match.

3.4 Erection

.1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16-14 and in accordance with approved erection drawings.

.2 Field cutting or altering structural members: to approval of the Engineer.

.3 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.

.4 Ensure all ASTM-A325/A35M bolts are installed to *snug-tight* condition.

.5 Guy wires shall be installed with an initial tensioning of 2kN (measured at 10°C ambient temperature). Tensioning shall be done gradually and evenly and as per the requirements of CSA-S37-13.

3.5 Field Quality Control .1 Refer to Section 01 45 00 – Quality Control.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Materials, removal, and installation of asphalt shingles and roll roofing.

1.2 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Waste Management And Disposal.

.3 Section 01 45 00 - Quality Control.

.4 Section 01 61 00 - Common Product Requirements.

.5 Section 01 78 00 - Closeout Submittals.

1.3 References

.1 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-37.4-M89, Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing.
- .2 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.
- .3 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .4 CAN/CGSB-51.34-M86, Vapour Barrier Polyethylene Sheet, for Use in Building Construction.

.2 Canadian Standards Association (CSA International).
- .1 CAN/CSA-A123.1/A123.5-16, Asphalt Shingles Made From Organic Felt and Surfaced With Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.
- .2 CAN/CSA-A123.3-05 (R2013), Asphalt Saturated Organic Roofing Felt.
- .3 CAN/CSA-A123.51-14, Asphalt Shingle Application on Roof Slopes 1:6 and Steeper.
- .3 CSA B111-74(R2003), Wire Nails, Spikes, and Staples

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
- .1 Material Safety Data Sheets (MSDS).

1.4 Submittals

.1 Submit proof of manufacturer's CCMC Listing and listing number to NCC Project Manager.

.2 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.3 Submit WHMIS MSDS - Material Safety Data Sheets. WHMIS acceptable to Health Canada for asphalt shingles.

.4 Submit product data sheets for asphalt shingles. Include:
- .1 Product characteristics.
- .2 Performance criteria.
- .3 Installation instructions.
- .4 Limitations.
- .5 Colour and finish.

1.5 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate samples of full size specified shingles.

1.6 Quality Assurance

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .1 Provide 500 x 500 mm mock-up
- .2 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
- .3 Allow 24 hours for inspection of mock-up before proceeding with work.
- .4 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished Work.

1.7 Delivery, Storage, and Handling

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Provide and maintain dry, off-ground weatherproof storage.

.3 Remove only in quantities required for same day use.

1.8 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Waste Management And Disposal.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal all packaging material for recycling in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated

containers.

.5 Divert unused asphalt shingle materials from landfill to asphalt recycling facility approved by NCC Project Manager.

.6 Dispose of unused asphaltic cement type materials at official hazardous material collections site approved by NCC Project Manager.

.7 Fold up metal banding, flatten, and place in designated area for recycling.

1.9 Extra Materials

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 All unused shingles remain property of owner.

PART 2 - PRODUCTS

2.1 Materials

.1 Asphalt shingles: to CSA A123.1/A123.5.
- .1 Type: to match existing and as selected by NCC Project Manager
- .2 Mass: to match existing and as selected by NCC Project Manager
- .3 Colours: to match existing and as selected by NCC Project Manager.
- .4 Texture: to match existing and as selected by NCC Project Manager.

.2 Sheathing paper: to CAN/CGSB-51.32-M77.

.3 Roofing felt: to CSA A123.3, organic felt No.15.

.4 Polyethylene film: to CAN/CGSB-51.34-M86, 0.10 mm thick, Type 2 - Standard Permeance.

.5 Asphaltic Cement:
- .1 Plastic cement: to CAN/CGSB-37.5-M89.
- .2 Lap cement: to CAN/CGSB-37.4-M89.

.6 PVC drip edge: extruded profile of unplasticized polyvinyl chloride of minimum thickness of 0.8 mm.

.7 Nails: to CSA B111-74(R2003), of galvanized steel, sufficient length to penetrate 19 mm into deck.

.8 Staples: chisel point galvanized steel 25 mm crown 1.5 mm

thick, sufficient length to penetrate 20 mm into deck.

PART 3 - EXECUTION

3.1 Removal of Existing Roofing

.1 Remove existing roofing, flashings, and underlay, and expose sheathing or shingle lath of roof.

.2 Withdraw existing shingle and flashing nails, set those which break off. Leave surfaces free from dirt and loose material.

3.2 Application

.1 Do asphalt shingle work in accordance with CAN/CSA A-123.51.

.2 Install drip edge along eaves, overhanging 12 mm, with minimum 50 mm flange extending onto roof decking. Nail to deck at 400 mm on centre.

.3 Install bottom step flashing (soaker base flashing) interleafed between shingles at vertical junctions.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes
.1 Materials and installation for chain link fence.

1.2 Related Sections
.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 35 43 – Environmental Procedures.

.2 Section 01 74 21 - Waste Management And Disposal.

1.3 References
.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 90M-13, Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-138.1-96, Fabric for Chain Link Fence.
.2 CAN/CGSB-138.2-96, Steel Framework for Chain Link Fence.
.3 CAN/CGSB-138.3-96, Installation of Chain Link Fence.

.3 Canadian Standards Association (CSA International).
.1 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.4 Submittals
.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.5 Waste Management and Disposal
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management And Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by NCC Project Manager.

.4 Fold up metal banding, flatten and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 Materials
.1 Chain-link fence fabric: to CAN/CGSB-138.1-96; match existing.

.2 Tension wire: to CAN/CGSB-138.2-96; match existing.

.3 Tie wire fasteners: Match existing.

.4 Tension bar: to ASTM A 653/A 653M, 5 x 20 mm minimum galvanized steel; match existing.

.5 Fittings and hardware: to CAN/CGSB-138.2-96; match existing.
.1 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.

2.2 Finishes

.1 Galvanizing:
.1 For chain link fabric: to CAN/CGSB-138.1-96 Grade 2.
.2 For other fittings: to CAN/CSA-G164-M92(R2003).

PART 3 - EXECUTION

3.1 Grading

.1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.
.1 Provide clearance between bottom of fence and ground surface of 30 mm to 50 mm.

3.2 Erection of Fence

.1 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.

.2 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals.
.1 Knuckled selvedge at bottom.
.2 Twisted selvedge at top.

.3 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals.
.1 Give tie wires minimum two twists.

3.3 Cleaning

.1 Clean and trim areas disturbed by operations.
.1 Dispose of surplus material.
.2 Restore damaged areas as outlined in Section 01 35 43 – Environmental Procedures.

END OF SECTION