

**"A"**  
**SPECIFICATION FOR**  
**FRONT ENTRANCE**  
**REDEVELOPMENT**  
**HALIFAX CITADEL**  
**NATIONAL HISTORIC SITE OF CANADA**  
**HALIFAX, NOVA SCOTIA**

**PREPARED BY:**  
**PARKS CANADA AGENCY**

**June, 2014**

This document is the document referred to as Plans and Specifications and marked "A" in the Articles of Agreement.

FRONT ENTRANCE REDEVELOPMENT, HALIFAX CITADEL

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FRONT ENTRANCE REDEVELOPMENT, HALIFAX CITADEL

HAHC 14/P1 – Sheet 1, SITE PLAN, SECTIONS AND DETAILS

HAHC 14/P1 – Sheet 2, SECTIONS AND DETAILS

1. Description of Work .1 Work under this contract covers upgrades to the Front Entrance at the Halifax Citadel, National Historic Site. Related items include removals, repaving the existing paved areas, alterations to guardrails, new railings and bollards, drainage elements, electrical and communications conduit, a new kiosk and other items indicated on the drawings.

The Citadel is an historic place and as such must be protected from any damage due to construction activities on the site. Preservation of existing historic fabric shall be given the highest priority during construction related to the protection/ repair of the assets. Any damage which occurs to adjacent assets or surfaces shall be repaired at the Contractor's cost.

The Contractor shall be deemed to have visited the site and examined all assets and to have become fully familiar with all conditions relative to carrying out the work. There shall be no consideration given to claims resulting from the Contractor's failure to carry out sufficient site investigations prior to tendering of the work.

2. Documents Required .1 Maintain at job site, one copy each of following:

- .1 Contract drawings
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed shop drawings.
- .5 Change orders.
- .6 Other modifications to Contract.
- .7 Field test reports.
- .8 Copy of approved work schedule
- .9 Manufacturers' installation and application instructions.
- .10 Record drawings( kept up to date on a daily basis)
- .11 Site Specific Safety Plan

3. Products .1 Contractor's duties:

- .1 Order products specified from designated suppliers. Order in quantities and at times compatible with construction schedule and site storage capacity.
- .2 Transport, unload and handle at site.
- .3 Promptly inspect delivered products, and give written report to the Departmental Representative on condition of all items received.

- .4 Pay demurrage charges.
- .5 Install, connect and finish products as specified.

#### 4. Work Schedule

- .1 The Contractor is to prepare and submit to the Departmental Representative within five days of notification of award of the Contract five copies of the proposed Construction Schedule for approval by Parks Canada Agency. It is intended that all work of the contract will be carried out between Nov. 10/14 and May 1/15.
- .2 The work of this contract related to the Kiosk (including new light pole bases and all conduit runs) is to be completed by March 15/15. This will allow time for Parks Canada to complete the interior of the building, run electrical and communication service and install equipment prior to the Park opening on May 5/15.
- .3 The Contractor is to comply with the agreed schedule(s) at all times. If, for any reasons, the schedule is not followed, the Contractor is to immediately notify the Departmental Representative of the change and submit a revised Schedule for acceptance.
- .4 Interim reviews of work progress based on work Schedule will be conducted as decided by the Departmental Representative and Schedule updated by Contractor as requested by the Departmental Representative.
- .5 If required, the Contractor shall increase manpower and equipment and make whatever adjustments are appropriate to ensure that the project is completed on schedule.

#### 5. Contractor's Use of Site

- .1 The site is located at the Halifax Citadel. Use of the site shall be limited to the existing paved areas adjacent to the work. Access to these areas will be by the existing driveway entrances from Sackville St. and Ahern/Rainnie. The contractor shall liaise with Parks regarding acceptable times and usage of the site, roads, etc. It shall be the Contractor's responsibility to arrange for all required transportation of men, equipment and materials to the site.
- .2 During construction the Contractor shall provide all labour, materials and signage necessary to close the Perimeter Road to non construction related traffic on the east side of the Citadel. This will involve providing temporary gates/barriers at the branch

intersections above Sackville St. and Rainnie Drive as well as reversing the normal traffic flow on the west side of the Citadel between those points. The Contractor shall submit a Traffic Control Plan prior to mobilizing to the site for PCA review and approval. Access for PCA staff vehicles and others shall be granted through the construction site and to the Front Gate as required. All signage shall be symbolic or bilingual.

- .3 Do not unreasonably encumber site with materials or equipment.
- .4 Move stored products or equipment which interfere with operations of Parks Canada.
- .5 Obtain and pay for use of additional storage or work areas needed for operations.
- .6 Provide all barriers, signs, enclosures, etc. to ensure safety of the public or other parties on the site.

6. Departmental Representative

- .1 The Departmental Representative for this work shall be Mark Garnett, Asset Manager, Mainland NS Field Unit. Contact information is as follows:  
Phone: 426-1994, Cell: 225-9694, Fax: 426-4228,  
E-mail: [mark.garnett@pc.gc.ca](mailto:mark.garnett@pc.gc.ca)

7. Measurement for Payment

- .1 The work of this contract is covered by lump sum and unit rate pay items and shall be measured and paid for as described in Section 01 29 01. The final quantities for the various items will only become known as the work proceeds. Unit rates provided will apply to greater or lesser quantities as the eventual scope of work dictates.

8. Codes and Standards

- .1 Perform work in accordance with latest edition of National Building Code of Canada (NBCC) 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 contract documents, specified standards, codes and referenced documents.

- .3 All work shall be carried out in accordance with the Nova Scotia Occupational Health and Safety Act and the Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.

9. Project Meetings

- .1 Attend project meetings at times and locations requested/approved by the Departmental Representative.
- .2 Notify all parties concerned of meetings.
- .3 Parks will record notes of meetings, and distribute to all parties.

10. Setting Out of Work

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations required.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate the Departmental Representative 's inspection of work.
- .4 Supply stakes and other survey markers required for laying out work.
- .5 Do not use spray paint, chalk, etc. that will deface finished, exposed surfaces.

11. Cutting, Fitting and Patching

- .1 Execute cutting, fitting and patching required to make work fit properly. Maintain historic fabric at all times. Review items to be cut, fitted, patched, etc. with the Departmental Representative and obtain approval before proceeding with the work.
- .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- .3 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .4 Fit work airtight to pipes, sleeves, ducts and conduits.
- .5 Halifax Citadel is an historic site and no historically significant aspects shall be altered.



- |   |    |  |
|---|----|--|
| <u>12. Protection</u>                   | .1 | Provide temporary dust screens, barriers, warning signs in locations where work is adjacent to areas used by public or government staff.   |
| <u>13. National Parks Act</u>           | .1 | Perform work in accordance with applicable sections of the National Parks Act.   |
| <u>14. Protection of Materials</u>      | .1 | Store and protect all materials and equipment required in connection with the work until they have been placed in the work and accepted by the Departmental Representative. Immediately remove rejected materials from the site. |
| <u>15. Cleaning During Construction</u> | .1 | Maintain work area free from accumulations of waste materials and rubbish.   |

PART 1 - GENERAL

1.1 Description

- .1 This section covers the measurement of work done for payment purposes, and the scope of the work covered by the pay items in the Unit Price Table.
- .2 It is the intention to provide for a finished piece of work, complete in all essentials and details, including all items reasonably inferable from the drawings and specifications.
- .3 The aggregate of all unit prices and lump sum payments shall constitute full compensation for the entire work of the Contract, as shown, specified and intended, regardless of any omission in the tender documents of any items which are necessary for the completion of the work including temporary facilities, safety, etc.
- .4 Should there be any discrepancy regarding measurement between the Measurement and Payment Section and any other section in the specifications, the Measurement and Payment Section shall overrule the other specification section.
- .5 Unless otherwise specified, all materials necessary to complete the items listed in the Unit Price Table and the finished work are to be supplied by the Contractor and the cost of such material is to be included in the Contractor's prices. There will be no measurement for work not authorized, or for work beyond authorized limits as determined by the Departmental Representative.
- .6 All unit prices and lump sums shall include all costs applicable to the items, including labour, materials, equipment, transportation, ancillaries and all other applicable and relevant costs as intended and as required to complete the work to the full satisfaction of the Departmental Representative. The unit prices and lump sums indicated shall exclude HST.

- .7 All work including shoring, protection measures, etc. required to prevent damage/disturbance to existing structures of any areas damaged as a result of work or access are considered incidental to the work.
- .8 Where disposal of excess material or debris is included in an item this shall include disposal off site in an environmentally approved disposal site.
- .9 The intent is to cover a range of required work as determined by the Departmental Representative on the site under established unit rates. Actual quantities may vary widely depending on the final scope of work and the condition of the various structures.

1.2 Measurement and Payment

.1 General Conditions

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 1 in the Unit Price Table.

The price shall include all costs associated with mobilizing and demobilizing from the site, temporary site fencing and hoarding, traffic control, pedestrian and workers safety measures and signage, full reinstatement of all disturbed surfaces at completion of the work and provision of all labour, equipment and materials necessary to complete the work as intended but not covered in other pay items.

.2 Removals

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 2 in the Unit Price Table.

The price shall include all labour, equipment and materials required to remove all existing asphalt, concrete curb and sidewalk and granular and other subgrade materials within the indicated limits and depths, removal of the existing kiosk (incl. the associated retaining wall, slab and

fence/gate), removal of the existing guardrail and posts as indicated, removal and salvage for reuse as required of the following : existing bench, garbage can, all signage, flag pole, light standards, all foundation elements associated with the above noted items and all other required excavation or removals not specifically covered elsewhere.

.3 Paved Areas

Measurement for this item shall be by the square meter of asphalt, concrete sidewalk or pavers completed to the satisfaction of the Departmental Representative.

Payment will be at the unit prices bid for Items No. 3 a), b) and c) in the Unit Price Table.

The price shall include all labour, equipment and materials required to supply, place, grade and compact all granular materials as indicated on the drawings for the appropriate pavement type. **Note** : the thickness of sub-grade granulars and concrete varies with existing sub-grade conditions and cross section. The two accessible ramps will be measured as concrete sidewalk. Cost variations should be included in the averaged unit rate over the finished surface measured.

.4 Storm Sewer

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 4 in the Unit Price Table.

The price shall include all labour, equipment and materials required to supply and install all catchbasins and related piping, branch line from the Kiosk downspouts, outfall structures and rock protection to match existing outfalls and all other items required for a completed installation.

.5 Electrical and Communications

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 5 in the Unit Price Table.

The price shall include all labour, equipment and materials required to complete all indicated duct runs to and from the new Kiosk structure, all conduits shall be provided with pull wires. The price includes new light standard foundations to match the existing north light, reinstalling the salvaged lights and poles and all other items required for a completed installation.

.6 Concrete Curb

Measurement for this item shall be by the meter of new concrete curb completed to the satisfaction of the Departmental Representative.

Payment will be at the unit price bid for Items No 6 in the Unit Price Table.

The price shall include all labour, equipment and materials required to install new curb sections as applicable including excavation, supply and place granular base and all other items required for a completed curb as intended.

.7 Kiosk

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 7 in the Unit Price Table.

The price shall include all labour, equipment and materials required to supply and install all aspects of the kiosk including conduit terminations, excavation, granulars, slab-on-grade, structural framing, all exterior finishes, metal roofing, metal fascia, vented soffits, gutters and downspouts, windows and door and all other items required for a completed functional building as specified and indicated on the drawings.

.8 Signage and Misc. Items

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 8 in the Unit Price Table.

The price shall include all labour, equipment and materials required to supply and install new concrete foundations as required and reinstall all interpretive and roadway signage, the bench, garbage can and flag pole as indicated or directed on site.

.9 Handrails, Bollards and Fencing

Measurement for this item shall be by the meter of each element completed to the satisfaction of the Departmental Representative.

Payment will be at the unit and lump sum prices bid for Items No 9 a) through f) in the Unit Price Table.

The price shall include all labour, equipment and materials required to install each element as applicable including excavation, supply and place granular base and all other items required for completed elements as intended.

**Notes:** For **Item 9 c)** chain measurement includes two eye bolts and two quick connect chain eyes at each post. **Item 9 d)** only includes the missing section of fence in the area of the former Kiosk removal. **Item 9 e)** is provisional and may or may not be used. The item includes removal and disposal ( incl. conc. post bases) of existing fence sections and supply and installation of new sections as specified. **Item 9 f)** includes selected salvaged guardrail lengths installed on new PT posts to complete the new pavement edge as indicated on the drawings.

.10 Landscaping

There shall be no measurement associated with this item.

Payment will be at the lump sum price bid for Item No. 10 in the Unit Price Table.

The price shall include all labour, equipment and materials required to supply and install topsoil and sod around disturbed edges as indicated on the drawings and as required to reinstate all disturbed surfaces.

.11 Cost Plus Work

Measurement for this item shall be by the approved hours for labour and equipment and by quantities approved by the Departmental Representative for materials.

Payment for labour shall be at the hourly rates bid for Item No. 11a in the Unit Price Table. The rates shall include a small tools allowance for shovels, chipping hammers, wheel barrows, etc. Only large equipment will be paid for separately. The rate shall apply to all hours during the Contractor's regular working day. There shall be no additional payment for overtime hours unless approval has been obtained in advance from the Departmental Representative. Only labour designations identified on the Unit Price Table or subsequently approved by the Departmental Representative will be recognized for payment purposes.

Payment for equipment shall be at the hourly rates bid for Item No. 11b in the Unit Price Table. The rates shall include the operator and all expenses associated with operating the equipment. Only equipment specifically identified on the Unit Price Table or subsequently approved by the Departmental Representative shall be recognized for payment purposes. If it becomes necessary to use additional

equipment the hourly rates shall be submitted for approval of the Departmental Representative in advance.

Payment for materials shall be at cost (excluding HST) plus 10% for overhead and profit.

At the end of each day the Contractor shall submit a detailed log of all hours and all labour, equipment and material which will be reviewed and signed by the Departmental Representative. Any corrections shall be made by the Contractor as directed. These sheets shall be submitted with back-up invoices for material with each progress claim.

Cost plus claims shall be broken down by activity (i.e. "fence repairs," etc.) and shall indicate the days being claimed to allow for cross referencing with the submitted logs.

Only work specifically approved by the Departmental Representative shall be carried out under this item.



PART 1 - GENERAL

1.1 RELATED  
SECTIONS

- .1 Section 01 35 29.06 - Health and Safety Requirements.
- .2 Section 01 35 44 - Environmental Protection.

1.2 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit 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.
- .2 Do not proceed with Work affected by submittal 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 Departmental Representative. 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 considered rejected.
- .6 Notify Departmental Representative, 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 co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS  
AND PRODUCT DATA

- .1 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.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province s of Newfoundland and Labrador, Canada.
- .3 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 co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 5 days for Departmental Representative to review each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 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.
- .8 Submissions 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.

- .9 After Departmental Representative's review, distribute copies.
- .10 Submit one (1) transparency on plastic film, six (6) prints and one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .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 accordance with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
  - .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.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.

- .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.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, transparency copies 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.
- .20 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
  - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

#### 1.4 SAMPLES

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

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Submittal Procedures

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- .2 Deliver samples prepaid to Departmental Representative business address.
- .3 Notify Departmental Representative 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 Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative 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.

1.5 CERTIFICATES  
AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

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Health and Safety  
Requirements

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PART 1 - GENERAL

- 1.1 Submittals
- .1 Submit to Departmental Representative copies of the following documents, including updates:
    - .1 Site Specific Health and Safety Plan.
    - .2 Name and qualifications of person to be retained full time as H&S Co-ordinator.
- 1.2 Compliance Requirements
- .1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland and Labrador, and the Occupational Health and Safety Act Regulations made pursuant to the Act.
  - .2 Comply with Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.
  - .3 Observe and enforce construction safety measures required by:
    - .1 National Building Code of Canada;
    - .2 Provincial Worker's Compensation Board;
    - .3 Municipal statutes and ordinances.
  - .4 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.
  - .5 A copy of the Canada Labour Code Part II may be obtained by contacting:  
  
Canadian Government Publishing  
Public Works & Government Services Canada  
Ottawa, Ontario, K1A 0S9  
Tel: (819) 956-4800 (1-800-635-7943)  
Publication No. L31-85/2000 E or F)
  - .6 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative upon request.
- 1.3 Responsibility
- .1 Be responsible for health and safety of persons on site, of property and for protection of persons and public circulating adjacent to work operations to extent that they may be affected by conduct of the Work.
  - .2 Enforce compliance by all workers, sub-contractors and other persons granted access to work site with safety

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requirements of Contract Documents, applicable Federal, Provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.4 Site Control  
and Access

- .1 Control work site and entry points to construction areas.
  - .1 Delineate and isolate construction areas from other areas of site Facility by use of appropriate means.
  - .2 Post notices and signage at entry points and at other strategic locations identifying entrance onto site to be restricted to authorized persons only.
  - .3 Signage must be professionally made, bilingual in both official languages or display internationally understood graphic symbols.
- .2 Approve and grant access to site only to workers and authorized persons.
  - .1 Immediately stop non-authorized persons from circulating in construction areas and remove from site.
  - .2 Provide site safety orientation to all persons before granting access. Advise of site conditions, hazards and mandatory safety rules to be observed on site.
- .3 Secure site at night time to extent required to protect against unauthorized entry.
- .4 Ensure persons granted access to site wear appropriate personal protective equipment (PPE) suitable to work and site conditions.
  - .1 Provide such PPE to authorized persons who require access to perform inspections or other approved purposes.

1.5 Protection

- .1 Carry out work placing emphasis on health and safety of the Public, Facility personnel, construction workers and protection of the environment.
- .2 Erect safety barricades, lights and signage on site to effectively delineate work areas, protect pedestrian and vehicular traffic around and adjacent to work and to create a safe working environment.
- .3 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental

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Health and Safety  
Requirements

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Representative verbally and in writing.

- 1.6 Filing Of Notice
- .1 File Notice of Project and other Notices with Provincial authorities prior to commencement of Work.
- 1.7 Permits
- .1 Post on site permits, licenses, compliance certificates specified in section 01 10 10.
  - .2 Where particular permit or compliance certificate cannot be obtained at the required stage of work, notify Departmental Representative in writing and obtain his/her approval to proceed before carrying out that portion of work.
- 1.8 Hazard Assessments
- .1 Conduct site specific health and safety hazard assessment before commencing project and during course of the work. Identify risks and hazards resulting from site conditions, weather conditions and work operations.
    - .1 Also, conduct assessment when the scope of work has been changed by Change Order and when potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety Representative.
  - .2 Record results in writing and address in Health and Safety Plan.
  - .3 Keep copy of all assessments on site.
- 1.9 Project/Site Condition
- .1 The following are known or potential project related health, environmental and safety hazards at site which must be properly managed if encountered during course of work:
    - .1 Existing hazardous products are:
      - .1 work within and adjacent to roadway .
      - .2 work adjacent to streams and water
  - .2 Above list shall not be construed as being complete and inclusive of potential health, and safety hazards encountered during work. Include above items into hazard assessment process.



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Health and Safety  
Requirements

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- .3 Obtain from Departmental Representative, copy of MSDS Data sheets for existing hazardous products stored on site or used by Facility personnel.

1.10 Health And  
Safety Meetings

- .1 Attend pre-construction health and safety meeting conducted by Departmental Representative. Have following persons in attendance:
  - .1 Site Superintendent.
  - .2 Contractor's designated Health and Safety Site Supervisor.
  - .3 Health & Safety Site Coordinator.
  - .4 Departmental Representative will advise of date, time and location.

1.11 Health And  
Safety Plan

- .1 Develop written site-specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of work.
  - .1 Submit copy to Departmental Representative within 5 calendar days of acceptance of bid.
  - .2 Submit updates as work progresses.
- .2 Health and Safety Plan shall contain three (3) parts with following information:
  - .1 Part 1 - Hazards: List of individual health risks and safety hazards identified by hazard assessment process.
  - .2 Part 2 - Safety Measures: engineering controls, personal protective equipment and safe work practices used to mitigate hazards and risks listed in Part 1 of Plan.
  - .3 Part 3a: Emergency Response: standard operating procedures, evacuation measures and emergency response in the occurrence of an accident, incident or emergency.
    - .1 Include response to all hazards listed in Part 1 of Plan.
    - .2 Evacuation measures to complement the Facility's existing Emergency Response and Evacuation Plan. Obtain pertinent information from Departmental Representative.
    - .3 List names and telephone numbers of officials to contact including:
      - .1 General Contractor and all Subcontractors.
      - .2 Federal and Provincial Departments as stipulated by laws and regulations and local emergency resource organizations, as needed based on nature of emergency or accident.

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.3 Officials from PWGSC and site Facility management. Departmental Representative will provide list.

- .3 Part 3b - Site Communications:
- .1 Procedures used on site to share work related safety issues between workers, subcontractors, and General Contractor.
  - .2 List of critical tasks and work activities, to be communicated with the Facility Manager, which has risk of affecting tenant operations, or endangering health and safety of Facility personnel and the general public. Develop list in consultation with the Departmental Representative.
- .4 Prepare Health and Safety Plan in a three column format, addressing the three parts specified above, as follows:

Column 1	Column 2	Column 3
Part 1 Identified Hazards	Part 2 Safety Measures	Part 3a/3b Emergency Response & Site Communications

- .5 Develop Plan in collaboration with subcontractors. Address work activities of all trades. Revise and update Plan as Sub-contractors arrive on site.
- .6 Implement and enforce compliance with requirements of Plan for full duration of work to final completion and demobilization from site.
- .7 As work progresses, review and update Plan. Address additional health risks and safety hazards identified by on-going hazard assessments.
- .8 Post copy of Plan, and updates, on site.
- .9 Submission of the Health and Safety Plan, and updates, to the Departmental Representative is for review and information purposes only. Departmental Representative's receipt, review and any comments made of the Plan shall not be construed to imply approval in part or in whole of such Plan by Departmental Representative and shall not be interpreted as a warranty of being complete and accurate or as a confirmation that all health and safety requirements of the Work have been addressed and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of any of his legal obligations for Occupational Health and Safety provisions specified

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as part of the Work and those required by provincial legislation.

1.12 Safety  
Supervision and  
Inspections

- .1 Designate one person to be present on site at all times, responsible for supervising health and safety of the Work.
  - .1 Person to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health and Safety Act.
- .2 Assign responsibility, obligation and authority to such designated person to stop work as deemed necessary for reasons of health and safety.
- .3 Conduct regularly scheduled informal safety inspections of work site on a minimum bi-weekly basis.
  - .1 Note deficiencies and remedial action taken in a log book or diary.
- .4 Keep inspection reports on site.

1.13 Training

- .1 Ensure that all workers and other persons granted access to site are competently trained and knowledgeable on:
  - .1 Safe use of tools and equipment.
  - .2 How to wear and use personal protective equipment (PPE).
  - .3 Safe work practices and procedures to be followed in carrying out work.
  - .4 Site conditions and minimum safety rules to be observed on site, as given at site orientation session.

1.14 Minimum Site  
Safety Rules

- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements to be obeyed by all persons granted site access:
  - .1 Wear personnel protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.
  - .2 Immediately report unsafe activity or condition at site, near-miss accident, injury and damage.
  - .3 Maintain site in tidy condition.
  - .4 Obey warning signs and safety tags.
- .2 Brief workers on site safety rules and on disciplinary measures to be taken by Departmental Representative

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for violation or non compliance of such rules. Post rules on site.

- .3 The following actions or conduct by Contractor, workers and subcontractors will be considered as non conformance with the health and safety requirements of the contract for which a Non-Compliance Notification will be issued to the General Contractor by the Departmental Representative:
  - .1 Failure to follow the minimum site safety rules specified above.
  - .2 Negligence resulting in serious injury or major property damage.
  - .3 Deliberate non-compliance with Federal and Provincial Acts and Regulations.
  - .4 Falsification of information in Workers Compensation Reports, safety reports and other health and safety related documents submitted to Departmental Representative or to Authority having jurisdiction.
  - .5 Possession of firearms on site.
  - .6 Possession of non-prescriptive illegal drugs or alcohol.
  - .7 Action, or lack thereof, resulting in the issuance of Warnings, Fines or Stop Work Orders from a Provincial Authority having jurisdiction.
  - .8 Violation of other specified health and safety rules and requirements as determined by Departmental Representative.
- .4 See elsewhere in this section for details on Non-Compliance Notifications and resulting disciplinary measures.

### 1.15 Accident Reporting

- .1 Investigate and report the following incidents and accidents:
  - .1 Those as required by Provincial Occupational Health and Safety Act and Regulations.
  - .2 Injury requiring medical aid as defined in the Canadian Dictionary of Safety Terms-1987, published by the Canadian Society of Safety Engineers (C.S.S.E) as follows:
    - .1 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
    - .2 Property damage in excess of \$5000.00,
    - .3 Interruption to Facility operations with potential loss to a Federal Dept. in excess of \$5000.00,
    - .4 Those which require notification to

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Workers Compensation Board or other regulatory agencies as stipulated by applicable law or regulations.

.2 Send written report to Departmental Representative for all above cases.

1.16 Tools and  
Equipment Safety

.1 Routinely check and maintain tools, equipment and machinery for safe operation.

.2 Conduct checks as part of site safety inspections. When requested, submit proof that checks and maintenance have been carried out.

.3 Tag and immediately remove from site items found faulty or defective.

1.17 Hazardous  
Products

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).

.2 Keep MSDS data sheets for all products delivered to site. Post on site. Submit copy to Departmental Representative upon receipt.

1.18 Confined  
Spaces

.1 Carry out work in confined spaces in compliance with:  
.1 Provincial Occupational Health and Safety Regulations and;  
.2 Canada Occupational Safety and Health Regulations (COSH) made under the Canada Labour Code - Part II.

.2 Conduct hazard assessment and address in Safety Plan before entering confined space.

1.19 Posting of  
Documents

.1 Post on site safety documentation as stipulated by Authorities having jurisdiction and as specified herein. Place in a common visible location.

1.20 Site Records

.1 Maintain on site a copy of all health and safety documentation and reports specified to be produced as

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- part of the work and received from authorities having jurisdiction.
- .2 Upon request, make available to Departmental Representative and to other authorized safety representative for review. Provide copy when directed by Departmental Representative.
- 1.21 Non Compliance and Disciplinary Measures
- .1 Immediately address and correct health and safety violations and non-compliance issues.
- .2 Negligence or failure to follow occupational health and safety provisions specified in the Contract Documents and of those of applicable federal and provincial laws and regulations could result in disciplinary measures taken by the Departmental Representative against the General Contractor.
- .3 PWGSC uses a system of Non-Compliance Notifications and Disciplinary Measures on projects as follows:
- .1 A non-compliance notification will be issued to the General Contractor, by the Departmental Representative, whenever there is a violation or failure to follow any of the project's occupational health and safety requirements by a worker, subcontractor or any other person to whom the Contractor has granted access to the work site.
- .2 Non-Compliance notifications are progressive in nature resulting in increased disciplinary measures imposed depending on the frequency, nature and severity of the infraction.
- .3 Disciplinary measures could include:
- .1 Removal of the offending person or party from site;
- .2 Financial penalties in the form of progress payment reduction or holdback assessments made against the Contract and;
- .3 Taking the Work Out of Contractor's Hands in accordance with the General Conditions.
- .4 Departmental Representative will make final decision as to what constitutes a violation and when to issue a Non-Compliance Notification.
- .5 Non-compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders and fines levied against Contractor by a regulatory agency having jurisdiction.
- .6 Details of the Non-Compliance Notification and Disciplinary Measures system will be provided by Departmental Representative upon acceptance of bid and

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- prior to commencement of work.
- .7 Further details on the disciplinary system will be provided at the pre-construction Health and Safety meeting.
  - .8 Be responsible to fully brief workers and subcontractors on the operation and importance of this system.

- 1. Fires .1 Fires and burning of rubbish on site shall not be permitted.
  
- 2. 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, paint thinner or herbicides into waterways, storm or sanitary sewers or onto the ground.  
.3 The Contractor shall be fully responsible for safe disposal off the site in an environmentally acceptable manner and in accordance with all applicable regulations.
  
- 3. Drainage .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.  
.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.  
.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
  
- 4. Pollution Control .1 Maintain temporary erosion and pollution control features installed under this contract.  
.2 Control emissions from equipment to local authorities emission requirements.  
.3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.  
.4 Clean up and remove all blown, excavated or imported material, material packaging, general equipment maintenance containers, general working debris, etc., to the designated dump site from the site daily.
  
- 5. Environmental Assessment .1 A Basic Impact Analysis has been carried out and is attached to this specification. The Contractor should be aware of and prepared to conform to the mitigation measures outlined in the document.

\*\*\*\*\*END\*\*\*\*\*



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## Quality Control

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### PART 1 - GENERAL

- 1.1 Related Sections .1 Section 01 33 00 Submittal Procedures
- 1.2 Inspection .1 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .2 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.
- .3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed.
- .4 Pay costs to uncover and make good work disturbed by inspections and tests.
- 1.3 Testing .1 Tests on materials, as specified in various sections of the Specifications is the responsibility of the Department except where stipulated otherwise.
- 1.5 Access to Work .1 Facilitate Departmental Representative's access to Work. If part of Work is being fabricated at locations other than construction site, make preparations to allow access to such Work whenever it is in progress.
- .2 Furnish labour and facility to provide access to the work being inspected and tested.
- .3 Co-operate to facilitate such inspections and tests.
- 1.6 Rejected Work .1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.
- .2 Make good damages to new construction and finishes resulting from removal or replacement of defective work.

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## Temporary Facilities

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1. Access
- .1 Provide and maintain adequate access to project site.
  - .2 Build and maintain temporary roads when approved or directed.
  - .3 Use existing roads/paths for access to project site, storage areas or work areas, maintain such roads/paths for duration of contract and make good damage resulting from Contractor's use of roads/paths to Owner's satisfaction.
  - .4 Contractor shall accommodate and permit authorized Public Works (PWGSC)/Parks Canada (PC) employees and the Departmental Representative on the site.
2. Contractor's Site Office
- .1 N/A
3. Storage Sheds
- .1 Provide adequate weathertight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.
4. Sanitary Facilities
- .1 The Contractor shall 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.
5. Water Supply
- .1 Arrange, pay for and maintain temporary potable water supply in accordance with governing regulations and ordinances.
6. Power
- .1 Arrange, pay for and maintain temporary electrical power supply as required in accordance with governing regulations and ordinances.
7. Signs and Notices
- .1 Signs and notices for safety or instruction to be in English and French languages, or commonly understood graphic symbols.

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- .2 Supply all labour, materials and equipment as required to install the furnished signs.
  
- 8. Scaffolding
  - .1 N/A
  
- 9. Removal of Temporary Facilities
  - .1 Remove temporary facilities from site when directed by the Departmental Representative.
  
  - .2 If project is closed down at end of construction season keep temporary facilities operational until close down or removal is approved by the Departmental Representative.

\*\*\*\*\*END\*\*\*\*\*

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1. General

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by the Departmental Representative, 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 Provide material and equipment of specified design and quality , performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified.

2. Manufacturer's Instructions

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 Notify the Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. The Departmental Representative will designate which document is to be followed.

3. Delivery and Storage

- .1 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.
- .2 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.
- .3 Store material and equipment in accordance with supplier's instructions.
- .4 Touch-up damaged factory finished surfaces to the Owners satisfaction. Use primer or enamel to match original. Do not paint over name plates.

4. Substitution

- .1 Proposals for substitution may be made in accordance with Instructions To Tenders, Item 7, standard PWGSC documents. Such requests must include statements of respective costs of items originally specified and proposed substitutions.
- .2 Proposals will be considered by the Departmental Representative if:
  - .1 Products selected by tenderer from those specified, are not available, or
  - .2 Delivery date of products selected from those specified would unduly delay completion of Contract, or
  - .3 Alternative products to those specified, which are brought to attention of and considered by the Departmental Representative as equivalent to those specified and will result in credit to Contract amount.
- .3 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.
- .4 Amounts of all credits arising from approval of substitutions will be determined by the Departmental Representative and Contract price will be reduced accordingly. No substitutions will be permitted without prior written approval of the Departmental Representative.

5. Construction  
Equipment and Plant

- .1 On request, prove to the satisfaction of the Departmental Representative 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.

- 1. General
  - .1 Conduct cleaning and disposal operations to comply with local ordinances and antipollution laws.
  - .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
  - .3 Provide adequate ventilation during use of volatile or noxious substances.
- 2. Materials
  - .1 Use only cleaning materials recommended by manufacturer for surface to be cleaned, and as recommended by cleaning material manufacturer.
- 3. Cleaning During Construction
  - .1 Provide on site, dump containers for collection of waste materials, and debris.
  - .2 Dispose of waste materials, and debris legally off site. No on site disposal is permitted.
  - .3 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet surfaces nor contaminate building systems or be hazardous to the public visiting the site.
- 4. Final Cleaning
  - .1 Broom clean stone, concrete, top of walls and other hard surfaces.
  - .2 Rake clean other surfaces of the grounds, ramparts, etc.
  - .3 Dispose of all debris, legally, off the site.

PART 1 – GENERAL

- 1.1 Description of Work
- .1 The work of this section includes the removal and disposal of the existing Kiosk at the Citadel Entrance; removal of the associated retaining walls and slab, fence sections, guardrail sections and posts, existing surfacing and site furniture, flag pole, light poles and signs.
  - .2 Remove and retain for re-use the bench, garbage cans, interpretive signage and traffic signage, light poles and lights.
  - .3 Select the best sections of removed guardrail ( in consultation with the Departmental Representative) to be salvaged and reused on the new edge alignment.
  - .3 All normal removals as required to complete the work.
- 1.2 Protection
- .1 Prevent movement, settlement or damage of adjacent Parks Canada structures. In event of damage, immediately inform Departmental Representative of such items and make repairs at no additional cost to project.
  - .2 Prevent debris from gathering on work site.
  - .3 All damage to existing structures, not specified for removal to be repaired at the Contractor’s cost to the satisfaction of the Departmental Representative.

PART 2 – PRODUCTS Not applicable.

PART 3 – EXECUTION

- 3.1 Preparation
- .1 Inspect site and verify with Departmental Representative items designated for removal and items to be preserved prior to undertaking the work.
  - .2 Locate and protect existing structures near project
  - .3 Provide portable power for project as required by normal construction.
  - .4 All repairs of damage as a result of Contractor’s operations to be at their cost and to the satisfaction of the Departmental Representative.

- 3.2 Removal
- .1 Remove items indicated and using methods described on drawings.
  - .2 At end of each day's work, leave work in safe condition.
- 3.3 Disposal of Material
1. Disposal of materials not designated for salvage or re-use in work, will be the Contractor's responsibility, and must be disposed of off-site.
  2. The material to be disposed is to be transported and disposed of in an environmentally acceptable manner to the satisfaction of the Departmental Representative, and in accordance with any local, Municipal, Provincial and Federal restrictions and regulations.
- 3.4 Restoration
1. Upon completion of work, remove debris, trim surfaces and leave work site clean.



### PART 1 – GENERAL

- 1.1. Related Sections .1 Section 31 23 20 – Excavating, Trenching and Backfilling.
- 1.2 References .1 Canadian Standards Association (CSA)  
.1 CSA C22.2 No. 211-1-(M1984), Rigid types EB1 and DB2/ES2  
PVC Conduit.

### PART 2 – PRODUCTS

- 2.1 PVC Conduits and fittings .1 Rigid PVC conduit to CSA C22.2 No. 211.1, with moulded fittings for concrete encasement and direct burial installations.  
.2 Rigid PVC bends, couplings, reducers, bell end and fittings, plugs, Cups, adapters same product material as conduit, to make complete installation.  
.3 Rigid PVC 90 and 45 bends.  
.4 Rigid PVC 5 angle couplings.  
.5 Expansion joints as required.  
.6 Provide nylon pull cords in all conduits.
- 2.2 Solvent Weld Compound 1. Solvent cement for PVC conduit joints.
- 2.3 Markers 1. Under Ground Cable Markers: as indicated, with words similar to “Under Ground Electrical Cable(s)”.

### PART 3 – EXECUTION

- 3.1 Installation .1 Install conduit in accordance with manufacturer’s instructions.  
.2 Clean inside of conduits before laying.  
.3 Ensure full, even support throughout conduit length.  
.4 Slope conduits with 1 to 16” minimum slope.  
.5 During construction, cap ends of conduits to prevent entrance of foreign materials.  
.6 Clean inside of conduits and provide pull wires.  
.7 Install markers as required.

PART 1 – GENERAL

1.1 References

- .1 American Society for Testing and Materials.
  - .1 ASTM C 117-95, Test for Material Finer than (No.200) Sieve in Mineral Aggregates by Washing.
  - .2 ASTM C 136-96a. Method for Sieve Analysis of Fine and Course Aggregates.
  - .3 ASTM C 698-98, Test Method for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Oxides ((U,Pu)O<sub>2</sub>).
  - .4 ASTM c902-99B, Specifications for Pedestrian and Light Traffic Paving Brick.
  - .5 ASTM D 698-9 1 (1998), Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m<sup>3</sup>).
  - .6 ASTM E 11-95, Specifications for Wire-Cloth Sieves for Testing Purposes.
- .2 Canadian General Standards Board
  - .1 CAN/CGSB-8.1-88. Sieves, Testing, Woven Wire, Inch Series.
  - .2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association
  - .1 CSA A23.1/A23.2-94, Concrete Materials and Methods of Construction, Section 5.3.2.
  - .2 CSA A179-94, Mortar and Grout for Unit Masonry.
  - .3 CSA-A23 1.1-99, Precast Concrete Paving Slabs.

1.2 Product Data

- .1 Submit following test data:
  - .1 Sieve analysis for graduation of bedding and joint material.
  - .2 Unit paver test data.

1.3 Samples

- .1 Submit samples as requested.

1.4 Protection

- .1 Prevent damage to building landscaping, sidewalks, trees, fences and adjacent property. Make good any damage.

PART 2 – PRODUCTS

2.1 Materials

- .1 Unit pavers: Shaw Brick Regular Cobblestone, Natural Charcoal

- .2 Granular base: Refer to Section 31 05 17.
- .3 Manufactured sand for bedding: hard, durable, crushed stone particles, conforming to the gradation of concrete sand as recommended by manufacturer of unit pavers.
- .4 Joint sand to CSA A179, hard, durable, crushed stone particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.

### PART 3 EXECUTION

#### 3.1 Subgrade

- .1 Ensure that subgrade preparation conforms to levels and compaction required to allow for installation of granular base.

#### 3.2 Granular Base

- .1 Compact base to a density of not less than 100% Standard Density in accordance with ASTM D698.
- .2 Shape and roll alternately to obtain a smooth, even and uniformly compacted granular base and ensure conformity of grades with finish surface.
- .3 Apply water as necessary during compaction to obtain specified density. If granular base is excessively moist, remove it and install more granular material to rid it of sponginess.
- .4 The areas not accessible to rolling equipment, compact to specified density with approved mechanical tampers.
- .5 Ensure top of granular base does not exceed plus or minus 10 mm over a 3 m straightedge.

#### 3.3 Bedding Sand

- .1 Place and spread bedding sand to 25 mm compacted Thickness.
- .2 Maximum thickness after compaction 25 mm.

3.4 Surface Course

- .3 Use material other than bedding sand to compensate for depressions that exceed specified tolerances in surface of base.
- .4 Do not use joint sand for bedding sand.
- .1 Ensure bedding sand and granular base are not saturated prior to placement of unit pavers.
- .2 Install unit paving true to grade and free of movement on the bedding sand, in location, layout and pattern indicated.
- .3 Where required, cut units accurately without damaging edges.
- .4 Do not pre-compact bedding sand prior to setting paving units.
- .5 Install unit paving with 3 mm wide joints.
- .6 Compact and level paver's with min. 22 KN force mechanical plate vibrator. Use minimum 19 mm thick plywood or neoprene pad under plate compactor and over pavers units.
- .7 Fill spaces between pavers by sweeping in sand.
- .8 Pass mechanical plate vibrator over unit paving to achieve compaction of sand in joints. Ensure joints are full at completion of compaction.
- .9 At the completion of each work day, ensure all work of laying face is left with sand filled joints.
- .10 Surface of finished pavement: free from depressions exceeding 5mm as measured with 3 m straight edge.
- .11 Sweep surface clean and check final elevations for conformance to drawings.

## **PART 1 - GENERAL**

### 1.1 Description

The work of this section includes but is not necessarily limited to the supply of all materials, labour and equipment for placement of formwork for all slabs, curbs, etc. and all other concrete work, as indicated on the drawings. The contractor is responsible to ensure all formwork is located in accordance with the drawings and is securely supported as required.

### 1.2 Related Work

- |    |                        |                  |
|----|------------------------|------------------|
| .1 | Concrete Reinforcement | Section 03 30 10 |
| .2 | Cast-in-Place Concrete | Section 03 30 0  |

### 1.3 Reference Standards

- |    |  |
|----|--|
| .1 | Do concrete formwork in accordance with CAN3-A23.1-LATEST, except where specified otherwise. |
|----|--|

## **PART 2 – PRODUCTS**

### 2.1 Materials

- |    |  |    |  |    |  |
|----|--|----|--|----|--|
| .1 | Formwork lumber: wood formwork materials to CAN3-A23.1-LATEST, To produce authentic finish appearance approved by the Departmental Representative.   |    |  |    |  |
| .2 | Falsework materials: to CSA S269.1-LATEST  |    |  |    |  |
| .3 | Form stripping agent: colourless mineral oil, free of kerosene, with viscosity between 70 and 100 s Saybolt Universal at 100°F, flashpoint minimum 300°F, open cup.                          |    |  |    |  |
| .4 | Form ties: removable or snap-off metal ties, fixed or adjustable length, free of devices leaving depressions larger than 25mm diameter in concrete surface.                                  |    |  |    |  |
| .5 | Form liner:<br><table><tr><td>.1</td><td>Plywood: Douglas Fir to CSA 0141-LATEST.</td></tr><tr><td>.2</td><td>No plywood to be used against concrete (where it will show).</td></tr></table> | .1 | Plywood: Douglas Fir to CSA 0141-LATEST. | .2 | No plywood to be used against concrete (where it will show). |
| .1 | Plywood: Douglas Fir to CSA 0141-LATEST.   |    |  |    |  |
| .2 | No plywood to be used against concrete (where it will show).   |    |  |    |  |

### **PART 3 – EXECUTION**

#### **3.1 Erection**

- .1 Verify lines, levels with the Departmental Representative before proceeding with formwork and ensure dimensions agree with drawings.
- .2 Construct forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN3-A23.1-LATEST.
- .3 Obtain the Departmental Representative's approval for use of earth forms.
- .4 Hand-trim sides and bottoms and remove loose earth from forms before placing concrete.
- .5 Align form joints and make watertight. Keep form joints to minimum.
- .6 Form chases, slots, openings, drips, recesses, expansion and control joints, etc. as indicated.
- .7 Clean formwork in accordance with CAN3-A23.1-LATEST before placing concrete.
- .8 Leave formwork in place for following minimum periods of time after placing concrete.
  - .1 7 days for walls, retaining walls and sides of beams.
  - .2 7 days for beam soffits, slabs, decks and other structural members.
  - .3 7 days for footings and pedestals.
- .9 Re-use formwork and falsework subject to requirements of CAN3-A23.1-LATEST.

**PART 1 - GENERAL****1.1 Description**

Provision of all labour, material and equipment necessary for supply and placement of concrete reinforcement as shown on the drawings. Work to include but not necessarily be limited to the following:

- .1 Detailing, including provision of shop drawings to Owner for review.
- .2 Supply, fabrication and placement of concrete reinforcement according to drawings.
- .3 Supply of all ties, reinforcement chairs, etc. as required to secure reinforcement in proper location.

**1.2 Related Work**

- .1 Concrete Formwork Section 03 10 10
- .2 Cast-in-Place Concrete Section 03 30 10

**1.3 Reference Standards**

- .1 Do reinforcing work in accordance with CAN3-A23.1-Latest.

**1.4 Source Quality Control**

- .1 Provide the Departmental Representative with a certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 3 weeks prior to commencing reinforcing work.
- .2 Inform the Departmental Representative of proposed source of material to be supplied.

**1.5 Shop Drawings**

- .1 In accordance with Section 01 33 00

**1.6 Substitutes**

- .1 Substitution of different size bars permitted only upon written approval of the Departmental Representative.

**PART 2 PRODUCTS****2.1 Materials**

- .1 Reinforcing steel; billet steel, grade 400 deformed bars to CSA G30.18-M92 unless indicated otherwise.
- .2 Cold-drawn annealed steel wire ties: to CSA G30.3-M1983.
- .3 Welded steel wire fabric: to CSA G30.5-M1983. Provide in flat sheets only.

- .4 Chairs, bolsters, bar supports, spacers: to CAN3-A23.1-M94.
- .5 Mechanical splices: subject to the approval of the Owner.
- .6 Dowels: smooth steel dowels to ASTM A307, lightly oiled on one end.

## 2.2 Fabrication

- .1 Fabricate reinforcing in accordance with CAN3-A23.1-M94, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.
- .2 Obtain the Departmental Representative's approval for locations of reinforcement splices other than shown on steel placing drawings.
- .3 Ship bundles of bar reinforcement, clearly identified in accordance with bar list.

## **PART 3 – EXECUTION**

### 3.1 Field Bending

- .1 Do not field bend reinforcement except where indicated or authorized by Owner.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits.

### 3.2 Placing Reinforcement

- .1 Place reinforcing steel as indicated on reviewed shop drawings and in accordance with CAN3-A23.1-M94.
- .2 Drill and grout into concrete as indicated.
- .3 Obtain the Departmental Representative's approval of reinforcing steel and position.
- .4 Give the Departmental Representative 48 hours to inspect reinforcing steel and position.
- .5 Field touch-up all damaged epoxy coatings.



PART 1 - GENERAL1.1 Scope

The work of this section includes but is not necessarily limited to the supply of all material, labour and equipment necessary for the supply, placement, finishing and curing of cast-in-place concrete sidewalk, curb sections, slabs, etc.

1.2 Related Work

.1 Concrete Formwork Section 03 10 10

.2 Concrete Reinforcement Section 03 20 10

1.3 Reference Standards

.1 Do concrete work in accordance with CAN3-A23.1-Latest, testing in accordance with CAN3-A23.2-Latest, except where specified otherwise.

1.4 Source

.1 At least 3 days prior to commencing work, inform the Engineer of proposed source of concrete and other materials.

1.5 Certificates

.1 If requested, provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN3-A23.1-Latest.

.2 Provide certification that mix proportions selected will produce concrete of specified quality and yield and that strength will comply with CAN3-A23.1-Latest.

1.6 Quality Control

.1 Submit proposed quality control procedures for the Departmental Representative's approval.

PART 2 – PRODUCTS2.1 Material

.1 Portland cement: Type 10 to CAN3-A5-Latest.

.2 Water: to CAN3-A23.1-Latest.

.3 Aggregates: to CAN3-A23.1-Latest. Coarse aggregates to be normal density.

.4 Air entraining admixture: to CAN-A266.1-Latest

- .5 Premolded joint fillers: Bituminous impregnated fibre board: to ASTM D1751-83 or sponge rubber: to ASTM D1752-84, Type I, flexible grade.

## 2.2 Concrete Mixes

- .1 Proportion normal density concrete in accordance with CAN3-A23.1-Latest, and other applicable standards to give following properties:
  - .1 Use Type 10 Cement.
  - .2 Minimum compressive strength at 28 days: 30 MPa.
  - .3 Minimum cement content: to be determined in accordance with CAN3-A23.1-Latest.
  - .4 Class of exposure: A
  - .5 Nominal size of coarse aggregate: 20 mm.
  - .6 Slump at time and point of discharge: 25 to 75 mm.
  - .7 Air content: 5.0 to 8.0%.
  - .8 Maximum water cement ratio of 0.45.

## PART 3 – EXECUTION

### 3.1 Workmanship

- .1 Obtain the Departmental Representative's approval before placing concrete. Provide 48 hours notice prior to placing of concrete.
- .2 Ensure reinforcement and inserts, are not disturbed during concrete placement.
- .3 Prior to placing of concrete obtain the Departmental Representative's approval of proposed method.
- .4 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, inside and outside air temperature and test samples taken.
- .5 Apply curing compound maximum 1 hr after concrete placing begins or after forms are removed.
- .6 Do not place load upon new concrete until authorized by the Engineer.

.7 In cold weather, protect concrete work to CAN/CSA-A23.1-LATEST and as follows:

.1 Cold weather is defined as a period when the mean air temperature drops below 5 C for more that 3 successive days.

.2 When air temperature is above 0 C and is forecast to remain so for 48 hours after placing, insulated tarps are acceptable protection provided concrete temperatures are monitored and comply with the limits specified in .5 below. Prevent contact between the tarps and the fresh concrete to avoid marking the finished surface.

.3 For all other cold weather conditions, protect concrete with a windproof enclosure that allows free circulation of air around fresh concrete. Enclosure shall provide sufficient clearance to allow finishing operations and stripping of the forms.

.4 If required supply approved heating equipment to maintain temperatures as follows:

.1 Concrete temperature between 10 C and 30 C for the initial 10 days after placing.

.2 Take concrete temperature readings at start and end of each day and keep records.

### 3.2 Inserts, etc

.1 The Contractor shall be responsible to ensure that the concrete work is placed to suit the existing conditions.

### 3.3 Finishing

.1 Finish concrete in accordance with CAN3-A23.1-Latest.

### 3.4 Testing

.1 Inspection and testing may be carried out by a Testing Laboratory designated by the Departmental Representative.

## PART 1 - GENERAL

### 1.1 Scope

- .1 The work of this section includes but is not necessarily limited to supply of all labour, material and equipment necessary for the supply and installation of the following items as indicated on the drawings:
  - .1 New picket fence in the area of the former kiosk to complete the fence closure to the north Sentry Booth.
  - .2 New stainless steel railing on the east side of the new sidewalk adjacent to the Look-off.
  - .3 Bollards on either side of the crosswalk area.
  - .4 Bollards and chain around the perimeter of the new paver area.
  - .5 Reinstallation of miscellaneous signage, site furniture, flag pole base and light bases and poles.

### 1.2 Workmanship

- .1 All metal fabrication to be carried out by qualified personnel and to job specifications.

### 1.3 Shop Drawings

- .1 Submit shop drawings of all items for the Departmental Representative's approval.
- .2 Do not proceed with work until relevant submissions are reviewed and approved by the Departmental Representative.

## PART 2 - PRODUCTS

### 2.1 Materials

- .1 Stainless Steel for Railing:
  - .1 Angles, bar, connections and fittings, brushed stainless steel, low lustre: to ASTM A 276, Type 304. Ensure material appearance matches existing sections.
  - .2 Bolts and Nuts: to ASTM F593, Group 2, Type 304
  - .3 Welding materials: to CSA W59
  - .4 Welding electrodes: to CSA W48 Series.
  - .5 Expansion bolts, and other fasteners securing s.s. railings and posts to concrete, Type 304
- .2 Steel sections and plates: to CAN3-G40.21, Grade 300W.

- .3 Welding materials: to CSA W59.
- .4 Primer: Alkyd primer, Kem Kromik universal metal primer - B50Z series by Sherwin Williams or approved equal.
- .5 Finish paint; two coats gloss alkyd black enamel. Industrial enamel B54Z by Sherwin Williams or approved equal.
- .6 Bollards: Type R-7551 Ductile Iron non-flute by Reliance Foundry or approved equal, colour: black. Chain: 5/16-inch galvanized steel chain, Grade 30, with quick-release type connections. Provide sufficient lengths to provide drape acceptable to Departmental representative. Chain Eye: 5/16-inch diameter steel. Quick Links: Powder coated chain links with barrel nut closures. Finish: Powder coated to match bollard finish.
- .7 All mounting hardware shall be stainless steel or as specified by the various manufacturers (e.g. flag pole anchor bolt insert and bollard mounting hardware)

### 2.2 Fence and Railing Fabrication

- .1 Build work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Fabricate items from steel unless otherwise noted.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure welds are continuous for length of each joint.

### 2.3 Shop Painting of Fencing

- .1 Apply one shop coat of primer to metal items.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7° C.
- .3 Clean surfaces to be field welded; do not paint.

- .4 Supply ready to install fence sections to site complete with two coats of specified finish paint.

### PART 3 - EXECUTION

#### 3.1 New Fencing at former Kiosk

- .1 Erect work square, plumb, straight, and true, accurately fitted, with tight joints and intersections. Adjust standard panel dimensions as required to fill in the gap left by the existing Kiosk. Submit layout drawing prior to fabrication.
- .2 Concrete post footings to extend minimum 1200 below grade. Use 200 mm sono-tubes or approved equal bedded in minimum 150 surround of Type 1 granular fill.
- .3 Make field connections with bolts or weld in accordance with reviewed shop drawings.
- .4 Provide items for casting into concrete or building into masonry complete with setting templates to appropriate trades.
- .5 Touch-up field welds, bolts and burnt or scratched surfaces after completion of erection with primer and two finish coats.

#### 3.2 Replacement Fencing (Provisional)

- .1 Requirements as outlined in 3.1 except that for replacement fence sections the work shall include the complete removal and disposal (including concrete footings) of the existing fence in the sections designated by the Departmental Representative.
- .2 Provide specialized hardware as required to connect to existing fence at the limits of replacement designated on site.

#### 3.3 Signage

- .1 Supply and install new concrete bases and posts to match original for all traffic signage salvaged during removals. Locations for signage to be provided by the Departmental Representative.
- .2 Supply and install new concrete bases to match original for the tri-corner Parks Canada sign.

- .3 The HSMBC plaque may be bolted directly to the sidewalk in a location chosen by Parks Canada.

3.4 Flag Pole

- .1 Supply and place a new concrete foundation and Type 1 backfill to match the original removed foundation.
- .2 Parks Canada will supply the anchor bolt insert and pole.

3.5 Bench and Garbage can

- .1 To be reinstalled in the location indicated or as directed on site.

3.6 Stainless Steel Railing

- .1 Use welding methods and materials approved for use when working with Type 304 Stainless steel.
- .2 Build work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .3 Ensure exposed welds are continuous for length of each joint. File or grind off burrs or other irregularities to achieve uniform, smooth and flush surfaces.
- .4 Following acceptance or installed work, clean all stainless steel railing surfaces using an approved stainless steel cleaner/polish.
- .5 All hardware to be stainless steel as indicated on the drawings.

3.7 Bollards

- .1 General: Comply with manufacturer's installation instructions and setting drawings.
- .2 Damaged, cracked, chipped, deformed or marred bollards are not acceptable.
- .3 Field touch-up minor imperfections in accordance with manufacturer's instructions.
- .4 Protect bollards against damage.
- .5 Immediately prior to Substantial Completion, clean bollards in accordance with manufacturer's instructions to remove dust, dirt, adhesives, and other foreign materials.
- .6 Touch up damaged finishes according to manufacturer's instructions.

3.8 Light Bases

- .1 Provide new concrete bases integrating the new conduit terminations and reinstall the salvaged poles and lights. Bases to be 300 dia. by 1200 deep concrete finished 50 above grade with new no visible formwork above grade. Bed and backfill in Type 1 gravel.

\*\*\*\*\*END\*\*\*\*\*

PART 1 – GENERAL

- 1.1 Work Included .1 This section covers items required for the construction of the new Kiosk.
- Note:** The intent is to provide a weathertight finished exterior Kiosk c/w doors, windows and interior conduit terminations for electrical and communications ( with pull wires). Parks Canada will be responsible for electrical and communication equipment installation, interior finishes, door hardware and exterior painting.
- 1.2 Related Work .1 Cast-In-Place Concrete Section 03 30 00
- 1.3 Workmanship .1 Competent workmen shall be equipped with all tools and equipment necessary to adequately carry out the work in a traditional manner.
- .2 Contractor must maintain full-time supervisor/foreman on the job during times work is in progress.
- 1.4 References .1 National Building Code of Canada (NBC) latest edition.
- .2 National Lumber Grades Authority (NLGA).
- .1 Standard Grading Rules for Canadian Lumber, current edition.
- .3 Gypsum Board to CAN/CSA –A82.27-M91.
- .4 Furring to ASTM C754-99A.
- 1.5 Quality Assurance .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- 1.6 Samples .1 Submit samples as requested.
- 1.7 Coordination of Work .1 Connections into existing equipment or systems to be made at time approved by Departmental Representative.



PART 2 – PRODUCTS

- 2.1 Materials
- .1 Concrete : refer to:  
Section 03 30 00 – Cast-in-place Concrete.
  - .2 Dimension lumber : species: spruce – pine – fir (SPF), Smooth four sides (S4S), moisture content 19% or less in accordance:
    - .1 CSA O141-91
    - .2 National Lumber grades Authority (NLGA)  
Standard Grading Rules for Canadian Lumber, latest Edition.
  - .3 Framing and Board Lumber in accordance with NBC latest Subsection 9.3.2. except as follows:
    - .1 Top and bottom wall plates. SPF, No. 2 Grade or better.
    - .2 Studs, lintels, joists, rafters, beams, ridge boards, collar ties;  
SPF , No. 2 Grade or better.
    - .3 Miscellaneous blocking, strapping and furring: SPF, No.2 Grade or better.
  - .4 Siding and corner boards: C&D Select pine; bevelled siding with 100 finished exposure.
  - .5 Windows and Doors:
    - .1 Transaction windows: 275 Series Access Window by Ready Access or equal.
    - .2 Fixed windows: Aluminium frame, tempered glass, size as indicated.
    - .3 Door: D Series solid door and F Series steel frame by Fleming or equal, 16 ga., polystyrene core .
    - .4 Door Hardware supplied and installed by Owner.
  - .6 Roofing: Atlantic Rib 26 gauge metal roofing, 806 ridge cap, 810 hip cap, 809 eave starter by Scotia Metal Products Ltd. or equal. Colour selected by Departmental Representative, submit samples as requested. Black aluminium fascia and white aluminium vented soffit.
  - .7 Gutters and downspouts: 125 wide half round aluminium gutter and 100 dia. round aluminium downspouts. Colour black.
  - .8 Miscellaneous:
    - .1 Building wrap and tape shall be Tyvex Homewrap system or approved equivalent
    - .2 Nails, spikes and staples: to CSA B111, of galvanized steel,

sufficient length to penetrate 19 mm into sheathing.

- .3 Exterior caulking shall be Dymonic by Tremco or approved equal.
- .4 “Cedar Breather” nylon webbing

### PART 3 EXECUTION

#### 3.1 Carpentry

- .1 Frame new kiosk walls on the slab using 38 x 140 framing lumber in accordance with NBCC to produce finished dimensions indicated on the drawings.
- .2 Provide prefab trusses or on site framing for the roof. Submit roof framing plan for approval prior to ordering and/or installing the framing.
- .3 Sheath the walls and roof with 12.5 spruce plywood.
- .4 Install building wrap, strapping at 300 c to c, corner boards and fascia.
- .5 Install windows and doors followed by pine siding. Use oval headed galvanized siding nails driven flush.
- .6 Leave 5 mm gaps at corner boards and door and window frames. Seal all gaps with specified caulking.
- .7 Install Cedar Breather and insect screen at the top and bottom of the siding to seal the gap between strapping while maintaining air movement.

#### 3.3 Doors and Windows

- .1 Install doors and frames to CSDFMA Installation Guide.
- .2 Install windows in accordance with manufacturer’s specifications.

#### 3.4 Painting

- .1 Exterior painting to be completed by Parks Canada. This may include coordination with another contractor.

#### 3.5 Miscellaneous

- .1 Provide all other miscellaneous work required to complete the Kiosk as intended in this contract.
- .2 Dispose of all excess materials in accordance with Section 01 35 44, Environmental Protection.

PART 1 - GENERAL

1.1 Source Approval

- .1 Inform the Departmental Representative of proposed source of aggregates and provide access for sampling at least 4 weeks prior to commencing production.
- .2 If, in opinion of the Departmental Representative materials from the proposed source do not meet, or cannot reasonably be processed to meet specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .3 Should a change of material source be proposed during work, advise the Departmental Representative four weeks in advance of proposed change to allow sampling and testing.
- .4 Acceptance of a material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

1.2 Production  
Sampling

- .1 Provide the Departmental Representative with a gradation curve of proposed aggregate. Contractor to be responsible for cost of initial gradation curve.
- .2 Aggregate will be subject to continual sampling by the Departmental Representative during production.
- .3 Provide the Departmental Representative with ready access to source and processed material for purpose of sampling and testing.
- .4 Contractor to bear the cost of sampling and testing of aggregates which fail to meet specified requirements.

## PART 2 - PRODUCTS

### 2.1 Materials

- .1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material or other deleterious substances.
- .2 Flat and elongated particles are those whose greatest dimension exceeds five times their least dimensions.
- .3 Fine aggregates satisfying requirements of applicable section shall be one, or a blend of following:
  - .1 Natural sand.
  - .2 Manufactured sand.
  - .3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.
- .4 Coarse aggregates satisfying requirements of applicable section shall be one of or blend of the following:
  - .1 Crushed rock.
  - .2 Gravel and crushed gravel composed of naturally formed particles of stone.
  - .3 Light weight aggregate, including slab and expanded shale.

## PART 3 - EXECUTION

### 3.1 Processing

- .1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
- .2 Blend aggregates if required to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified. Use methods and equipment approved by the Departmental Representative.
- .3 Wash aggregates, if required to meet specifications. Use only equipment approved by the Departmental Representative.
- .4 When operating in stratified deposits use excavation equipment and methods that will produce uniform, homogeneous aggregate.

Front Entrance Redevelopment  
Halifax Citadel

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3.2 Handling

- .1 Handle and transport aggregates to avoid segregation, contamination and degradation.

3.3 Stockpiling

- .1 Stockpile aggregates in sufficient quantities to meet project schedules but so as not to encumber the site.
- .2 Stockpiling sites shall be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.
- .3 Separate different aggregates by substantial dividers or stockpile far enough apart to prevent intermixing.
- .4 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by the Departmental Representative within 48 hours of rejection.
- .5 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.
- .6 Coning of piles or spilling of material over edges of pile will not be permitted.
- .7 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.4 Stockpile Clean Up

- .1 Leave aggregate stockpile site in a tidy, well drained condition, free of standing surface water.
- .2 Leave any unused aggregates in neat compact stockpiles as directed by the Departmental Representative.

## PART 1 - GENERAL

### 1.1 Scope

- .1 Work covered under this section includes but is not necessarily limited to provision of labour, material and equipment necessary to excavate, trench, backfill and compact to allow preparation of the subgrade, installation of catchbasins, conduit, bollards, fencing, etc. as shown on the drawings. Work shall include but not necessarily be limited to:
  - .1 Excavation to remove existing asphalt, sidewalks, pole bases, surface granulars, soil and sod, etc.
  - .2 Backfilling, placement and compaction of granular fill and gravels as required on the drawings and in the specification.
  - .3 Importation of granular fill.
  - .4 Removal of all unsuitable or excess material, and disposal as directed by the Departmental Representative.
  - .5 Fills.
  - .6 All testing of fill material and compaction as identified in specification.
  - .7 All other excavation, trenching and backfilling as required to complete the work indicated or specified to the full satisfaction of the Departmental Representative.

### 1.2 Protection of Existing Features

- .1 Conduct, with the Departmental Representative, condition survey of existing features which are designated for removal and items to remain.
- .2 Prevent movement, settlement or damage to adjacent structures, services, and parts of existing structures to remain. Provide bracing and shoring as required. In event of damage, immediately replace such items or make repairs to approval of the Departmental Representative at Contractor's cost.

- .3 Relics and antiquities and items of historical or scientific interest found on site, shall remain property of Parks Canada. Protect such articles and request directives from the Departmental Representative.
- .4 Give immediate notice to the Departmental Representative if evidence of archaeological finds are encountered during construction, and await his written instructions before proceeding with work in this area.
- .5 An archaeologist, representing Parks Canada, may be present during excavation work. Archaeologist has authority to stop work when excavation uncovers archaeological resources.
- .6 Suspend excavation so that appropriate recording and removal of archaeological resources can be completed. Provide labour assistance as necessary to the archaeologist during removal and recording of archaeological resources. There will be no additional payment to the Contractor as a result of this provision of labour assistance and work suspension.
- .7 Any other aspects of the work that might involve disturbance of existing surfaces, grade, walls, etc. may also be subject to archaeological surveillance.
- .8 Existing buried utilities and structures:
  - .1 Prior to commencing any excavation work, notify the Departmental Representative, establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.
  - .2 Confirm locations of buried utilities by careful test excavations.
  - .3 Maintain and protect from damage utilities and structures encountered. Obtain direction of the Departmental Representative before moving or disturbing utilities or structures.

- .9 Prevent damage to existing structures, vents, foundations, walls, stairs, etc. and any other existing feature to remain.
- .10 Conduct with the Departmental Representative a condition survey of existing structures, features, etc. which may be affected by the work.
- .11 Protect existing surface features which may be affected by work from damage while work is in progress and repair damage resulting from work.
- .12 Make good any damage to approval of the Departmental Representative.

## PART 2 - PRODUCTS

### 2.1 Materials

- .1 Gravels to the minimum requirements of the NSDOT Standard Specifications: clean, hard, durable crushed gravel or stone, free from shale, clay, friable materials, organic matter and other deleterious substances and graded within the following limits when tested to ASTM C136-83 and ASTM C117-80 and giving a smooth curve without sharp breaks when plotted on a semilog chart:

#### .1 Type 1

<u>ASTM Sieve Designation</u> ( $\mu\text{m}$ )	<u>% Passing</u>
28,000	100
14,000	50 - 85
5,000	20 - 50
160	5 - 12
80	3 - 8



.2 Type 2

<u>ASTM Sieve Designation</u> (µm)	<u>% Passing</u>
80,000	100
56,000	70 - 100
28,000	50 - 80
14,000	35 - 65
5,000	20 - 50
160	3 - 10
80	0 - 7

.3 Surge:

<u>ASTM Sieve Designation</u> (µm)	<u>% Passing</u>
112,000	100
14,000	not more than 50
80	not more than 10

Note: used washed “clean” surge in the drainage system free for sand size particles and smaller.

- .2 Site Fill: selected material from excavation or other sources, approved by the Departmental Representative for use intended, unfrozen and free from rocks larger than 150 mm, cinders, ashes, sods, refuse or other deleterious materials.

PART 3 - EXECUTION

3.1 Site Preparation

- .1 Remove obstructions from surfaces to be excavated.
- .2 Strip topsoil from within limits of excavation and stockpile as directed by the Departmental Representative for respreading after backfilling.

3.2 Stockpiling

- .1 Stockpile fill materials on site in approved areas. Reinststate surfaces to original state leaving no evidence of

stockpiling. Stockpile granular materials in manner to prevent segregation.

- .2 Protect fill materials from contamination and from getting wet. Protect material from moisture and do not allow moisture content to increase above optimum which will adversely affect compactability. Work materials during dry weather because wet conditions may result in softening of material.

### 3.3 Dewatering

- .1 Keep excavations free of water while work is in progress.
- .2 Dispose of water in a manner not detrimental to public and private property, or any portion of work completed or under construction and to the Departmental Representative's approval.
- .3 Submit for the Departmental Representative's approval details of proposed dewatering methods.
- .4 Softening of excavated surfaces due to standing water (ground or surface) shall be prevented. Soft spots due to lack of dewatering shall be excavated out and replaced with surge at the Contractor's expense.

### 3.4 Excavation

- .1 Excavate to lines, grades and dimensions as indicated on drawings or agreed on site. Remove soft and unsuitable material and replace with granular fill.
- .2 Dispose of surplus and unsuitable excavated material in approved location as directed by the Departmental Representative.
- .3 Do not obstruct flow of surface drainage or natural watercourses.
- .4 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter. Compact excavated surfaces.
- .5 Notify the Departmental Representative when soil at bottom of excavation appears unsuitable and proceed as directed by the Departmental Representative.

- .6 Obtain the Departmental Representative's approval of completed excavation.
  - .7 Remove unsuitable material from trench bottom to extent and depth directed by the Departmental Representative.
- 3.5 Fill Types and Compaction
- .1 Use fill as specified below. Unless otherwise specified, compact to following densities:
    - .1 All Gravels: 98% standard proctor dry density.
    - .2 Site Fill and Granular Fill: 98% standard proctor dry density.
- 3.6 Backfilling
- .1 Do not proceed with backfilling operations until the Departmental Representative has inspected and approved installations.
  - .2 Areas to be backfilled to be free from debris, snow, ice, water or frozen ground.
  - .3 Do not use backfill material which is frozen or contains ice, snow or debris.
  - .4 Backfilling around installations, manholes, etc.
    - .1 Place material by hand under, around and over drain pipes until 300 mm of cover is provided. Dumping material directly on drain pipes will not be permitted.
  - .5 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
  - .6 Hand tamp clear stone in drainage trenches.
- 3.7 Restoration
- .1 Upon completion of work, remove surplus materials and debris, trim slopes, and correct defects noted by the Departmental Representative.
  - .2 Replace topsoil as directed by the Departmental Representative.

3.8 Surplus Materials

- .3 Clean and reinstate areas affected by work as directed by the Departmental Representative.
- .1 Remove surplus material from site as directed by the Departmental Representative.
- .2 Remove material undesirable for fill, grading or landscaping from site as directed by the Departmental Representative.

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\*\*\*\*\*END\*\*\*\*\*

June 2014

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## PART 1 - GENERAL

### 1.1 Scope

The work of this section includes but is not necessarily limited to the supply of all material, labour and equipment necessary for the supply, placement, finishing of asphalt pavement as indicated on the drawings.

### 1.2 Related Work

- .1 Aggregates: General Section 31 05 17
- .2 Excavating, Trenching and Backfilling Section 31 23 20

### 1.3 Source

- .1 If requested, at least 3 days prior to commencing work, inform the Departmental Representative of proposed source of asphalt.

### 1.4 Protection

- .1 Keep the traffic off newly paved areas until paving surface temperature has cooled below 100 F. Do not permit stationary loads on pavement until 24 hr after placement.

## PART 2 – PRODUCTS

### 2.1 Material

- .1 Asphalt pavement shall comply with the following:
  - .1 Minimum requirements of NSTPW Standard Specification Division 4, Section 4
  - .2 Mix Type C asphalt including mix design, liquid asphalt content, air voids, mixing temperature, Marshall Stability, etc. to NSTPW Standard Specification.
- .2 Line Paint to comply with requirements of Clause 4.1 in Division 6, Section 6 of NSTPW Standard Specification. Colour to match CGSB-GP-12C (white 513-301) or (yellow 505-308)

## PART 3 – EXECUTION

### 3.1 General

- .1 Perform work for supplying, hauling, placing, shaping and compacting of the required Type C asphalt, subgrade, granular base, line painting etc. in accordance with the appropriate sections of the NSTPW Standard Specification.

PART 1 - GENERAL

1.1 Scope

- .1 Work covered under this section includes but is not necessarily limited to provision of labour, material and equipment necessary for final grading and placement of topsoil and finish grading. Work shall include but not necessarily be limited to:
  - .1 provision of suitably conditioned topsoil.
  - .2 grading related to finish surfaces as indicated on the drawings.
  - .3 Other areas as indicated or as required to reinstate disturbed areas.

1.2 Protection

- .1 Prevent damage to bench marks, existing structures, curbs to remain, etc. Make good any damage at Contractor's cost.

1.3 Source of Topsoil

- .1 Topsoil may be obtained from on site. Strip topsoil and stockpile separately prior to excavating or regrading in any areas. Locate stockpiles as directed on site. Cover stockpiles to protect the topsoil from becoming wet.
- .2 Rototill topsoil thoroughly before stripping and remove all rocks debris, etc., larger than 25 mm.
- .3 Off-site source of topsoil approved by the Departmental Representative prior to delivery.

1.4 Scheduling of Work

- .1 Schedule placing of topsoil and finish grading to permit sodding operations under optimum conditions.
- .2 The finished surfaces rely on an established grass surface for erosion protection and stability. It is the Contractor's responsibility to protect the surfaces from becoming saturated and slipping, eroding or from other damage until the interim certificate of completion is issued. Any damage which occurs prior to final acceptance shall be repaired at the Contractor's cost.

## PART 2 - PRODUCTS

### 2.1 Materials

- .1 Fill material: in accordance with Excavation, Trenching and Backfilling.
- .2 Obtain approval of excavated or graded material used as fill for grading work. Protect approved material from contamination or from becoming wet, soft and unsuitable for use in the work.

## PART 3 - EXECUTION

### 3.1 Preparation of Existing Grade

- .1 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage. Remove soil contaminated with toxic materials. Dispose of removed materials as directed by the Departmental Representative.
- .2 Remove surface debris, roots, vegetation, branches and stones in excess of 25 mm diameter.

### 3.2 Grading

- .1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.
- .2 Rough grade to dimensions shown on drawings.
- .3 Compact filled and disturbed areas to 98% Standard Proctor Dry Density.
- .4 Finished grade shall provide positive drainage to catchbasins or other approved areas.

### 3.3 Testing

- .1 Inspection and testing of soil compaction will be carried out by a designated testing laboratory selected by the Departmental Representative.

### 3.4 Surplus Material

- .1 Dispose of surplus material not required as directed by the Departmental Representative.
- .2 Remove materials unsuitable for fill, grading or landscaping from site as directed by the Departmental Representative.

### 3.5 Spreading of

Topsoil/Planting Soil

- .1 Spread topsoil (50 mm min. thickness) after the Departmental Representative has inspected and approved subgrade.
- .2 Spread topsoil with adequate moisture in uniform layers over approved, unfrozen subgrade, where sodding or seeding is indicated.
- .3 For sodded areas keep topsoil below finished grade as indicated.
- .4 Apply topsoil as indicated.
- .5 The Departmental Representative may adjust the thickness of topsoil to be spread depending on the quantity available on site.

3.6 Finish Grading

- .1 Fine grade and loosen topsoil. Eliminate rough spots and low areas to ensure positive drainage.
- .2 Roll to consolidate topsoil for areas to be sodded leaving surface smooth, uniform, firm against deep foot printing, and with a fine loose texture to approval of the Departmental Representative.
- .3 The Contractor shall be fully responsible to grade, regrade as required to ensure that all surfaces are maintained until the 12 month warranty period has expired.

3.7 Restoration of  
Stockpile Sites

- .1 Restore stockpile sites acceptable to the Departmental Representative.

3.8 Sodding

- .1 Sodding shall be in accordance with Section 32 92 23.

3.9 Protection

- .1 Provide tarps etc. as the Contractor deems necessary to protect finished slopes from saturation and failure due to heavy rains. Damaged slopes shall be repaired at the Contractor's cost.



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## PART 1 - GENERAL

### 1.1 Description

This section includes but is not necessarily limited to provision of labour, material, and equipment necessary to sod any areas disturbed by construction activities and return them to original or better condition.

### 1.2 Source Quality

#### Control

- .1 Obtain the Departmental Representative's approval of sod at source.
- .2 When proposed source of sod is approved, use no other source without written authorization.
- .3 Provide written confirmation that sod of the required dimensions and thicknesses will be supplied and used in the work.

### 1.3 Scheduling

- .1 Schedule sod laying to coincide with topsoil operations.
- .2 Schedule all work to take place in optimum weather conditions.

### 1.4 Payment

- .1 There shall be no acceptance of sodded areas until the areas are well established and accepted by the Departmental Representative. All maintenance, repair, etc., required up to final acceptance shall be carried out at the Contractors cost.
- .2 Payment is included on Pay Item No. 1 and holdback may be retained until acceptance.

## PART 2 - PRODUCTS

### 2.1 Materials

- .1 Sod
  - .1 Pasture sod shall be certified #1 cultivated grass sod grown and classified in conformity to standards of the Canadian Sod Growers Association and the Canadian Atlantic Nursery Trades Association and comply with standards outlined in Guide Specifications for Nursery Stock (Section 17) published by the Canadian Nursery Trades Association.
- .2 Cut sod sizes:

- .1 Standard sod: 900 x 450 x 38.
- .2 The sod shall have at least 2 years growth at the time of cutting with strong fibrous roots, no stones or bare spots. Sods shall be cut to a uniform thickness.
- .3 Wooden pegs: 50 x 12 x 600 long.
- .4 Water: free of impurities that could inhibit germination and growth.
- .5 Fertilizer: fertilizer shall be commercial, synthetic, slow release type.

### PART 3 - EXECUTION

#### 3.1 Procedure

- .1 General: Areas indicated on the drawings shall be sodded.
- .2 Sodding
  - .1 Obtain the Departmental Representative's approval of sod at source.
  - .2 Schedule deliveries of sod such that storage at the job site is kept to a minimum. Sods shall be delivered, unloaded and stored on pallets.  
Deliver sod to site within 24 hours of being lifted and lay sod within 36 hours of being lifted. Do not deliver small, irregular or broken pieces of sod.  
During wet weather, allow sod to dry sufficiently to prevent tearing during lifting and handling. During dry weather, protect sod from drying and water sod as necessary to insure its vitality and prevent dropping of soil in handling. Sod which dries out will be rejected. Schedule sod laying to coincide with topsoil operations.
  - .3 Obtain the Departmental Representative's approval of topsoil grade and depth before starting sodding. Minimum topsoil thickness shall be 50 mm.
  - .4 Place sod during growing season. Sodding during freezing temperatures, or over frozen soil is not acceptable.
  - .5 Lay sod sections at right angles to slopes and secure with wooden pegs. Place pegs to prevent shifting of soil, drive pegs flush with top of sod soil.
  - .6 Butt new sod flush against existing along a well defined neatly cut line.
  - .7 Provide close contact between sod and soil by means of light roller. Heavy rolling to correct irregularities in grade is not permitted.

- .8 Water immediately after sod laying to obtain moisture penetration through sod into top 50 mm of top soil.
- .9 On slopes steeper than 3:1 secure sod with wooden pegs. Place pegs to prevent shifting sod and drive pegs flush with top of sod. Number and spacing of pegs to be determined by the Contractor. Pegs must be sufficient to secure all sods in place, without open joints, until they have rooted and are accepted.
- .10 Provide adequate protection of sodded areas against erosion and mechanical damage. Remove protection after sod areas have been accepted. Assume full responsibility for condition of sodded areas until the warranty period has expired. Repair defective sod and slopes as required at Contractor's expense.
- .11 Provide erosion protection as required.
- .12 Cut grass first time when it reaches height of 50 mm. Remove clippings that could smother grassed areas. At no time shall the grass be allowed to reach a height greater than 150 mm.
- .13 Fertilize areas one month after sodding. Spread evenly and water well. Postpone fertilizing until next spring if application falls within four week period to accepted end of growth season in locality.

### 3.2 Acceptance

- .1 Sodded areas will be accepted at final inspection provided that:
  - .1 Areas are properly established at required grades free of low spots, rutting, eroding, gulleys, etc.
  - .2 Areas are free of bare or dead spots, and weeds.
  - .3 No surface soil is visible when grass has been cut to height of 50 mm.
  - .4 Areas have been cut at least twice.
  - .5 Areas have been fertilized.
  - .6 Areas completed in Fall will be accepted the following Spring, one month after start of growing season provided acceptance conditions are fulfilled.
  - .7 Payment for sodded areas shall only be made following acceptance by the Departmental Representative.

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## PART 1 - GENERAL

### 1.1 Description

This section specifies requirements for supplying and installing catchbasins and connecting drainage pipe, provision of all bedding material and backfill, etc. As required to complete the drainage features as indicated on the drawings as follows:

1. Three new catchbasins and covers.
2. Mainline perforated pipe bedded and backfilled in clean surge.
3. Three 150 dia. PVC outlet pipes to 2 outfall locations on the adjacent slope and one connection to an existing 100 dia. subdrain adjacent to the asphalt path.
4. A 150 dia. branch pipe from the northwest corner of the Kiosk to Catchbasin No. 1.

The intent of this system is to provide limited underground storage in the mainline which can eventually drain through the surge into the surrounding soil. The central outlet (connected to the existing subdrain) will be set to start discharging when the water level in the system is above the top of the mainline. The two secondary outlets will start discharging to grade when the water level is above the central outlet.

### 1.2 Related Work

- .1 Excavating, Trenching and Backfilling Section 31 23 20

## PART 2 - PRODUCTS

### 2.1 Plastic Pipe and Fittings

- .1 Type PSM Polyvinyl Chloride: to ASTM D3034-Latest:
  - .1 SDR: 28
  - .2 Separate gasket in integral bell system.
- .2 625 dia. Big 'O' perforated pipe or equal for main connections between catchbasins

### 2.2 Precast Concrete Sections

- .1 Standard sections in sizes indicated by L.E. Shaw Limited or approved equal.

### 2.3 Catchbasin Covers

- .1 IMP S441 or approved equal.

2.4 Geotextile .1 Terrafix 600R or approved equal.

PART 3 - EXECUTION

3.1 Installation .1 Do trenching and backfilling in accordance with Section 31 23 20.

.2 Trench line and depth require approval prior to placing bedding material and pipe.

.3 Place granular bedding, cover and backfill materials as indicated.

.4 Position and join pipes in accordance with manufacturers recommendations.

3.2 Handling .1 Handle and transport pipes and precast section by approved methods and ensure no damage occurs.

3.3 Reinstatement .1 After pipe is installed, bedded and hydrostatically tested, reinstate all disturbed surfaces.



# Basic Impact Analysis (BIA)

## Halifax Citadel Arrival Area Redevelopment



Halifax Defense Complex

August 2014



Cover photo by Mark Garnett: Depicts the existing kiosk that will be dismantled and a replaced with a new, larger kiosk.



1. **PROJECT TITLE:** Halifax Citadel Arrival Area Redevelopment
2. **PROJECT LOCATION:** Front gate and kiosk, including roadway to Kiosk, Halifax Citadel
3. **PROJECT SITE(S):** Halifax Citadel
4. **PROPONENT:** Mark Garnett, Asset Manager, MNSFU
5. **PROPONENT CONTACT INFORMATION:** Mark Garnett, Asset Manager, MNSFU  
Halifax Citadel  
P.O. Box 9080, Station A  
Halifax, Nova Scotia B3K 5M7  
(902) 426-1994 phone, (902) 225-9694 cell, (902) 426- 4228 fax  
mark.Garnett@pc.gc.ca
6. **PROJECT DATES:** Planned commencement: 2014-11-03  
Planned completion: 2015-03-31
7. **INTERNAL PROJECT FILE #:** MLNS-04-2014-KEJ

## 8. PROJECT DESCRIPTION

### Background:

The project involves upgrading the existing paved arrival area between the Look-off Deck and the Main Gate and includes the following project components:

1. Remove and replace existing asphalt and other surface features within the area.
2. Install concrete curbs to define the new narrower roadway and pull-offs.
3. Regrade and repave the new roadway. A section of the roadway (approx. 8 m), Section B on Plan drawing (Appendix 4), will be lowered by approximately 150 mm. This incurs excavating to less than 600 mm. The grade of this section of roadway will be altered and it will extend onto the currently grassed area. In total, an additional approximately 120 m<sup>2</sup> of sod area will be paved.
4. Provide new sidewalk surfacing on both sides of the road (concrete and pavers)
5. Remove and dispose of the existing kiosk
6. Install a new, larger ticket kiosk (4 X 5 m), as indicated in Appendix 4 Plan Drawings.
7. Service trenches (< 1 m deep) will be installed for electrical and communications conduits. These trenches will be located on the look-off axis in the same previously disturbed area.
8. Several storm water catch basins will be installed on the east limit of the construction area. Excavation will be required up to 2.5 m deep. Associated with each basin is discharge piping at a similar depth. Some of the piping may be placed in the Glacis, an area that may not have been recently disturbed.
9. Install new traffic and pedestrian bollards. This incurs digging to 1200 cm depth and more than 250 cm in diameter. An auger may be used for excavating.
10. Install gates and a new section of fence (approximately 10 m) and ~ 7 fence posts. This incurs digging to a maximum depth of 1700 cm for installing posts below frost line. An auger will be used for excavating the holes.

## 9. VALUED COMPONENTS LIKELY TO BE AFFECTED

- Cultural resources
- Visitor experience

See also the Effects Identification Matrix ([Appendix 1](#)) for potential interactions between the project and the surrounding environment.





## 10. EFFECTS ANALYSIS

- Cultural resources: An array of cultural artifacts may be present, though most of the work occurs in previously disturbed soils.
- Visitor experience: Visitors access this NHS year-round. Construction, re-routing traffic, noise, dust, temporary closure

The Effects Identification Matrix ([Appendix 1](#)) was used to identify potential interactions between the project and the surrounding environment.

## 11. MITIGATION MEASURES

The following mitigations and measures must be implemented to decrease the likelihood and significance of adverse environmental effects associated with the area redevelopment:

### \*Planning:

1. The Environmental Assessment Coordinator, or designate shall hold a briefing with all personnel (including contractors) before operational activities begin in order to outline the environmental factors and mitigation measures.
2. All activities on the premises shall be conducted in compliance with national and provincial applicable environmental laws, and in accordance with generally accepted environmental practices and best management practices.
3. Activities must be in compliance with the Occupational Health and Safety Act and Canada Labour Code.
4. Any new development or major change in the operation proposed is subject to a separate approval process which will include EA if required by CEAA, or by Parks Canada policy. Such changes will be reported to the EA Surveillance Officer or Coordinator.
5. A copy of the mitigation measures shall be available on site for consultation.
6. Measures must be put in place to reduce safety risks to tourists during construction work (e.g. appropriate signs and restricted access using caution tape, chains, gates, etc).
7. Any excavation work will require review/monitoring by Cultural Resource Management staff.
8. The project manager (Mark Garnett), or an appointed Parks Canada Surveillance officer will monitor the various phases of this project to ensure mitigation measures are implemented.

### \*Cultural resources:

1. \* An archaeologist must be consulted in advance of any digging or excavation activity to address potential impacts to cultural resources. Contact Carla Wheaton (902.426.1992) and/or EA Coordinator, Donna Crossland (902.682.2293).
2. Compliance with all Cultural Resource management recommendations are mandatory.
3. Any cultural, archaeological, historical resources discovered shall be reported to Parks Canada immediately and shall not be disturbed prior to archaeological assessment of nature and significance.

### **Operations will be halted immediately.**

### \* Operation of mechanized equipment: A variety of machinery is required to carry out the phases of the project.

1. Equipment shall be operated in a manner that does not damage soils and vegetation exterior to the immediate construction site. Avoid rutting, compaction from heavy equipment, as buried cultural artifacts may be present.
2. All equipment shall be properly tuned, free of leaks, in good operating order and equipped with standard air emissions control devices. Vehicles found leaking petroleum products at the site shall be ordered off the grounds.
3. Maintain an emergency spill kit on site (containing absorbent products for oil and gas).
4. Report any spills that occur immediately to Parks Canada (Mark Garnett 902.426.1994, cell 902.225.9694. Spills may also be reported to the Environment Canada oil spill and pollution (24 hr) reporting line at 1 800.565.1633.



5. Equipment must be refuelled off-site or on impermeable pads/pans designed to allow full containment of spills.
6. Workers shall be trained and familiar with the equipment, wearing appropriate protective clothing and gear.
7. Fuel and petroleum product storage shall be off-site in secure areas on impermeable pads.
8. Cleanup, repair and rehabilitation resulting from a spill shall be to the satisfaction of the EA Coordinator.

\*Remove and replace existing asphalt and other surface features within the area:

1. Dispose of all materials off-site in a safe environmental manner
2. Ensure against run-off and dust emissions from the newly exposed underlying materials.

\* Regrade and repave the new roadway and pull-offs/Install concrete curbs, new sidewalk surfacing, and storm water catch basins:

1. Impermeable surfaces (e.g. pavement, concrete) shall be kept to a minimum where possible to maintain a more historically accurate landscape and to foster a higher environmental ethic.
2. Follow best management practices for all construction and paving activities.
3. Post signs for road closure/construction as appropriate when completing the work.
4. Dig only as deep as necessary to site prepare area.
5. Sod and top soil that is removed from Section B (plan drawing) to construct new roadway may be stockpiled to be used for restoration purposes following the project.
6. Soil, vegetation and landscape features will be restored or improved after work is completed.
7. Excavation for storm water catch basins and associated discharge piping will not exceed 2.5 m and shall incur the least digging disturbance possible. Archaeological monitoring during excavation may be mandatory, depending on feedback from Cultural Resource Management.
8. Authorization by Cultural Resource Management is required if some of the discharge piping is placed in the Glacis.
9. Ensure against particulate emissions and runoff.

\*Demolition of existing kiosk/Install new larger (4 x 5 m) kiosk:

1. Remove and properly dispose of the existing kiosk and contents.
2. The presence of asbestos and other potentially toxic or harmful substances shall be verified and recorded prior to demolition activities.
3. Ensure that any contaminated waste or toxic substances that pose hazards to human or environmental health are safely disposed as per environmental laws, and that they are handled according to safe work practices.
4. Excavations for installing service trenches to kiosk will be less than 1 m deep.

\* Excavations for: new traffic bollards, pedestrian bollards, fence posts for new fence, and gate posts

These excavations all incur digging, mainly with an auger, to significant depths (maximum 1.2 m) to avoid frost-heaving. Though most of the construction takes place in areas that have received imported fill, or were previously disturbed, there remains some possibility of disturbing artifacts at greater depths in some of the construction locations. The professional opinion of an archaeologist shall be sought to determine mitigation requirements during these phases of the project.

1. All contractors and park employees will adhere to mitigations recommended by the archaeologists as the project proceeds.
2. Based on the opinion of the archaeologist, monitoring by an archaeologist during excavation may be mandatory.



**12. CONSIDERATION OF THE NEED FOR PUBLIC PARTICIPATION & ABORIGINAL CONSULTATION**

**12 a)** Indicate whether opportunity for public participation should be offered:

No  Yes  
 Bus tour operators, Manager of VE, Cultural Resource Manager

**12 b)** Indicate whether there is a requirement for Aboriginal Consultation in relation to project impacts:

No  Yes

*NOTE: The possibility of early Mi'kmaq presence and artifacts on this site have been largely erased following several hundred years of intense European occupation and modification of this site. This project mainly focuses on replacing pre-existing infrastructure.*

**13. EFFECT SIGNIFICANCE**

Environmental effects are not significant. This is not a natural site. The project largely focuses on replacement of infrastructure. Cultural impacts should be negated through archaeological monitoring of any digging activities.

**14. SITE INSPECTION**

Document whether a site inspection program will be required while the project is underway.

Site inspection required  
 Site inspection not required

A pre-site inspection is required by an archaeologist, as well as inspections during periods of excavation to ensure minimal damage to cultural artifacts. A site inspection by the Environmental Assessment Coordinator or designate is also recommended to ensure reduced exposure of toxic products to the environment, and to minimize impacts to soil, vegetation, runoff, etc.

**15. SPECIES AT RISK MONITORING**

There are no potential adverse effects on SAR species.

**16. SARA NOTIFICATION**

N/A

**17. EXPERTS CONSULTED**

*Include Parks Canada experts. Add as many entries as necessary for the project.*

<b>Department/Agency/Institution:</b> Parks Canada, Halifax Defence Complex	Date of Request: 2014-07-17
Expert's Name: Carla Wheaton	Title: Cultural Resource Manager
Contact Information: 902 426.1992	
Expertise Requested: Proper protection of cultural resources during this project.	
Response: Contacted Charles Burke, Parks Canada Archaeologist, to verify the presence of imported materials at the worksite and discuss required mitigations.	
<b>Department/Agency/Institution:</b> Parks Canada, HCCD	Date of Request: YYYY-MM-DD
Expert's Name: Charles Burke	Title: Parks Canada Archaeologist
Contact Information: 902.426.7513	
Expertise Requested: Assessment of potential impacts on archaeological resources and recommendations for	



mitigations.	
Response:	
Department/Agency/Institution: Parks Canada, HDC	Date of Request: YYYY-MM-DD
Expert's Name:	Title:
Contact Information:	
Expertise Requested:	
Response:	

**18. DECISION**

Taking into account implementation of mitigation measures outlined in the analysis, the project is:


X not likely to cause significant adverse environmental effects.

likely to cause significant adverse environmental effects.


*NOTE: If the project is identified as likely to cause significant adverse effects, CEAA 2012 prohibits approval of the project unless the Governor in Council (Cabinet) determines that the effects are justified in the circumstances. A finding of significant effects therefore means that the project CANNOT go ahead.*

**19. SIGNATURES AND APPROVAL**

**EA Author** (Add additional signature blocks for multiple authors as required)

Name: Donna Crossland	Date: YYYY-MM-DD 2014-08-05
Position: Resource Management Officer II/ Environmental Assessment Coordinator	
Signature: 	

**Decision Approval**

Name: Linda Frank	Date: YYYY-MM-DD Aug 6/14
Position: Field Unit Superintendent	
Signature: 	

**20. REFERENCE LIST**

Parks Canada Agency 2006. Guide to assessing effects on National Historic Sites of Canada under the Canadian Environmental Assessment Act

**21. ATTACHMENTS LIST** (See Appendices)



**22. ADDITIONAL CONSIDERATIONS / COMMENTS**  
*Use this space to record additional content as needed.*





## Appendix 2: SARA-Compliant Authorization Decision Tool

(Note: Please consult a representative of the [Species Conservation and Management team](#) when completing this form)

Date:	Topic/Issue:	Species :	Where: (PCA site)	Who: (your name)

### Part A – Is a SARA authorization required?

**1. Will the activity directly or indirectly affect a listed endangered, threatened or extirpated species at risk, its residence or critical habitat?**

*Affect = kill, harm, harass, capture, or take individuals; possess, collect, buy, sell or trade individuals or parts of individuals; damage or destroy residence; destroy any part of critical habitat*

<input checked="" type="checkbox"/> No	<b>SARA authorization is NOT required.</b> Provide explanation and <b>STOP HERE.</b> <ul style="list-style-type: none"> <li>No SARA species have been recorded at the Halifax Citadel.</li> </ul>
<input type="checkbox"/> Yes	<b>SARA authorization IS required.</b>

**2. Is the activity already authorized in a final recovery document or required for public safety?**

<input type="checkbox"/> Yes	<b>SARA authorization is NOT required</b>
<input type="checkbox"/> No	<b>SARA authorization is required.</b> Continue to Part B.

### Part B – Can a SARA authorization be issued?

**\*\*\*\*Complete ONLY if you have answered Yes to Questions 1 or 2, above\*\*\*\***

**3. Does the activity fall into one of the following three categories?**

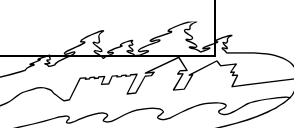
<input type="checkbox"/>	The activity is scientific research related to the conservation of the species and conducted by qualified persons; OR
<input type="checkbox"/>	The activity benefits the species or is required to enhance its chance of survival in the wild ; OR
<input type="checkbox"/>	Affecting the species is incidental to the activity (i.e., the <u>purpose</u> of the activity is <u>not</u> a prohibited activity, for example, fishing for a listed species cannot be permitted, but accidental by-catch <i>may</i> be, and repairs to a bridge that incidentally disturbs a nearby plant <i>may</i> be).

**4. If you concluded that the activity can be authorized, have alternatives that would reduce the impact(s) on the species been considered?**

<input type="checkbox"/> No	<b>The activity CANNOT be authorized as alternatives have not been/cannot be considered.</b> Continue to Part C to summarize your decision.
<input type="checkbox"/> Yes	<b>The activity MAY be authorized.</b> <ul style="list-style-type: none"> <li></li> </ul>

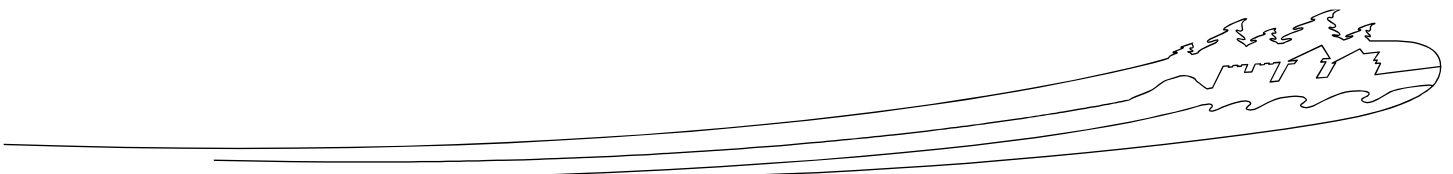
**5. Will all feasible measures be taken to minimize the impact of the activity?**

<input type="checkbox"/> No	<b>The activity CANNOT be authorized.</b> If it is <u>not possible</u> to implement all feasible measures, continue to Part C to summarize your decision.
<input type="checkbox"/> Yes	<b>The activity MAY be authorized.</b>





6. Will the activity jeopardize the survival or recovery of the species?	
<input type="checkbox"/> Yes	The activity <b>CANNOT</b> be authorized. <i>If the survival or recovery of the species <u>will</u> be jeopardized, continue to Part C to summarize your decision.</i>
<input type="checkbox"/> No	The activity <b>MAY</b> be authorized.







### Appendix 3: Cultural Resources Assessment

2014-07-16 Carla Wheaton, Cultural Resource Manager, was contacted by the Project Manager, Mark Garnett, for consultation on this project and she will oversee the appropriate protection of the cultural resources associated with this Historic Site. Her comments will be submitted below once she receives a reply from the archaeologist.

