RENEWABLE GENERATION

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Glen Access Road Improvements

General Requirements for Contracted Construction Services

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1.0 GENERAL

1.1 Contract Scope of Work

Ontario Power Generation (OPG) is seeking the services of a qualified Contractor to provide Engineering, Procurement and Construction contracting services for all of the Services and Goods associated with the Glen Access Road Improvements.

The Services to be performed comprises of the full and complete supervision, labour, equipment, tools, materials, testing and professional services for the complete inspection, survey / assessment, design, procurement and construction, in accordance with the Technical Specifications.
The Services shall also include Design, supply, erect, maintain and remove all temporary barriers, signage and traffic management to allow unimpeded access to the SAB 1 / SAB 2 site via Glenn Access Road.

The Contractor is to refer to the Technical Specification Documents, procedures, and drawing material provided for further details and requirements.

The Contractor shall identify, prepare, submit and obtain all required permits, applications, amendments of existing certificates etc. for all phases of the project.

The Contractor shall participate and lead any design and or construction reviews that would be required by the various regulatory agencies and update the design and or construction to ensure that it is in agreement with the agencies and permits final requirements.

The Contractor shall also provide a complete turnover package as described in Section 9.2 (in both PDF and AutoCAD format) in accordance to OPG Drafting Protocol, Operating and Maintenance Instructions/warranties, etc.

1.2 Project Goals and Objectives

- Safety – to complete the project with zero fatalities, no lost time injuries, and minimal near misses.
- Quality – all manufacturing and construction activities will be monitored and verified to ensure they are executed according to specifications and that the delivered result meets the customer's expectations.
- Environment – all involved personnel with this project will strive to meet OPG environmental expectations
- Cost and Schedule – complete the Project within the approved funding. Through proper planning and communication, cost control and schedule will be maintained in real time and assessed using Earned Value Analysis.
- Generation – to execute the project with minimal disruption to the on-going normal site operation, and particularly by minimizing the use of temporary Construction Islands that may be required during demolition and installation period.
- Reliability – to deliver a robust product that will perform reliably over its Life Cycle.

1.3 OHSA Roles

For the purpose of this work, OPG shall be recognized as “Owner” and the successful contractor shall provide all the Services and Goods and shall fulfil the role of “Constructor” in accordance with the (Ontario) *Occupational Health and Safety Act* (OHSA) and its regulations. This work shall fall within a designated Construction Island.

1.4 Normal Hours of Work

The normal hours of work for this project will be considered as 7:00 am to 3:30 pm, Mondays to Friday, which includes 30 minutes for lunch.
OPG requests that all Contractors propose a schedule reflecting normal OPG work hours. Work outside the normal hours will not be permitted unless it is expressly authorized in writing by OPG due to working conflicts with other work group.
The Contractor may submit alternative schedule options for OPG’s consideration.

1.5 Site Representative

OPG’s expectations for site representation for this project are described in the Agreement document section 3.3 Contractor Organization.

It is expected that the Contractor will appoint an alternate Supervisor(s). In the event the Contractor’s site Supervisor is away from site and the Ministry of Labour (MOL) arrives for inspection, the Contractor should have a plan implemented that ensures all field staff are aware of the alternate Supervisor.

1.6 Security Clearance

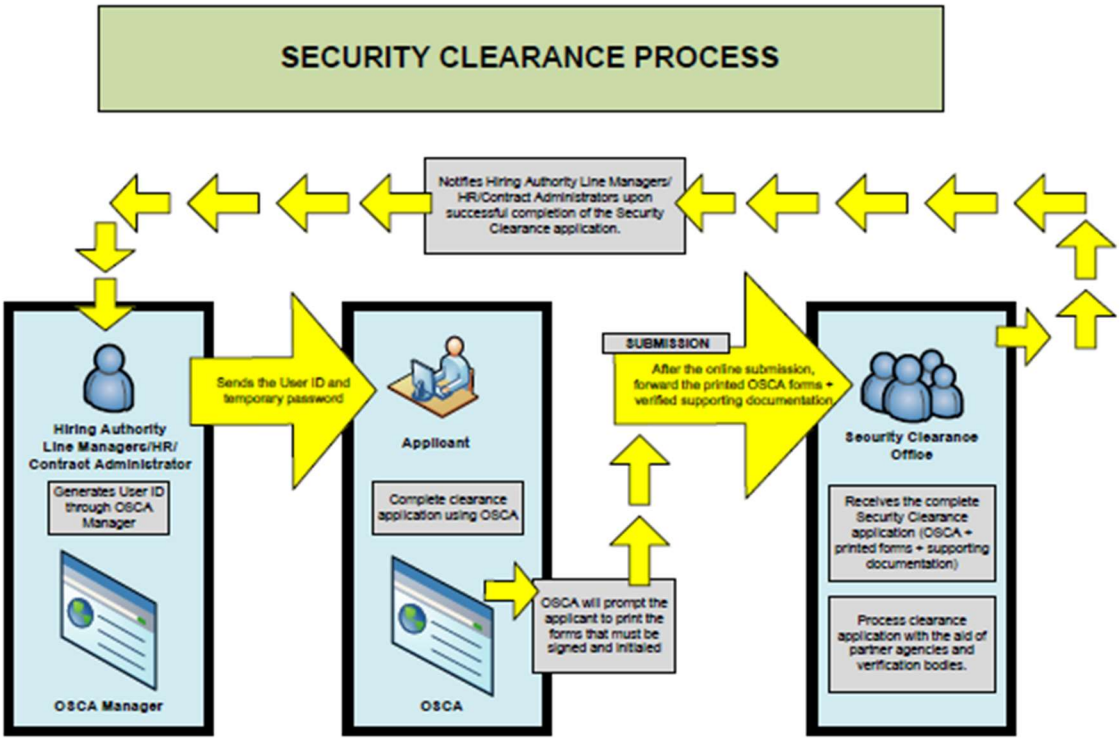
1.6.1 Site Security

The Contractor, at its own expense, shall provide its own security measures to protect its work areas including all facilities, tools, equipment and materials from such losses caused by the natural forces, flooding, accidental damages, fire, thief or vandalism.
The Contractor shall be responsible to prepare and administer their own Site Security Plan which may include:
Identify all potential means of unauthorized access to the site.
Establish a means for controlling access to the site to authorized personnel.
Identify the need for, design and install appropriate physical barriers (fencing, gates, signage, etc) to ensure that unauthorized personnel do not gain access to the work sites.
Implement modifications to such barriers if certain ones are ineffective in preventing unauthorized personnel from gaining access to the sites
Contractor will be responsible for identifying workers (e.g., identification/name badges) to ensure that only authorized personnel access the sites.
The Security Plan should include the requirement to report all infractions/incidents to OPG’s Representative including those related to public safety, security breaches or unauthorized access. A follow-up assessment of any infractions/incidents shall be conducted to determine if there are deficient control measures related to public waterways safety, land access and safety, security control measures or security equipment. Contractor shall cooperate with OPG by taking part in security/public safety incident investigations and quarterly security/public safety assessments.

Contractor shall develop and maintain a full filing/record-keeping system associated with the management of the Security Plan.
The plan shall detail the Contractor's discipline/consequence protocol for any employees or sub-contractor(s) employees who contravene rules related to public safety and security.
All persons attending or visiting the site must comply with the Contractor's access requirements and shall access the site using the designated project access route and by signing in and out in accordance with the Contractor's requirements.

1.6.2 Security Clearance

1. All personnel on site must meet the appropriate security clearance requirements as pertinent for the services being provided. No individual will be permitted to provide services without completing the mandatory security clearance required by OPG. At OPG's request, the Contractor will remove from the provision of the services, any individual providing services who has failed to pass any initial or subsequent security clearance.
2. The Contractor should complete the security clearance applications in a timely manner and process prior to mobilization. **Note: this can be a lengthy process taking 2-6 weeks approval time and must be completed with Security Clearance prior to starting any Services on site.**



3. An OPG Manager/contact will provide unique User ID start codes to the Contractor's applicants to allow access to the OSCA website. The applicant is to follow online instructions and requirements.
4. **Only authorized persons shall be permitted on site.**

1.7 Mark-Up Meeting

1. After award of the *C*ontract, the Contractor will chair a pre-job mark-up meeting with union representatives. This meeting is to be arranged through the Electrical Power Systems Construction Association (EPSCA) office. The purpose of the mark-up meeting is to outline:
2. The scope of the *Services* to be done.
3. The union(s), which are to do the *Services.*
4. Any jurisdictional disputes and ensure they are resolved prior to starting the *Services*.
5. Key tradespersons and staffing requirements.
6. This meeting must be completed prior to the start of the work onsite. A minimum of two week waiting period following the meeting and prior to the start of the work is the norm.
7. A clearance must be provided from the EPSCA office to use employees who are presently on the contractor's payroll (i.e. key tradesmen). The key tradesmen clauses in the various trade agreements will give the conditions, which must be mutually agreed to by the union and employer. These conditions are to be established at the mark-up meeting.

1.8 Site Conditions and Requirements

The Contractor shall adhere to the following conditions and include in their pricing:

1. Contractor shall investigate all aspects of the Services in order to inform OPG of existing site conditions including but not limited to the existing Utilities associated with all areas as shown in the project maps, the character and extent of the work to be done, the difficulties in gaining access to the Services area, etc.
2. Contractor shall thoroughly examine the worksite and access routes. Contractor shall take note and report to OPG any conditions, which may affect the safe and successful completion of the Services involved within the approved costs.
3. The devices and equipment required for the Services.
4. The Contractor shall confirm all relevant dimensions and equipment layout by field inspection and field measurement before proceeding with the Services.
5. The Contractor's personnel shall follow the required procedures for access to OPG's buildings.

1.9 Site Acceptance

1. Site acceptance is required to demonstrate that the system supplied and installed meets all specification requirements. The objectives of the site acceptance are summarized as follows:

a) Ensure installation meets with requirement with respect to quality of workmanship and installation practice,
b) Ensure system(s) meet performance requirements.

2. The Contractor shall, at all times, afford adequate opportunity and facilities for the OPG's Designated Delegate(s) to inspect the Services as required.
3. If any Services should be covered up without consent or review of OPG's Designated Delegate(s), it shall, if required by OPG's Designated Delegate(s), be uncovered for examination and covered again by the Contractor at the Contractor's expense.
4. The presence or absence of OPG's Designated Delegate(s) shall not relieve the Contractor of any of its obligations or the requirements of the specification.
5. OPG or OPG's Designated Delegate(s) will not be liable for any claims or extension of schedules relating to delays caused by any such inspection.
6. All drawings and documents shall be submitted to OPG by the Contractor for review by OPG Engineer and Production in their draft and final stages as a condition of acceptance and use of such Services and prior to initiation of any Construction work.
7. All materials shall be new. Preparation and application of materials used shall be in strict accordance to technical specifications outlined or attached herein.
8. Prior to any fabrication the Contractor shall submit to OPG, its proposed method, sequence of operations, and equipment that will be used to fabricate, transport and install all required parts and components. No fabrication shall commence until the Contractor has received written approval of its proposed method, sequence of operations, and equipment from OPG.
9. There shall be no patching, plugging, shimming, or other such means to overcome defects or discrepancies without the prior written agreement of the Ontario Power Generation.
10. Fabrication tolerances for the components shall be in accordance with drawings or as specified herein.
11. The decision of OPG in respect to the quality of workmanship in the contract works shall be final, nevertheless this provision shall not relieve the Contractor from the necessity of fulfilling all terms and provisions of these specifications.
12. The Contractor shall grant OPG access to the Contractor's facilities and to those of any subcontractors.
13. OPG's review of Contractor ITP prior to the Services outlined in this document being executed is a condition for acceptance of such Services.
14. The Contractor shall prepare and submit to OPG three copies of its proposed inspection and test program prior to commencing work. OPG's representative will return one copy to the Contractor indicating any inspections and tests that he may wish to witness. The Contractor shall confirm to OPG, the date and time by PHONE and E-MAIL, three working days prior to the inspections.
15. The Contractor shall be responsible for and supply all necessary labour, materials, transportation, equipment, and personnel to assist OPG and any designated inspection personnel.
16. Immediately after the Contractor's inspectors or OPG's test personnel determine that part(s) of the Work does not meet quality control requirements, the Contractor shall forward all factory rejection certificates to OPG.
17. Any Services that fails to meet any requirements of the Contract Documents and associated schedules shall be corrected by the Contractor to ensure conformance. Prior to carrying out these corrective actions, the proposed materials and modifications needed to ensure that the Services, will meet the specification requirements shall be submitted to OPG for review and acceptance. The Contractor shall perform corrections to the Services to ensure compliance with the requirements of the specification and the Contract requirements.
18. Completed Services shall be accepted by OPG upon review and satisfactory conformance to the specification requirements and the Contract requirements.

19. OPG reserves the right to request a formal review meeting to be conducted by the Contractor with OPG participation to discuss the equipment and installation proposed specifications, as proposed by the Contractor.

2.0 SAFETY

2.1 Safety Requirements

The Contractor shall perform all Services in accordance with the *Occupational Health and Safety Act of Ontario* (OH&SA) and any applicable regulations and legislative requirements that may apply to the project, and in accordance with the Agreement recital B and Section 3.5.

2.1.1 Pre-Start Orientation

1. The Contractor will be required attending a brief project specific site orientation at its own expenses prior providing Services on site.

2. The Contractor and their subcontractors will be required to attending a Public Safety Awareness Training for Contractors by OPG, at their own expenses prior to providing Services on site.

The Contractor is responsible for its personnel attending the orientation on site. This includes supervisory staff and workers for both direct hires and Sub-contractors. A record for every worker, both direct hires and Sub-contractor hires, must be kept in the Contractor's records. This record should reflect the orientation received and must be signed by the recipient and the site safety manager. This information must be available for audit by OPG.

3. The Contractor will provide a full-time site supervisor.

   a) The Contractor is required to attend a brief orientation training session (which includes *Orientation Checklist for Contractors* (F12-07) to become familiar with the generating station area, the construction Services area and as to what Services are being performed. Orientation must be completed prior to providing any Services on site.

   b) The Contractor is responsible for all personnel to receive the orientation. This includes supervisory staff and workers for both direct hires and sub-Contractors. A record for every worker, both direct hires and sub-Contractor hires, must be kept in the Contractor's records. This record should reflect the orientation received and must be signed by the recipient and the site safety manager. This information must be available for audit by OPG. A copy of the completed form must be sent to the Project Leader. No separate payment for this training will be made. All site visitors will be given an orientation by the Contractor prior to proceeding into the Services site.

   c) Proof of orientation is a requirement for the approval of EPSCA billings.

2.2 Project Site-Specific Safety Plan (PSSSP)

The Contractor will conduct a safety hazard analysis to identify all significant safety hazards in respect of the Services.

The Contractor will prepare a Project Site Specific Safety Plan (PSSSP) for the entire Project, identifying safety concerns, and the steps and procedures that the Contractor will take in order to comply with all applicable safety laws (statutes, regulations, applicable guidelines, orders, directives, applicable approvals, permits and authorizations).

Upon awarding of the contract, the Contractor will develop and submit a copy of the plan to OPG for review.

The PSSSP is to include a Fire Watch Program for the areas where cutting, welding and grinding will be done.

The PSSSP is to include a Traffic Protection Plan. The contractor will access their work site by the Niagara Parkway entrance.

Note: Access to SAB1 and SAB2 via Glen Access Road must be maintained at all times during construction for OPG Employees and other contractors.
Note: The Contractor is to comply with all requirements of the authority having jurisdiction over roads used by the Contractor in the execution of the Services. Determine the condition and availability of highways and roads, clearances, restrictions, bridge load limits, bond requirements, and other limitations that may affect ingress to and egress from the Site. Comply with applicable load regulations during hauling of materials and equipment over highways, roads or bridges and minimize interference with local traffic. Keep highways and roads impacted by the Services open to traffic and passable at all times.

Heavy load restrictions and Permits requirement need to be investigated by the Contractor, and any Permits that may be required will need to be arranged well in advance by the Contractor.

OPG reserves the right to request revisions it deems necessary to meet the laws, regulations, and specific site and permit requirements.

No construction work can commence until OPG reviews the PSSSP.

The Contractor will provide all the Services at the Site in accordance with the PSSSP.

Items to be addressed within the PSSSP may include:

Site-Specific Health and Safety Management Plan	
1.0 Scope of Work *2.0 Contractor's Health and Safety Policy* *3.0 Regulatory Framework* *3.1 General* *3.2 Permits* *4.0 Roles and Responsibilities* *4.1 Project Manager* *4.2 Safety Representative*	*8.0 Training* *8.1 Training Requirements* *8.2 Induction Training* *8.3 Certificates and Qualifications* *8.4 Training Delivery* *8.5 Records* *9.0 Monitoring* *9.1 By Contractor*

4.3 Worker	*9.2 Equipment Inspections*
4.4 Site Safety Manager	*9.3 Site Inspections*
4.5 Corporate Safety	*9.4 By OPG*
5.0 Hazard Evaluation	*9.5 By Worker Rep/JHSC*
5.1 Hazard Identification	*9.6 By Regulatory Agency*
5.2 Risk Assessment	*9.7 Correction of Deficiencies*
5.3 Control Measures	*10.0 Emergency Response*
6.0 Site-Specific Procedures	*10.1 Reporting and Notification*
6.1 General Site Rules	*10.2 First Aid Requirements*
6.2 Hazard/Job Specific	*10.3 Medical Emergency Response*
7.0 Communication	*10.4 Fire Emergency Response*
7.1 Project Meetings	*10.5 Confined Space Rescue*
7.2 Safety Meetings – Safety Representative and Crew Meetings	*10.6 Arrested Fall Rescue*
7.3 Pre-Job Briefings	*11.0 Accident/Incident Investigation*
7.4 Project Signage	*12.0 Sub Contractor Requirements*
7.5 Reports	

2.3 Safety Reporting

During the performance of the Services the Contractor will provide OPG with all the safety reports in accordance to the Agreement Section 3.5.

2.4 Designated Substances

The Contractor will fully investigate and determine all hazards associated with this work during the proposal and construction stages, and will ensure it takes into account all required preventative measures to execute the work safely, to protect the health and safety of its workers and OPG staff, and to meet regulatory requirements.

2.5 Hazardous Material Management

The Contractor shall make itself fully aware of all Federal and Provincial legislation and restrictions on the storage and use of certain products or materials considered harmful to the environment or persons and shall comply with all applicable regulations and guidelines. The Contractor shall require its manufacturers or suppliers to provide current Material Safety Data Sheets (MSDS) for all such products and shall comply with all requirements of the Workplace Hazardous Materials Information System (WHMIS) Regulations.

Prior to use, all hazardous materials that: (i) will be used in confined spaces; (ii) will be installed/applied to/contained in OPG Equipment or Structures (e.g. insulation and paints); or (iii) may adversely affect the health and safety of OPG employees working in close proximity to contractors, must be approved by OPG Health and Safety.

OPG reserves the right to specify exposure controls to protect the health and safety of OPG employees. Contractors must implement all exposure controls specified.

The Contractor will provide a list complete with MSDS and product information of all hazardous materials being used as part of the Contracted Construction Services at least two weeks prior to being used for review and approval.

2.6 Other Known Site Hazards

1. In addition to the hazards indicated in section 2.4 Designated Substances, Some known site hazards include, but are not limited to:
   a. Electrical – high voltage generation equipment, circuits, panels, transformers, etc.
   b. Overhead power lines - they exist in areas inside and outside. The *Contractor* is responsible for adherence with limits of approach as per OHSA Regulations. Extreme caution must be used whenever lifting, hoisting, craning, etc. activities are undertaken.
   c. Water – fast flowing, fluctuating levels
   d. Public - external to but in the vicinity of the work area, approaches.
   e. Regular and Construction Vehicular Traffic - within and outside work area boundaries.
   f. Embedded Services – locates are required prior to breaking of ground.
   g. Legacy Structures - the Contractor should not use any legacy embedded structures or clamp onto steel structures for lifting purposes. OPG must be consulted prior to usage as these structures cannot be assumed to be safe.
   h. Biological Hazards – insects, flies, ticks, bees, wasps, etc.
   i. Authorized/unauthorized foot traffic.
2. This is not meant to be an exhaustive, prescriptive or inclusive list and is intended to raise Contractor's awareness when it develops its own hazard list and preventative measures. The Contractor is fully responsible for conducting a thorough site safety analysis and for managing all safety aspects within the Construction Island(s).
3. The Contractor acknowledges that it is satisfied as to the nature and location of the work. The general and local conditions, including but not restricted to those bearing upon access, transportation, disposal, handling and storage of materials, uncertainty of weather or similar physical conditions at the site, the character of equipment and facilities needed preliminary to and during execution of work. The Contractor further acknowledges that it is satisfied as to the character, quality and quantity of surface and subsurface materials to encounter insofar as this information is reasonably ascertainable from an inspection of the site as well as from information presented by reference drawings and these specifications. Failure by the Contractor properly acquaint himself with the available and existing work site conditions will not be relieve the Contractor from the responsibility of properly estimating the cost for successfully performing the Services.
4. The Contractor acknowledges that it is aware of all inherent hazards associated with the Site.

2.7 Terminal Points

Niagara Operations support shall be required in order for the Constructor to ensure a safe work area for the project.

A walkdown of the project area will be completed with the Constructor prior to project execution to identify all sources of hazardous energies. Terminal Points (where applicable) are to be determined and documented on OPG-FORM-0173 Control of Hazardous Energies Walkdown Sheet. The Constructor will then advise OPG of any hazardous energies requiring isolation according to their project schedule, and in accordance with the project requirement mentioned above. Refer to Appendix E for an overview of the use of a Terminal Point.

2.8 Memorandum of Understanding

1. A memorandum of understanding (MOU) will be prepared by OPG's Project Site Manager with assistance from Niagara Operations Control Centre (NOCC) Operations listing the devices required for a Contractor to ensure a safe work zone for their workers. The Contractor will then need to review the applicable drawings for the systems and sign off on the MOU signifying their acceptance as to the adequacy of the isolations for protection of their workers. Arrangements will be required for operations support for switching operations. The Contractor will then implement their own Lockout/Tagout (LOTO) program for the protection of their workers.

2. There are also electrical systems which are energized in the Constructor's work zone. These energized systems shall be identified to the Constructor. The systems will be identified as requiring isolation for Lockout/ Tagout (LOTO) requirements or identified as not to be isolated in the MOU.

3.0 ENVIRONMENTAL

3.1 Environmental Awareness

The Contractor shall maintain an awareness of environmental requirements and developing issues on site. The Contractor's Environmental Coordinator in consultation with OPG's Representative(s) shall hold formal environmental orientation meetings involving key site personnel. The Contractor shall have an environmental component at its weekly work-group toolbox meetings involving all workers and such minutes be documented. Orientation meetings with members of the site team shall be held at the start of the Services (at the time of mobilization) and when new staff joins the workforce. Environmental review meetings with the site team shall also be held at other key times throughout the Services prior to starting significant new tasks. The Contractor shall review the environmental content of its orientation, as well as review toolbox meetings with OPG's Representative(s).

The Contractor shall provide minutes of its orientation, review and toolbox meetings to all attendees and to OPG's Representative(s). Each attendee shall understand the requirements, abide by the requirements, and be required to sign an attendance list, which includes a point form summary of the meeting content.

All Contractors and their sub-contractors agree to accept and work provide all Services in conformance with OPG's Environmental Management System (EMS) and will acknowledge this commitment, in writing, to OPG. Equivalent processes and methodologies may be used by the Contractor to fulfil the intent of the OPG EMS as it pertains to the contracted service.

Contractors are expected to conform to OPG's Environmental Policy, shown in Appendix G.

The Contractor shall take measures to maintain an awareness of environmental requirements on site by orientation meetings involving key site personnel and by weekly work-group toolbox meetings having an environmental component.

The Contractor is responsible for:

- Complying with all environmental laws.
- Obtaining all necessary regulatory approvals unless specified otherwise.
- Developing and implementing a comprehensive environmental plan (including reporting and remediation) to manage environmental aspects.
- Preventing, managing and reporting its own spills.

As a general guide for the performance of the Services in an environmentally responsible fashion, the Contractor shall follow the Ontario Waterpower Association (OWA) environmental Best Management Practice (BMP) outlined below and found in Appendix F – Environmental Best Management Practice, which includes:

- Wildlife Management:
    1. BMP 019 Encountering Unexpected Flora and Fauna
- Construction:
    1. BMP 024 Demolition
    2. BMP 037 Control of Fugitive Dust
- Waste Management:
    1. BMP 032 Regulated Waste Storage and Handing
    2. BMP 033 Storage and Handling of Hazardous Materials
    3. BMP 035 Regulated Waste Transportation
    4. BMP 036 Materials Storage and Handling
- Spills:
    1. BMP 034 Spills Response.

3.2 Summary of Environmental Requirements

The Contractor will provide all Services and Goods in accordance with:

1. All Applicable Laws.
2. Environmental portion of the General Requirements
3. Agreement Section 3.6.
4. Local business unit level procedures and controls.

3.3 Conflicts and Omissions

If the Contractor finds or observes that there appears to be a conflict between the contents of this Section or other Sections of the General Requirements and the requirements of legislative authorities, then such conflict shall be brought to the attention of OPG for resolution.

Similarly, any omissions or apparent omissions from this Section relevant to current legislation shall be referred to OPG's Contract Owner or Delegate. Omissions or apparent omissions shall in no way diminish the Contractor's responsibility to comply with the statutes, regulations, by-laws and directives of legislative authorities.

3.4 Environmental Compliance

The Contractor while performing the Contracted Services will comply with all Applicable Laws in all matters relating to the protection of the environment. Without limiting the generality of the foregoing, the following legislation is called to the attention of the Contractor.

Federal:

- Hazardous Products Act.
- Transportation of Dangerous Goods Act.
- Canadian Environmental Protection Act.
- Canada Wildlife Act.
- Migratory Birds Convention Act.
- Fisheries Act.
- Navigation Protection Act.
- Species at Risk Act
- Endangered Species Act

Ontario:

- Environmental Protection Act.
- Ontario Water Resources Act.
- Ontario Regulation 347 General – Waste Management.
- Ontario Heritage Act.
- Dangerous Goods Transportation Act.
- Aggregate Resources Act.
- Gasoline Handling Act.
- Highway Traffic Act.
- Occupational Health and Safety Act
- Liquid Fuels Handling Act
- Planning Act (Species of Conservation Concern)
- Fish and Wildlife Conservation Act

Local and Site Specific:

- Municipal Bylaws (e.g. noise control, licensing of trades people).
- Existing Water Management plan
- Niagara Parks Commission

3.5 Project Site Specific Environmental Management Plan

It is mandatory that the Contractor prepare a Project Specific Site Environment Plan (PSSEP) for the Contracted Services, identifying those activities that have the potential for environmental impacts and legal requirements. The Contractor will outline the steps and procedures that it will take in order to comply with all applicable environmental laws and for meeting all of the environmental requirements specified within this document. The PSSEP shall address the following topics, as a minimum: Spill Management, Emergency Management, Sediment Control, Waste Management, Environmental Awareness Training and commitments necessary to fulfill applicable conditions of permits and approvals.

Upon awarding of the contract, the Contractor will have a qualified individual(s) develop the PSSEP and submit a copy to OPG for review and acceptance. A qualified individual is someone who has the knowledge, skills and experience to write a plan that will support the Contractor to fulfil the environmental requirements of the contract, including environmental legal compliance. OPG reserves the right to

request revisions it deems necessary to meet the environmental laws, regulations, and specific site and permit requirements.

No construction work can commence until OPG accepts the PSSEP.

The Contractor must ensure that all their subcontractor(s) are trained and must comply with the approved PSSEP.

A sample table of contents for the plan is provided below.

Sample Table of Contents for Project Specific Site Environment Plan
1.0 Scope of Work
2.0 Environmental Policy 2.1 Contractor's Environmental Policy 2.2 OPG's Environmental Policy Commitment
3.0 Regulatory Framework 3.1 General 3.2 Contractor Permits, Certificates and Approvals 3.3 OPG Legal Requirements Contractor To Follow
4.0 Contractor's Roles and Responsibilities (including reporting environmental events) 4.1 Environmental Management 4.2 Project Manager 4.3 Supervisor 4.4 Worker
5.0 Environmental Requirements Assessment 5.1 List of activities with potential for environmental impact 5.2 Risk assessment
6.0 Site-Specific Environmental Requirements 6.1 Spills and Emergency Management 6.2 Waste Management 6.3 Natural Environment Management 6.4 Work In or Near Water 6.5 Equipment Management 6.6 Site Management 6.7 Community Impact Management 6.8 Other Environmental Requirements
7.0 Communication 7.1 Meetings 7.2 Environmental Event Reporting to OPG 7.3 Communication with External Parties 7.4 Issues Management Protocol
8.0 Training 8.1 Environmental Orientation (part of the Site Safety Orientation) 8.2 On-going Worker Environmental Awareness
9.0 Monitoring

9.1 By Contractor 9.2 By OPG 9.3 By Regulatory Agencies 9.4 Correction of Deficiencies with Environmental Management Requirements
11.0 Incident Investigation 11.1Corrective Action
12.0 Sub-Contractor Requirements

3.6 Inspections / Audits

OPG may conduct an environmental audit(s) to ensure conformance / compliance with the Environmental Requirements as well as any applicable Laws, standards, specifications, manuals or codes of any technical organisation or Governmental Authority or best practices. Non-compliance and non-conformance issues arising from these site visits should be dealt with immediately to the satisfaction of OPG's Contract Owner or Delegate. Where required, and as a result of these and other inspections or audits, a corrective action request may be issued by OPG's Contract Owner or Delegate. OPG may also continue monitoring to ensure completion of the corrective action request and its effectiveness. If there is a legal implication, the corrective action request must be addressed forthwith and the action taken must be commensurate with the finding.

Inspections may be conducted

i) Prior to the start of the project to document pre-disturbance conditions,
ii) During the project to ensure environmental control measures are in-place, well maintained and functioning as intended, and
iii) Post project completion to ensure restoration of the site has been completed

- Reports should include any deficiencies and the response actions taken
- A schedule of the monitoring/inspection dates should be presented for this component of the Environmental Plan
- Copies of inspections should be kept onsite for review by OPG Personnel.

3.7 Environmental Event Reporting

The Contractor will be responsible for reporting to Government Authorities for environmental activities and non-compliance events, including but not limited to spills reporting.

All reports, notifications and/or reports will be communicated forthwith to OPG's Representative and attention given to immediate safety and environmental protection considerations.

OPG's Representative must be informed immediately if any Government Authority identifies any concern with the Contractor's response to an environmental non-compliance event.

All follow-up testing required by any Government Regulator or OPG's Representative in connection with a spill to the natural environment resulting from action or inaction on the part of the Contractor or its sub-contractors will be the responsibility of the Contractor.

The Contractor shall notify OPG's Contract Owner or Delegate immediately of all spills, regardless of magnitude and/or location – see section 3.8 Spill Management.

OPG's Contract Owner or Delegate must be informed immediately if any Government Authority identifies any concern with the Contractor's response to an environmental non-compliance event.

All follow-up testing required by any Government Regulator or OPG's Contract Owner or Delegate in connection with a spill to the natural environment resulting from action or inaction on the part of the Contractor or its Subcontractors will be the responsibility of the Contractor.

3.8 Spill Management

As a component of the Project Site Specific Environment Plan, the Contractor will prepare a Spill Management Plan to demonstrate its preparedness and ability to respond to spills or unplanned releases of contaminants to the environment.

OPG's Representative shall be immediately notified of all spills, regardless of magnitude and/or location. OPG's Representative will in turn, report all spills to the Environmental Advisor as soon as possible. It is the Contractor's responsibility to determine if the spill is reportable to MOECC. If the spill is determined to be a reportable spill to the MOECC Spills Action Centre (SAC), it is the accountability of the Contractor, in an "OPG as Owner-Only" project to perform the reporting to the MOECC. All spills will be reported in the close-out reports.

This plan should identify the care and control that will be used to prevent spills onsite, including but not limited to:

- Plan for washing, refueling and servicing machinery
- Fuel and other materials stored in a manner to prevent any deleterious substances from entering the water, including the use secondary containment, impermeable liners etc
- Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
- Use of less harmful products where available (ex. biodegradable hydraulic fluid)
- Protection measures for refuelling equipment
- Appropriate location for sanitation facilities
- Best practices for asphalt and concrete mixing/handling/application (including plan for waste water and wash area)

- This plan should describe the procedure for responding to spills on the project site
  - This includes the stakeholders to be contacted; the reporting sequence and timing, the response resources that would be kept readily available (spill kit, location of spill kits, clean up personnel, etc.) and the timing windows for response activities to take place

3.9 Waste Management

3.9.1 General Waste Management

The Contractor shall be fully responsible for the collection, temporary storage, removal, transportation and off-site disposal of all wastes generated on Site in accordance with Agreement Section 3.6 as well as all applicable Laws and regulations. The Contractor will be expected to include a description of their proposed waste management measures in the Contractor's Project Site Specific Environment Plan (PSSEP). These should include the considerations described in this Specification.

For greater clarity, wastes from this project include:

- Any material that is no longer required that may be recycled.
- Non hazardous, domestic, sewage, hazardous- including but not limited to designated substances, subject and/or other contaminated materials wastes as defined under Ontario Regulation 347 – General- Waste Management.

Unless otherwise specified, the Contractor is responsible for the costs of all necessary laboratory testing and analysis. The testing must be done following scientific protocols for sample analyses (i.e. use of appropriate fixatives, sample containers, coolers, etc.). The laboratory used must be an accredited laboratory and a copy of their accreditation must be supplied to OPG if not already on file. A "Chain of Custody" shall be used for all sampling records and a copy sent to OPG.

Unless a manifest is required by law, all other shipments, including transportation of dangerous good shipments, must be accompanied by an OPG Bill of Lading with copies supplied to OPG's Representative.

The Contractor shall be responsible for registering the project as a waste generator.

For all non-registerable waste, the Contractor shall arrange for immediate disposal of all wastes to an MOECC-approved landfill or recycling facility. A copy of the landfill's Environmental Compliance Approval must be obtained by the Contractor and provided to OPG's Representative. Any exceptions to this, or to OPG's waste management system, must be approved in writing, by OPG.

Residency times for waste to remain on site should be minimized where possible.

See the OWA Waste Management Practices in Appendix G for guidance.

3.9.2 Solid Waste

For any soil/concrete/rock excavated for this project:

- To be disposed of offsite at an appropriate facility
- Representative samples must be collected, and analysed against toxicity characteristic leachate criteria (TCLP) and compared to Ontario Regulation 558/00, Schedule 4, Leachate Toxic Criteria
- CofAs/ECAs for the facilities accepting waste and transport services must be kept on file
- Volumes sent offsite and associated paperwork to be kept on file
- Management of excavated material/rubble to be included in the *Runoff and Sediment Control Plan*

3.9.3 Liquid Waste

Liquid waste, shall be contained collected and stored e.g. drums, until laboratory testing is performed by an accredited laboratory to determine if the liquid contains hazardous/deleterious substances. Disposal method of the liquid waste will be determined by the analysis results.

3.9.4 Concrete

Concrete is defined as an inert waste. Disposal of any concrete waste is in accordance with section 3.9.4 Solid Waste. The concrete shall be removed from site to an approved landfill. All concrete chips, dust and/or slurry must be collected and prevented from entering the environment. Concrete leachate is alkaline and highly toxic to fish and aquatic life

3.9.5 Grout

Grout and grout-water are also known to be toxic to aquatic life. All measures should be taken to prevent any incidence of concrete, concrete leachate or grout from entering any water body or water course.

3.9.6 Demolition of Concrete

Concrete demolition rubble shall be disposed of off-site as inert fill or as construction garbage.

Concrete reinforcing steel not embedded in concrete shall be separated for disposal in accordance with Section3.9.7, Metal Wastes.
The Contractor will develop and implement a plan for dealing with excess wet concrete and concrete truck and/or mixer washings appropriately. The Contractor will submit this plan to OPG's Representative for review and acceptance. No concrete will be allowed on site until the procedures for on Site handling and disposal of concrete wastes have been accepted by OPG's Representative.

3.9.7 Metal Wastes

Loose or exposed concrete reinforcing steel or iron and other steel wastes shall be recycled by the Contractor.
The Contractor shall collect and recycle metal wastes arising on site.

3.9.8 Waste Wood

Waste wood that cannot be reused or given away shall be disposed of at an MOECC approved local landfill site. Every reasonable effort shall be made to reuse waste or surplus wood.

3.9.9 Managing Excess Washings

All excess wet concrete, excess cement grout and concrete truck mixer washings shall be disposed of in a containment area (basin) to be developed by the contractor in the lay down area at the site. The proposed design of the excess wet concrete basin shall be submitted to OPG's Contract Owner or Delegate for approval. Once hardened, excess fresh concrete and cement grout, together with mixer washing residue, shall be disposed of as concrete rubble.

3.9.10 Sanitary Sewage

Sanitary sewage shall be collected in portable toilet facilities. Waste shall be removed on a regular basis consistent with health and safety requirements. Waste shall be disposed of at a licensed disposal location by a licensed hauler. Copies of the waste hauler and disposal locations Environmental Compliance Approvals shall be provided to OPG's Contract Owner or Delegate; as well as copies of the service records as the records are received.

All old sewage piping should be drained of any free products prior to removal and disposal and the sewage dealt with as specified in the contractor's Environmental Compliance Approval. Health and Safety precautions should be considered for handling this old sewage piping.

3.9.11 Truck / Equipment Wash Area

Washing of trucks and equipment is not allowed on site or near surface waters unless the Contractor provides a plan for review and acceptance to OPG's Representative or OPG's Designated Delegate.

3.9.12 Dumpster and Containers

Delivered dumpsters or containers used for waste or recycling collection must be inspected by Contractor before the dumpster/container driver leaves the site. The dumpsters or containers must be in good condition, especially so that the bottom does not permit leakage of the contents and/or precipitation to the environment. The dumpsters must also be clean of any hazardous residue from previous use. In some cases, covered and sealed containers or dumpsters may be requested by OPG

3.9.13 Domestic and Construction Garbage

The contractor shall ensure that the site is kept in a clean and tidy condition. Waste shall be removed on a regular basis to avoid accumulation on site. The contractor shall minimize the volumes of domestic and construction garbage produced on site. Waste storage bins, with lids, provided by the contractor, shall be used for the collection and temporary storage of domestic wastes. A ministry-approved local landfill site shall be used for disposal of domestic and construction garbage (e.g. wastes that cannot practically be reused or recycled).

3.9.14 Designated Substance Waste

Refer to Section 2.4 The Contractor shall be responsible for the removal, transportation and off-site disposal of all designated substance waste as identified in section 2.4 and as per Section 3.9.1 General Waste Management.

3.9.15 Contaminated Soil or Granular Material

Empty open-head drums with sealable lids shall be provided on site for pre-disposal storage of spillable substances and for disposal of used sorbents, contaminated soil etc. The PSSEP shall include minimum size, number and locations of disposal drums.

3.10 Hazardous Material Management

The Contractor shall make itself fully aware of all Federal and Provincial legislation and restrictions on the storage and use of products or materials considered harmful to the environment or persons and shall comply with all applicable regulations and guidelines.

Chemicals cannot be brought onto OPG's site without prior approval. The Contractor shall require its manufacturers or suppliers to provide current Material Safety Data Sheets (MSDS) for all such products and shall comply with all requirements of the Workplace Hazardous Materials Information System (WHMIS) Regulations. MSDS Sheets for proposed chemicals are to be provided to OPG's Designated Delegate for acceptance prior to being brought on site.

Hazardous, Suspect and Contaminated solid and liquid wastes shall be disposed of off site using licensed disposal agents and haulers. Copies of the waste hauler and disposal locations Environmental Compliance Approvals shall be provided to OPG's Contract Owner or Delegate; as well as, copies of the disposal records as the records are received. The Contractor shall be responsible for registration of all hazardous, subject and contaminated wastes under provincial regulations. Copies of all documentation are to be provided to OPG.

Compressed gases must be properly stored as per legislation (e.g. oxygen, acetylene, etc.). All compressed gases must also be stored in approved locations when not in use. Propane must be handled and stored as per the Propane Storage and Handling Code (O. Reg. 211/01) and the Liquid Fuels Regulation (O. Reg 217/01).

Bulk storage for any environmentally hazardous liquid shall be located at least thirty (30) metres away from a water body or water course within dikes or equivalent secondary containment, on flat ground and in an OPG-approved area.

Empty open-head drums with sealable lids shall be on hand for pre-disposal storage of spilled substances or contaminated material from fuel spills; sufficient drums shall be available to accommodate stored and in-service volumes of spillable substances.

The Contractor is expected to describe any on site procedures related to the use, handling and storage of hazardous products in the Site Specific Environmental Management Plan

3.10.1 Fuel Use

Any Site fuel storage tanks will be located and managed in accordance with the requirements of the Technical Standards and Safety Act and associated regulations. The Contractor is expected to minimize the amount of fuels that are stored at the site, particularly during times when the contractor is not present. OPG's minimum fuel handling requirement for this project are; that any fuel be stored and dispensed at least 30 m away from any surface water; storage requires adequate secondary containment for the maximum volume maintained on site; training of workers in spill response and use of fuel dispensing equipment is also mandatory.
Impermeable liners must be used for any fuel storage container placed on the ground. The only allowed exception is where the Contractor uses double walled tanks with installed devices for monitoring the interstitial spaces. Onsite storage facilities will be regularly inspected and monitored.

Small containers of fuel shall have secure secondary containment and shall be protected at all times from accidental spillage. Provide separate storage for incompatible materials. Spill kit(s) shall be on hand at all liquid fuel storage areas as a means of containing or absorbing minor releases.

OPG's preference is that readily mobile highway vehicles will be refuelled **off** Site. Where onsite refuelling of project equipment is necessary the Contractor must include their re-fuelling procedures in their Site Specific Environmental Management Plan.

3.11 Equipment Management

All equipment will be in good operating condition, appropriately serviced to prevent unplanned releases and /or leaks of operating fluids and meet applicable statutory requirements for serviceability and exhaust emissions. Exhaust systems will function in a manner to control exhaust noise within acceptable levels. OPG's Representative has the authority to require the removal from Site of any piece of equipment which their opinion cannot be operated without excessive leaking of operating fluids or excessive exhaust emissions, including noise.

Operating fluid wastes arising on site from vehicles and construction equipment shall be collected in suitable containers with tight sealing lids and shall be removed from site in accordance with the EPC Agreement Section 2.5 and all applicable laws and regulations, for recycling or disposal as hazardous waste at an MOE approved facility by an MOE approved hauler. Wastes shall be properly labelled according to WHMIS regulations.

Equipment working in dewatered work areas, on or in water will be cleaned and serviced as necessary to prevent deposition of oil, grease, coolant, fuel and any other contaminants.
Stationary equipment operating in dewatered areas or within 10 m of any surface water or in dewatered areas will be equipped with drip trays to contain any fuel, oil, coolant or grease which might be spilled from the equipment. Drip trays of a size not less than the full plan area of each piece of equipment for which protection is provided will be used. Drip trays for concrete pumps, grout pumps and grout reservoirs will be capable of containing accidental spills/leakage during hose connection and operation. Ensure the containment is leak proof.
Equipment shall not remain/stored on site unless they are required to execute the work. Equipment awaiting to be removed off site shall be stored without fuel and the same fuel containment precautions as above shall apply.
No equipment will be washed on site in work areas or near surface waters.

3.12 Work In or Near Water

The contractor shall be responsible for the design, operation, inspection and maintenance of all erosion and sediment control on the site, both on land and in water courses and water bodies adjoining and/or affected by the Contracted Service. This includes all installations as shown on any drawings/sketches, as required by site conditions, permits or approvals and/or as required from time to time by OPG's Contract Owner or Delegate.

The contractor shall arrange to have a qualified individual prepare an Erosion and Sediment Control Plan for review and acceptance by OPG's Contract Owner or Delegate.

- This plan should identify mitigation measures that will be implemented during each stage of the project to prevent the transportation of sediment and/or contaminants overland and deposition into surrounding natural areas.
- Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.
- Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a water body
- Erosion and sediment control measures should be maintained until all disturbed ground has been permanently stabilized and runoff water is clear.
- Where practical, project activities should be timed appropriately to limit the area/time where soil is exposed

- Removal of non-biodegradable erosion and sediment control materials once site is stabilized.
- Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction (Included in Inspection described in Section 3.6)
- Mitigation measures to prevent dust and debris from entering the watercourse during all aspects of the work
- Repairs to erosion and sediment control measures and structures if damage occurs.
- Program to include best management practices identified in the Erosion & Sediment Control Guideline for Urban Construction (http://www.npca.ca/wp-content/uploads/ErosionandSedimentControl-Guidelines.pdf)

It is the responsibility of the contractor to fully familiarize itself with fluctuating water levels and water flow conditions and to anticipate the effects that any water levels and flows may have on the Services.

No treated timber shall be used in water.

Turbid water shall not be directly discharged to the waterways.

The Contractor is fully responsible for arranging for the required permits, if any.

3.13 Natural Environment

Wildlife (both terrestrial and/or aquatic) should not be intentionally harmed or harassed as result of this project.

The Contractor shall utilize a Biologist to conduct a survey to identify the presence of any endangered species in the vicinity of the work areas and determine an action plan if they are to interfere with construction. Of special concern is the Butternut Tree, Allegheny Dusky Salamander and breeding birds. The Contractor will be responsible to obtain and comply with any necessary permits for the removal or relocation of fish or wildlife that are necessary for this project. Such removals or relocations will be carried out under the supervision of a qualified person (e.g. biologist, ecologist or other licensed individual).
The Contractor is required to notify OPG Representative immediately if it comes across any endangered species. The Contractor must avoid impact on any federally and provincially endangered and threatened/rare plant species and their habitat. The Contractor must execute the work in compliance to all applicable acts and regulations and must obtain all required approvals and permits.

Nuisance wildlife will be reported to OPG's Representative.
No fishing or hunting is allowed at the project site.

3.13.1 Vegetation Removal

Any vegetation removal required for this work should be identified in this section of the Environmental Plan to ensure there are not impacts to Species at Risk /Species of Conservation Concern/rare species on the property. The Contractor shall be fully responsible for any surveys, permits, approvals or any other action that may be required to ensure compliance with all applicable laws, Acts, regulations, bylaws.

Ash trees to be disposed off in an appropriate manner to ensure that the avoidance of spreading invasive species (ash borer).

Any other invasive species must be disposed of in the appropriate manner to avoid the spread of the invasive species.

The Contractor shall be fully responsible for any permits required for cutting trees above a certain size.

Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction. When practicable, prune or top the vegetation instead of grubbing/uprooting.
Immediately stabilize shoreline or banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.

3.13.2 Water Intakes

If intake is required, the following protection measures but not limited to, must be implemented:

- Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish.
- Screens should be located away from natural or artificial structures that may attract fish that are migrating, spawning, or in rearing habitat.
- The screen face should be oriented in the same direction as the flow.
- Screens should be located a minimum of 300 mm (12 in.) above the bottom of the watercourse to prevent entrainment of sediment and aquatic organisms associated with the bottom area.
- Provision should be made for the removal, inspection, and cleaning of screens.
- Ensure regular maintenance and repair of cleaning apparatus, seals, and screens is carried out to prevent debris-fouling and impingement of fish.
- Pumps should be shut down when fish screens are removed for inspection and cleaning.

The Contractor is expected to describe any on site procedures related to all above items in this section, in the Site Specific Environmental Management Plan

3.14 Site Management

All areas affected by the work must be cleaned up each day and upon completion of the project. All debris shall be removed and disposed of off-site by the Contractor in accordance with all regulations and at the Contractor's expense. Care shall be taken to prevent contaminating the waterway with any debris for the project duration.

The site shall be cleaned of all construction debris upon completion and left in a clean and tidy condition. The laydown area shall be left in a clean, tidy and uniformly graded condition. Ramps, railings and fencing disturbed in the execution of the Contracted Services shall be restored.

Office trailers, storage sheds and/or containers, and portable washrooms will be provided by the Contractor. They must be placed in OPG approved locations, and are to be situated in such a manner as to prevent any environmental impacts, such as blocking surface run-off and avoiding potential wildlife habitat locations.

During construction and in particular, prior to the completion of the project, an environmental inspection(s) may be made to ensure conformance / compliance with the environmental requirements of this Contract and applicable environmental legal requirements. Non-compliance and non-conformance issues arising from inspections should be dealt with immediately to the satisfaction of the OPG Contract Owner or Delegate.

3.15 Community Impacts

The Contractor shall work with the local authorities, NPC, and MOE well in advance to secure permits for heavy equipment and trucks that will be used for this project.

3.15.1 Construction Noise Control

Construction safety (OHSA requirements) and local municipal by-laws shall provide the regulatory basis for noise control and hearing protection. Noise by-laws or formal exemption shall be used in setting hours of work limitations

3.15.2 Construction Dust Control

Dust shall be controlled for the duration of the Project. Regular mechanical sweeping, environmentally acceptable dust suppressants and/or water shall be used as necessary to control dust on the access road and in lay down and work areas.

Environmentally acceptable dust suppressants and/or water will be used as necessary to control dust on access roads, laydown and work areas. Dust will be controlled for the duration of the Project so as to prevent off site nuisance or hazard to adjacent property owners. . If water is used, caution should be applied to prevent water and slurry from entering any water body. Ensure that other suppressants are applied at least 30 meters away from any water body. Oils shall not be used for dust control.

3.15.3 Public Complaints

The Contractor shall develop a community complaint response protocol for any nuisance impacts related to the contracted service. OPG's delegate shall review this protocol prior to mobilization at site.

4.0 QUALITY

The Contractor will meet all of the quality requirements specified within the Technical Specification document and associated maps, drawings, and in accordance with the Agreement Section 3.13.

The Contractor shall be responsible for quality of construction and conformance of all Services in accordance with the Contract. All Work will be subject to inspection and quality control testing by the Contractor's Engineer. All records will be subject to inspection audits by OPG'S designated Delegate. As a minimum Quality Control (QC) requirement, the Contractor shall designate a qualified member of its site staff as Quality Control Coordinator for the Services. This QC Coordinator shall be qualified in QA/QC procedures to monitor work in progress.

The QC Coordinator shall be responsible for maintaining up-to-date quality control records including tests, geometric measurements, concrete and grout data, certified test reports and other records. This QC Coordinator shall have the authority to ensure that proper work conditions such as temperature, work cleanliness and dust control are maintained, and shall maintain records confirming that these conditions have been met.

If the Contractor fails to perform Quality Control work to the satisfaction of the Engineer, payment may be withheld and the subject work may be rejected. No separate payment will be made for the repair of rejected work.

4.1 Project Specific Quality Management Plan (PSQMP)

The Contractor will prepare a Project Specific Quality Plan (PSQMP) for the Contracted Services, summarizing and identifying quality assurance and quality control steps and procedures that the Contractor will take in order to comply will all applicable codes and standards.

The Contractor shall also supply a QA document from the fence material supplier.

The Inspection and Test Plan (ITP) shall list all the key milestone Hold Points requiring testing and verification by the Contractor. Each Hold Point requires witness sign-off by OPG, prior to proceeding to the next requirement.

The content of the plan should address as a **minimum** the following:

Project Specific Quality Management Plan
1.0 Scope of Work *2.0 Contractor's Quality Program* *3.0 Roles and Responsibilities* *4.0 Project and Contract Activities* *4.1 Inspections Requirements* *4.1.1 Frequency of site visits/walk-downs for contract quality surveillance has been determined.* *4.2 Testing Requirements* *4.3 Hold Points* *4.3.1 Inspection and Test Plans (ITPs) established for Owner/Engineer witness, review and/or hold points* *4.4 Deficiencies Tracking*

4.2 Quality Assurance

The Contractor will provide the Services and Goods in accordance with its quality assurance program and any requirements set out in the Specifications. If there are any conflicts between the contractor's internal program and the Specifications, the Specifications will prevail.

OPG may have any aspect of the quality assurance program of the Contractor or subcontractor reviewed by auditors designated by OPG. The Contractor will identify and resolve any non-conformances in accordance with its quality assurance program and this Agreement, subject to obtaining the written acceptance of the proposed disposition by OPG's Designated Delegate.
The Contractor shall, as part of its QA Program, establish and maintain, as a minimum, the following:

a. A filing and record keeping system.

b. A drawing file and drawing control system.

c. A sketch file and sketch control system.

d. Records of all tests and reports pertaining to materials and equipment. This shall be filed in a readily accessible filing system designed for easy tracing of records.

e. A written Quality Control Program for major construction items and associated components

f. Copies of the QA and QC Programs reviewed by, and meeting with, the concurrence of the Engineer.

All Contractor-related correspondence including, but not limited to, general correspondence, transmittals, requests for information, records of activities, inspection records, etc,. shall be held by the Contractor on file, in its construction offices or in easily accessible storage protected from the elements and other damage. No records shall be destroyed.

4.3 Inspection and Testing

The Contractor is responsible for Quality Control inspection and testing in relation to its own work and the work of its sub-contractors under the Contract. Subject to acceptance by OPG / Engineer, the Contractor shall employ independent inspection and testing agencies for the purpose of inspecting and testing portions of the Services as required by the individual specification sections.

Any Services covered prior to the designated inspection and testing shall be uncovered by the Contractor. The Contractor shall re-cover such Services at its own expense after all inspections and tests have been satisfactorily completed.

If defects are revealed during inspection and/or testing, the Contractor shall promptly inform the Engineer of the defects, perform additional inspection and/or testing as required to ascertain the full degree of defects. The Contractor shall correct defects and irregularities to meet the requirements of the Contract at Contractor's expense and pay costs for re-testing and re-inspection.

The Contractor shall provide OPG and the Engineer access to the Services for audit purposes.

The Contractor shall give the Engineer 48 hours notice when requesting inspection in the field, and 72 hours notice for requesting inspection in the shop/field.

The Engineer may order any part of the Services to be examined if it is suspected that the Services are not in accordance with the Contract Documents. If, upon examination, such Services are found not in accordance with the Contract Documents, the Contractor shall correct such Services and pay the cost of examination and correction. If such Services are found to be in accordance with the Contract Documents, OPG will pay the cost of examination and replacement.

4.3.1 Hold Points

The Contractor shall establish “Hold Points” as required to address Inspection and Test Plan requirements.

The Contractor shall give OPG, and /or its representative reasonably advanced notice when requesting inspection in the field.

It is the responsibility of the Contractor to provide 72 hours Notice to the OPG Site Manager and / or its representative before any hold point inspections. Once at site, OPG shall not be delayed from completing the inspections. Any delays in being able to complete these inspections, will result in a charge back to the Contractor for all time cost

Any costs associated with project delays as a result of the Contractor not providing adequate notification for the Inspection “Hold Points” or any costs resulting from delays in being able to undertake the “Hold Point” inspections, once OPG is at site (i.e. labour and M& E costs) shall be borne by the Contractor with no additional payments from OPG.

4.3.2 Independent Inspection and Testing Agencies

Certified, Independent Inspection and Testing Agencies may be engaged by OPG for the purpose of inspecting and/or testing any portions of the Services.

Employment of Inspection and Testing Agencies by OPG in no way relieves the Contractor of its responsibility to perform the Services in accordance with the Contract Documents and to provide the required Quality Control.

4.3.3 Reports

The Contractor shall submit copies of inspection, in-progress inspection and test reports promptly to OPG/Engineer and provide copies to manufacturer/fabricator/sub-contractor of material/Services being inspected/tested.

5.0 REQUIREMENTS OF REGULATORY AGENCIES

5.1 Permits, Approvals, and Notices by OPG

OPG shall provide support to the Contractor for any permits.

5.2 Permits, Approvals, Licenses, and Notices by the Contractor

The Contractor shall procure all permits and licenses required in the name of the contractor for the Work to be performed by the contractor or the contractor’s subcontractors.

The Contractor shall obtain an “OPG Service Locate Permit” prior to work involving, trenching, drilling, boring and cutting. This permit will only be related to OPG buried services) not services from other utilities). A minimum notice of two (2) weeks is required from the Company for OPG to provide the permit.

The Contractor shall arrange and pay for **all** permits including but not limited to:

- Notice of Project with the MOL
- ESA inspection permits (Contractor to determine if required for the existing Utilities temporary support / relocation)
- Underground service locates from utilities other than OPG (Contractor to determine if any are required)
- Niagara Parks Commission (for Niagara Parkway usage) and Municipal and Provincial Highways
- All environmental permits and approvals
- All municipal/local permit requirements

5.3 Conditions of Approval

OPG will make all permits and approvals obtained by OPG available to the Contractor. The Contractor will be obligated to fully comply with all conditions of all Approvals. A copy of the permits and associated documentation / drawings will be provided by the Contractor which will remain on Site and be accessible for audit purposes for the duration o the scope of work. These documents will be returned to OPG at completion of the Site Work.

6.0 LOGISTICS

6.1 Project Site Location

The Project site is located on the Glen Access Road between the Niagara River Parkway to the SAB2 Entrance Gate, as shown in the Functional Specification.

6.2 Construction Island

During construction, the Contractor shall be given the necessary area, (to be known as the Construction Island),on site at the various OPG sites to execute the project scope, which will including full access to the work location, and space for equipment/material handling, contractor vehicle parking, (including employee personnel vehicles, and office/equipment storage trailers. The Contractor shall establish this construction island and shall conduct its activities within the construction island. OPG may require access to the site in emergency situations and in such an event; OPG shall contact the Contractor to co-ordinate access procedures.

The Construction Island shall be erected with a solid barrier to eliminate co-mingling between OPG and Contractor staff. The contractor shall use temporary fencing when taking down any existing fencing to protect against public entry. This shall be done for all waterways. It shall be erected utilizing minimum 8 foot high continuous modular or equivalent fencing that is adequately supported to withstand the effects of weather and environment. The fence shall have adequate signage indicating the area is under the control of the contractor with contact information if OPG access needs to be coordinated. No project scope is to be executed outside this island.

OPG will provide the Construction Island boundaries allowed utilizing drawings or other means. A detailed drawing showing the boundaries of this Island with detail on entrances, location of sanitary services, storage, parking, and office trailers depicted are to be provided by the Contractor. OPG reserves the right to adjust the proposed Construction Island to suite operating access and environmental protection. The final Construction Island will be agreed to between OPG and the successful Contractor in a Memorandum of Understanding after contract award.

6.3 Site Restrictions

The overall route goes through several residential roads. Where the Contractor will be required to determine and implement the appropriate public and traffic control measures to ensure public safety. The Contractor is to comply with all requirements of the authority having jurisdiction over roads used by the Contractor in the execution of the Services. Determine the condition and availability of highways and

roads, clearances, restrictions, bridge load limits, bond requirements, and other limitations that may affect ingress to and egress from the Site. Comply with applicable load regulations during hauling of materials and equipment over highways, roads or bridges and minimize interference with local traffic. Keep highways and roads impacted by the Services open to traffic and passable at all times.

The Contractor shall supply, install, and maintain all necessary barricades, temporary signs, red lights, danger signals and signs, and all other precautions for the protection of the Services, and the safety of the public. In addition to the requirements of the road authority having jurisdiction, provide flagmen to control traffic at all locations where the Contractor's operations interfere with public highways, roads, and detours.

The Contractor shall control dust and repair damage to highways, roads, and bridges caused by Contract-generated traffic.

The Contractor shall keep all access routes in clean and tidy condition and shall not obstruct operations.

6.4 Shipping and Receiving

All deliveries of materials and equipment to site including loading and unloading are the responsibility of the Contractor.

6.5 Site Entry and Exit Security Requirements

The contractor shall comply with OPG's site entry and exit security requirements.

The contractor will be limited to only those areas necessary to complete the contracted services. All other non-authorized areas are off limits.

The contractor will obtain an access card from security via the Contract Administrator to access the facility.

6.6 Protection of Work and Property

The Contractor will construct a perimeter around the construction island – see Section 6.11 Hoarding and Temporary Barriers.
The Contractor will be responsible for providing signage/barriers to warn OPG staff and the public from entering the work site. The Construction Island shall be easily and clearly identifiable to all workers and Public that may be in proximity to it.
The Contractor will be responsible for the security of equipment and supplies. Equipment and supplies shall be secured at all times.
The Contractor will be responsible for ensuring Site is secure and properly signed to prevent unauthorized access during Construction and off-hours.
Any additional enclosures required shall be supplied and maintained by the contractor at all times throughout the project.

6.7 OPG Access to the CI

If OPG requires access to the established CI, OPG must obtain the Contractor's permission and follow all Contractor's site procedures e.g. sign-in, access, orientation, training, safety including PPE, and the requirements of the MOU while inside the CI.

OPG personnel must wear personal protective equipment (PPE) appropriate for the construction project and at a minimum as required by the Contractor's safety procedures. Contractor shall make allowances for continuous access of OPG employees that participating in gate overhaul work, and contractors that provide services to OPG – building cleaning /maintenance , garbage removal, etc, on as needed basis.

6.8 Buried and/or Embedded Services

The Contractor is completely responsible to locate and identify all underground services. Maintain identification of services for the duration of the Services, and leave in place on demobilization unless otherwise noted by OPG.

OPG is to be informed of any unknown services found prior to and during excavation. OPG reserves the right to inspect these unearthed services prior to execution of project scope and before re-burial.

Notify the OPG and appropriate Utility or Owner (if applicable) prior to carrying out operations in the vicinity of the buried services. Comply with the requirements of, and co-operate fully with OPG and each Utility or Owner for the location and protection of the service lines during the Services. It is the Contractor's responsibility for any claims resulting from damage to the service lines as a result of the Contractor's construction operations. Promptly notify the OPG Project Site Manager, (and Utility if applicable) in the event of any damage or interruption to any services caused by the Contractor's construction operations. Co-operate with the Utility or Owner in the restoration of service as promptly as possible and bear all costs arising from the damage or interruption.

6.9 Contract Progress Meetings

The contract progress meetings requirements including the kick-off meeting prior to start of Services are outlined in the Agreement Section 3.4.

OPG will establish a time and location for the meeting and notify the parties a minimum of five (5) working days before the kick off meeting.

Representatives of the Contractor, subcontractor, and suppliers attending the meetings shall be qualified and authorized to act on behalf of the party each represents.

OPG will schedule and administer weekly Contract Progress Meetings throughout progress of the Services as required.

- OPG will prepare an agenda for these meetings – typically will address, Safety, Environment, Quality, Work Completed (past week), Look ahead 1-week,2-weeks, Work summary and coordination, new items
- The Contractor will provide physical space and make arrangements for meetings
- OPG will record minutes
- OPG will reproduce and distribute copies of minutes within one (1) working day after each meeting to meeting participants, affected parties not in attendance, the contractor and other stakeholders

6.10 Winter Work

In the event the work is extended in to winter, the Contractor will be responsible for all winter heating, enclosures, housing and all other services and costs related to winter works.

6.11 Hoarding and Temporary Barriers

The Contractor will be responsible for hoarding any parts of the work e.g. concrete but not limited to, that must be put under controlled conditions and to ensure maximum quality and uninterrupted work progress due to inclement weather.

Where a fence or fence fabric has been removed and is absent for the purpose of installing a new fence, upgrading an existing one or repairing and existing one, the following must be implemented by the contractor:

- The contractor must have the entire location where fencing and or fabric has been removed under continual observation by their employees in order to immediately identify to OPG if a member of the public enters the jobsite and crosses the fence line; or
- Install a temporary fence that has been approved by the OPG delegate as an adequate barrier in preventing access by members of the public. Typically a temporary fencing/barrier would be necessary outside normal working hours if the fence or fabric is absent.
- The use of plastic ties is prohibited on any temporary or permanent fencing installations.

6.12 Materials

All material shall be stockpiled in a manner approved by the manufacturer.

Contractor is responsible for providing qualified staff for all craning and material handling.

Contractor is responsible for any hoists, mobile cranes, forklifts or other material handling equipment required to undertake the services.

6.12.1 Contractor Responsibility for Materials:

The Contractor is responsible for providing the following:

1. Coordination and liaison with its subcontractors and OPG engineers or consultants employed or retained by OPG.
2. Transporting, receiving loading, rigging, off-loading, installation and all aspects related to equipment handling whether supplied by OPG or by the Contractor or its subcontractors required for the complete functional installation in compliance with the technical requirements outlined in the Specifications.
3. The Contractor's responsibility for any Goods supplied shall consist of the design, manufacture, delivery, installation, site acceptance testing and guarantee of these Goods.
4. Any, scaffolding (unless otherwise stated), forklifts or mobile cranes and trucks necessary to perform the work.
5. All additional devices, apparatus, appliances, material and labour not specifically described

here, that are necessary to complete, perfect and test equipment in order to meet the stated requirements and standards. These shall be at no additional cost to OPG.

6. The Contractor is responsible to obtain and pay for all necessary permits including all fees associated with mandatory or regulatory inspections if any.

6.12.2 OPG Responsibility for Materials and Services:

Ontario Power Generation will:

1. Provide the Contractor access to the facility and equipment as required for this scope and limited by site restrictions and outage schedule.
2. Provide a Single Point of Contact (SPOC) when the Contractor is on-site.
3. Review and approval for any hazardous chemicals brought on site prior to starting the work.
4. Witness and signoff on any applicable tests (ITP hold points).
5. Provide approval/acceptance for all exceptions/additions to the Services, materials etc.

6.13 Mobilization and Demobilization

Mobilization shall include and not limited to all activities and associated costs for transportation of the Contractor's personnel, general Site facilities, operating supplies and equipment to the job Site and preparing the Site and equipment in readiness for use until completion of the Contract.
Demobilization shall include and not limited to all activities and associated costs for the removal of the general Site facilities, operating supplies and equipment in a sequence and timing to suit the construction schedule and the Site restoration.

6.14 Parking during Construction

Contractor shall provide and maintain adequate parking for its construction vehicles, those of any Subcontractor(s) and OPG' Representative(s) in such a location to ensure that roadways are free and clear for construction and other access.

6.15 Construction Site Services

Sanitary Facilities

The Contractor will supply, install and maintain in good repair sufficient sanitary facilities for its workers in accordance with local health authorities and OHSA regulations. The Contractor to ensure the appropriate distance from any waterways is observed.

Water Supply

It is the Contractor's responsibility to ensure it has a sufficient supply of domestic water as needed to perform the Services

OPG is not responsible for any back up water supply due to unforeseen or unexpected municipal system outages or line breaks.

Temporary Power and Utilities

It is the Contractor's responsibility to ensure it has sufficient power as needed to perform the Services.

The Contractor is fully responsible for all temporary connections, disconnections, distribution, transformation, ground fault interrupters, panels etc., and for any backup power as required.

OPG is not responsible for any back up power provisions due to unforeseen or unexpected system power outages.

Temporary Telephone, Faxing, Computers, Internet

The Contractor will provide its own telephone, faxing, computer equipment and Internet service. The contractor is responsible to pay all costs associated with connection/disconnection and any costs associated with the use of the line(s) or wireless services.

Lunchroom and Office Trailer

The Contractor is responsible for providing its own Lunchroom and Office Trailer(s) at Site, complete with all necessary power, furniture, communication lines, appliances, and any other necessary items sufficient for the contractor's needs.

Temporary Lighting

The Contractor shall supply, install and maintain their own temporary lighting to the Services for the duration of the Project to produce adequate illumination for safe working and traffic movement. Provide lighting in the laydown area for work at night as necessary.

Temporary Heating

The Contractor shall provide temporary heating required during the construction period. Provision of temporary heating shall include attendance, maintenance and fuel. Construction heaters used inside work areas, if required, shall be positioned and operated in accordance with the safety standards of Ministry of Labour. Vented heaters shall be used to avoid exposure of new concrete to combustion fumes. In the case that vented heaters cannot be used, concrete surfaces shall be suitably isolated from combustion fumes. Heated areas shall be ventilated and the work area kept free of exhaust or combustion gases.

Project cleanliness

Contractor is responsible for keeping the area reasonably clean during the working day and that all walkways be cleaned up and free of obstructions every night. If significant quantities of garbage are to be produced, then waste bins should be brought in and emptied as necessary. Remove waste and debris from site at end of each working day.
The Contractor shall adhere to the OSHA Construction Reg. 213/91 S29.11.

6.15.1 *Tools, Equipment, Materials, Storage and Facilities by the Contractor*

The Contractor shall provide spare/extra equipment and parts on site such that an equipment failure will not result in a delay of the Services.
Contractor shall be responsible for the design of and provision of all scaffolding, shoring, equipment or other means required accessing the work areas safely and undertaking the repairs.

In the event that any components are lost or otherwise damaged, the contractor shall be responsible for the replacement, recovery, or repair as required to make good the component.

In no instance shall any components be abandoned on site including components lost in the water. Contractor is also responsible to clean and restore the site to the satisfaction of the OPG Project Site Manager.

The Contractor will be required to provide at his own expense, all materials, tools, supplies and consumables, storage containers that are lockable and/or weatherproof, all necessary environmental controls, all required safety devises including but not limited to guards, barriers and signs, for completion of the Services

All such facilities and temporary work shall be installed at the designated areas and to the satisfaction of OPG and shall be removed after completion of the Services.

6.16 Investment Recovery – Disposal of Surplus Assets

Contractor to provide a credit to OPG for the scrap metal material that is being removed and disposed of. The credit is to be applied to the disposal and transportation costs of the scrap metal.

6.17 Demolition of Structures

1. ***Demolition Plan***

   At least four (4) weeks before demolition work is to begin, Contractor shall submit to OPG's Representative(s) a detailed Demolition Plan describing the following:

   i. proposed sequence of operations;
   ii. proposed equipment and methods to be used for each operation;
   iii. proposed measures to protect structures and Services which are to remain in place, including temporary shoring, bracing and supports;
   iv. dust control;
   v. weather proofing.

2. ***Safety Measures***

   Contractor shall take all necessary measures to prevent any movement, settlement or damage of adjacent structures. Contractor shall supply and install all required bracing, shoring, underpinning work or any other measures as may be required.

   Contractor shall install appropriate instrumentation at adjacent structures to monitor for any movement or settlement because of the demolition work.

   Contractor shall take precautions to support structures and, if at any time safety of adjacent structures or Services appears to endangered, Contractor shall cease operations, notify OPG's Representative, and perform all necessary work to correct the situation.

3. ***Disposal***

   The burning of refuse and debris on Site is not permitted.

   Demolished materials, unless otherwise noted, shall become property of Contractor. Contractor shall take measures to prevent any debris from falling into the watercourse and shall remove any debris that has fallen into water.

Remove and dispose of demolished materials as the work progress in accordance with all regulations and at the Contractor's expense. Do not allow debris to accumulate in the work area. Care shall be taken to prevent contaminating the waterway with any debris for the project duration.

6.18 Final Cleanup

The Services shall comprise the supply of all labour, construction plant and material, and the performance of all work necessary for the removal of all construction plant, surplus materials, scrap, waste and debris deposited on the jobsite during, or because of the work, and for the final clean-up of all permanent work.

Contractor shall remove from the jobsite, to the satisfaction of OPG's Representative, all surplus materials, forms; waste steel, waste concrete/cement and other materials and debris of any description.

Contractor shall leave the entire jobsite, including all work areas in a neat and tidy condition, and restore it to the satisfaction of the OPG Site Project Manager.

7.0 PROJECT CONTROLS

7.1 Schedule

Construction Stages Schedules - Proposal

The submission of schedules shall be in accordance with the Agreement Section 3.8 and as further detailed below.

The contractor will provide a Level 2 in MS Project (Gantt chart format) schedule with their proposal outlining major activities, sequencing, and durations. As a minimum, the following activity information will be shown:

- Latest PO Award Date that will still allow contractor to undertake work within the project constraints
- Kick Off Meeting
- EPSCA Mark Up Meeting
- Preparation and Submittal of Project Specific Site Safety Plan, OPG to review
- Preparation and Submittal of Project Specific Site Environmental Plan, OPG to Accept
- Preparation and Submittal of Quality Management Plan and Inspection & Test Plan, OPG to Accept
- Permitting
- Mobilization
- Demolition activities
- Shop Drawings Issued for Review
- Issued for Construction Drawings
- Fabrication
- Delivery
- Installation

- Demobilization
- As-Built Drawings
- Project Completion Report
- Testing Commissioning

7.1.1 Construction Schedules

Upon award, the proposal schedule will be further developed (LV3) and base-lined with the Contractor and OPG, with established milestone dates and critical path activities, and in accordance with *the Agreement Section 3.8.*

The Contractor shall ensure that adequate time is allowed for the drawing reviews.

7.2 Project Milestones

Contractor to suggest Milestones and Milestone Payment plan in the proposal submission.

7.3 Monitoring and Reporting Requirements

This schedule will be updated (% completions), and submitted to OPG (in MS Project format) on a weekly basis, and in accordance with the *Agreement Section 3.8.*

The updated construction schedule must be submitted to OPG for review 3 days prior to contract progress meetings

7.3.1 Weekly Reporting

The Contractor shall prepare and submit the following items:

I. Safety
II. Environment
III. Quality
IV. Work Completed (past week) including percentage complete for each activity.
V. Look ahead for work 1-week, 2-weeks.
VI. Work summary reviews and coordination of work.
VII. Areas or matters of concern, if any, that may influence the success of the Project, and proposed mitigation plan
VIII. New items

The updated construction schedule must be submitted to OPG for review 3 days prior to contract progress meetings.

7.4 Cost Control Requirements

Weekly and monthly cost reports that include earned value analysis of work completed to the end of the reporting period for both cost and schedule (CPI and SPI). Forecasting and Cashflow reports are required on a monthly basis.

Contract Change Authorization (CCA) shall be followed.
Contractor will provide a narrative report to define:

- Problem areas, anticipated delays, and the impact on the schedule.
- Corrective action recommended and its effect

8.0 SUBMITTALS

8.1 Submittal Summary

8.1.1 Submittal Summary Required with Proposal

In addition to cost and other information required on the Contractor Information Form and Technical Requirements elsewhere in this RFP, all Contractors will submit the following information with their proposals -

No.	Submittal Name	Reference	Schedule
Technical Submittals with Proposal			
A1	Narrative Work Plan. Contractor to describe in their own words their understanding of the project, the constraints faced (i.e. schedule, off-site support work, site restrictions, designated hazards) and how they will execute the project)		Preliminary with Proposal
A2	A Construction Schedule showing milestone dates and durations for major tasks and proposed hours of work.		Preliminary with Proposal
A3	Main Risks as understood by the Contractor.		With Proposal
A4	Quality Management Plan (Table of Contents)		Preliminary with Proposal
A5	Environmental permitting approach		Preliminary with Proposal

No.	Submittal Name	Reference	Schedule
A6	Project Organizational Chart identifying key project personnel		Preliminary with Proposal
A7			
Technical Submittals after Contract Award			
B1	Narrative Work Plan		Final Ten (10) days after award
B2	Level 3 Schedule		Final Ten (10) days after award
B3	Project Site Specific Safety Plan (PSSSP)		Ten (10) days after award
B4	Project Site Specific Environmental Plan (PSSEP)		Ten (10) days after award
B5	Quality Management Plan		Ten (10) days after award
B6	Environmental monitoring and weekly written reports, with respect to the requirements of the PSSEP		Weekly as per the PSSEP
B7	SDS For All Hazardous Material		Prior To Work Start
B8	Waste Handling and Disposal Plan		Prior To Work Start
B9	Cost and Schedule Control Plan		Prior To Work Start
B10	Weekly Progress Reports		Weekly, after contract award
B11	ITPs		Prior To Work Start
B12	Project Closeout Reporting (Completion Report, Record and Vendor Drawings, List of Warrantees, O&M Manuals)		At project closeout
B13	Permits and Environmental Compliance Approval completion		Prior to construction and per approved schedule
B14	Vendor Equipment Manuals		As agreed
B15	Site Development Plan		Prior to mobilization
B16	Demolition Plan and Existing Utilities Handling/supporting Plan		Three (3) weeks Prior to demolition activities occurring

No.	Submittal Name	Reference	Schedule
Submittals During Construction			
C1	Copies of all Documentation Relating to the Disposal of All Wastes		During Execution
C2	Aggregate Sourcing		Four (4) weeks prior to use
C3	Factory test records for mechanical components (AS APPLICABLE)		Completed records shall be available two (2) weeks prior to equipment arriving on site; upon request, copies of completed records shall be submitted to OPG.
C4	Site Test Manual (as applicable)		Draft copies 1 month prior to scheduled commencement of these site activities. Final copies in Completion report
C5	Notice of intent to deviate from a standard, material or component required by these Specifications		Prior to adopting any deviation; and prior to any actions influenced by the deviation
C6	Weight of fabricated components		Prior to shipping to site from fabrication shop
C7	Inspection tests and examination reports		As received and in Completion report
C8	Welding procedures including test results, and acceptance of welding methods		Prior to fabrication/construction activities involving welding
C9	Inspection of weld (AS APPLICABLE)		During fabrication and in Completion report
C10	Detailed commissioning plan (as applicable)		TBD
C11	Inspection test schedule		1 month prior to required inspection and testing
C12	The Contractor shall submit the following documentation for OPG's approval: *a) A complete set of Material Safety Data*		Draft copies 1 month prior to scheduled commencement of these

No.	Submittal Name	Reference	Schedule
	Sheets (MSDSs) for all chemicals, lubricants, etc *b) One set of the electronic files in AutoCAD 2012 format. All drawings shall be produced using AutoCAD.*		activities. Final copies in completion report
C13	Final Record Drawings (revised to incorporate field changes, if any)		After completion of erection/installation and commissioning
C14	Inspection and test plan (factory acceptance, site commissioning)		Prior to factory inspection and testing and site commissioning
C15	Commissioning tests and other observations		After site commissioning and in Completion report
C16	Planned tests (factory acceptance, site commissioning)		Prior to factory testing and site commissioning
C17	Factory acceptance test and installation and commissioning documentation		After completion of factory testing and site commissioning and in Completion report
C18	Manufacturing and shop testing (FAT) schedules (as needed)		As required
C19	Copies of all Documentation Relating to the Disposal of All Wastes		During Execution
C20	Labour Hours Per Trade		During Execution
Technical Submittals After Construction			
D1	Documentation Turn-Over Package		Upon Completion
D2	Notice of Construction Contract Completion		Upon Completion
D3	Participation in Lessons Learned Meeting and Report Contribution		Upon Completion

8.2 Submittal Process

Submit all drawings, data and documents required by the individual technical sections.
Work affected by a submittal shall not proceed until OPG's review of the submittal is complete.
The contractor shall review its submittals prior to submission and indicate on the submittal the contractor's stamp, signed by contractor's authorized representative certifying approval of submissions, verification of

field measurements and compliance with Contract Documents. Contractor's submittals requiring engineering approval not stamped by a Professional Engineer registered to practice in the Province of Ontario, signed, dated, identified and completely legible shall be returned without being examined and shall be considered rejected. Submittals with extensive errors and omissions shall be returned to the contractor without a complete review.

8.3 Narrative Work Plan

The Contractor's narrative work plan shall address the following points:

1. Description of proposed methods, materials and equipment used in executing the Services.
2. Contractors plan to manage and control hazards and environmental aspects of the work (can be more specific here).
3. Proposed safe work methods and equipment required to complete the Services.
4. List of major construction equipment proposed for the Services.

8.4 Turnover Procedure

The Contractor shall work with the OPG's Representative to develop a plan outlining responsibilities and records necessary to ensure an orderly turnover of completed work to OPG's Niagara Operations.

8.5 Shop Drawings

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. The Contractor must submit detailed shop drawings for all contract items including but not limited to concrete mix design, asphalt mix design, reinforcing bars, handrails, guiderails, piling procedures, precast structures and all other materials not specifically noted that are required to complete the construction of the works. All items must be reviewed by the Engineer prior to ordering and installation of materials. Any costs associated with modifications to or return of materials/equipment, as a result of shop drawings not submitted for review by the Engineer, shall be borne by the Contractor.
3. Detail all shop drawings using the metric system. Prepare to a drafting standard equivalent to Contract drawings.
4. Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Indicate cross-references to design drawings and specifications.
5. Adjustments made on shop drawings by Engineer are not intended to change the Contract Amount. If adjustments affect the value of Work, state such in writing to Engineer prior to proceeding with Work.
6. Make such changes in shop drawings as Engineer may require, consistent with Contract Documents. When resubmitting, notify Engineer in writing of any revisions other than those requested.
7. Shop drawings shall be reviewed and stamped by the Manufacturer's Engineer, registered in Ontario, prior to submission and shall be dated. Shop drawings submitted by a subcontractor or supplier directly to the Engineer will not be reviewed.

8. Maintain a complete Shop Drawing Record showing the review status of all shop drawings on the work. Provide Engineer with a copy of this record on a monthly basis or as requested by Engineer.
9. Submittals:
    1. Submit shop drawings and other submittals to Engineer for review with a Submittal Transmittal Form in a form acceptable to Engineer.
    2. Each submittal or submittal package, type or print the appropriate information on the form to fully describe the submittal(s) being sent for review. Retain one (1) copy of the form for filing and record purposes before drawings are sent to the Engineer.
    3. Number each transmittal form in sequential order, for record and tracking purposes.

    4. Submissions shall include:
        1. Project title
        2. Date and revision dates
        3. Name and address of:
            1 Subcontractor
            2 Supplier
            3 Manufacturer
10. Apply shop drawing stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
11. 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. Relationship to adjacent work
12. Submit one (1) paper copy and one (1) pdf copy of product data sheets or brochures for requirements requested in specification Sections and as Engineer may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.
13. Submit one (1) paper copy and one (1) pdf copy of shop drawings for each requirement requested in specification Sections and as Engineer may reasonably request.
14. Submittals will be returned with one or more of the following notations. Take action as noted:
    1. "REVIEWED" - Make and distribute additional copies as required for execution of Work.
    2. "REVISE & RESUBMIT" - Make the necessary revisions and resubmit revised drawings for review. Show the drawing number of the first such revised drawing and show the latest revision number applicable to the drawing by adding a suffix to the drawing number as - "REV. 1", "REV. 2", etc.
    3. "NOT REVIEWED" - This notation, indicates when Engineer has not reviewed the drawing. It may also be used in combination with the notation to revise and resubmit the drawing where Engineer lacks sufficient information to complete the review and requires resubmitting the drawing for review after revision.
    4. Drawings will be marked "REVIEWED" together with the notation to "REVISE & RESUBMIT" when Engineer requires Contractor to resubmit a revised drawing showing corrections made as a result of Engineer's notations on the shop drawings. This procedure will not relieve

Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of Contract.

15. Use only those shop drawings on the work that bear the "REVIEWED" notation.
16. Do not revise shop drawings marked "REVIEWED" unless resubmitted to Engineer for further review.
17. Where more than one type of shop drawing has been specified for one item, e.g., layout details, and dimensional drawings, the shop drawings shall be submitted together, to enable Engineer to review the drawings as a package.
18. Manufacturers' catalogues, manuals, or price lists will not be accepted as shop drawings. Such materials may be used as supplemental information to the shop drawings.
19. Determine which shop drawings have, in addition to those drawings specifically mentioned in the Contract, design elements requiring the seal of a Professional Engineer registered in the Province or Territory where the work is located, in accordance with the applicable provincial or federal engineering acts or other governing legislation. Seal such drawings before submitting them for review. Submit for review engineering calculations signed by the registered Professional Engineer responsible for the shop drawing design elements.
20. If upon review by Engineer, no errors or omissions are discovered or if only minor corrections are made, one (1) pdf copy will be returned via email 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 the same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
21. Owner may deduct, from payments due to Contractor, costs of additional engineering work incurred if correct shop drawings are not submitted after one (1) review by Engineer.
22. Review by Engineer is for the sole purpose of ascertaining conformance with the general design concept. This review does not mean that Engineer approves the detail design inherent in the shop drawings, responsibility for which remains with Contractor, and such review does not relieve Contractor of the responsibility for errors or omissions in the shop drawings or of the responsibility for meeting all requirements of the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job-site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all sub-trades.
23. Record Information: Submit all construction record information to Engineer in accordance with Special Provisions Contract Items Supplementary Section 8.

8.6 Change Management Process

Change Order Definition

A Change Order is a written amendment to the Contract prepared by the OPG Representative or the contractor and signed by OPG's Representative and the contractor stating their agreement upon:

- a change in the contracted services;
- the method of adjustment or the amount of the adjustment in the Contract Price, if any; and
- the extent of the adjustment in the Schedule, if any.

Change Order Process

- When a change in the Contracted Service is proposed, or required, OPG's Representative or the contractor will provide the other party with a written description of the proposed change in the Contracted Services. The OPG's Representative or the contractor shall promptly present, using CM-FORM-404 - Contract Change Order, a method of adjustment or an amount of adjustment for the Contract Price, if any, and the adjustment in the schedule, if any, for the proposed change in the Contracted Service.
- When OPG's Representative and the contractor agree to the adjustments in the Contract Price and Schedule or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a Change Order - CM-FORM-404 - Contract Change Order.
- No changes to the contracted services may begin without a Change Order - CM-FORM-404 - Contract Change Order signed by OPG's Representative and the contractor
- The value of the work performed as the result of a Change Order shall be included in the application for payment.
- A copy of CM-FORM-404 – Contract Change Order can be found in the Appendix.

9.0 CONTRACT CLOSE-OUT

9.1 Final Inspections

Contractor's Inspection:

The contractor and all subcontractors will conduct an inspection of the Services, identify deficiencies and defects; repair as required. Notify OPG's Representative in writing of satisfactory completion of the contractor's inspection and of the corrections that have been made and request an OPG's Representative's review and acceptance.

OPG's Inspection:

OPG and the contractor will perform an inspection of the Services and identify obvious deficiencies or defects and record on a Punch List. The contractor will correct any deficiencies and defects accordingly to the satisfaction of OPG.

Final Inspection:

When deficiencies and defects identified in OPG's inspection have been corrected, the contractor will request a final OPG inspection of the Services. If OPG deems the Services incomplete, the contractor will complete outstanding deficiencies and defects and request a re-inspection.
Project Acceptance Report (PAR), OPG form HTO-PM-FORM-401, will be completed during a walkdown held with the direct stakeholders to obtain final acceptance that the deliverable(s) produced meets the criteria identified, and the customer requirements.

9.2 Documents

A Documentation Turn-Over Package to be submitted to OPG and is intended to be a single-source package that contains such items as:

a. Investigation and Test reports.

b. Design information.

c. Specifications.

d. Quality Documentation, and ITP documentation

e. As Constructed drawings.

f. Construction summary of work completed by the Contractor.

g. Warranty Summary.

h. Maintenance and Operations Manual.

i. Permit and notices records

j. Recommended Spare Parts List.

k. Photographic records.

l. *This list is not all inclusive*

9.2.1 AS-BUILT DRAWINGS

9.2.2 7.1 Site Records

OPG will provide to the Contractor one set of Contract Drawings. The Contractor shall mark all changes on a print as the Work progresses and, as changes occur, transfer information to reproducibles, revising reproducibles to show all Work as actually completed. Record drawings shall be made available at all times to OPG for reference and review.

The responsibility of the Contractor for properly completing all record drawings shall continue until the drawings are completed to the satisfaction of OPG.

9.2.3 7.2 As-Built Drawings

Supply Topographical drawing with as built fencing including all grounding and isolation panels. The Contractor shall finalize as-built construction and survey drawings and submit copies to OPG in accordance with the requirements of Clause 7.0, Submittals and as follows:

1. Identify each drawing in the lower right hand corner as “As-Built”, in lettering at least 12 mm high.
2. Update the revision table on the drawing(s) to reflect as-built status.

9.2.4 Vendor / Shop Drawings

Provide a comprehensive set of vendor drawings and shop drawings –see also section 8.5 - for Project records.

9.3 Notice of Construction Contract Completion

On completion of all execution, testing and commissioning tasks the Contractor will complete and submit to OPG the form in Appendix C.

9.4 Lessons Learned

The Contractor is to participate in a Project Closure – Lessons Learned meeting to review and provide input to the OPG Project – Lessons Learned report.

10.0 APPENDIX A - CM-FORM-404 - CONTRACT CHANGE ORDER

ONTARIO POWER GENERATION Renewable Generation & Power Marketing

CM-FORM-404-R000*
CONTRACT CHANGE ORDER

		Change Order#:	
Purchase Order (PO) #:		Company Name:	
Project Number:		Date Submitted:	
Contract Title:		Change Identified by: ☐ OPG ☐ Contractor ☐ Other	
Description / Reason of Change:			
Attachments:			
Schedule Impact:			

Original Contract Value	$		
Total Current Change Order Value	$		
Total Previous Approved Change Order Value	$		
Total Revised Contract Value	$		

Adequate back-up documentation complete with a detailed cost breakdown must be submitted with each Change Order. The detailed cost breakdown shall include but not limited to labour hours, materials, equipment, quantities, mark-up, overheads, etc

Decision	☐ Approved	☐ Approved with Conditions	☐ Rejected	☐ More Information Required
Comments:				

Contractor (print name)	Signature	(YYYY-MM-DD)
Contract Administrator (print name)	Signature	(YYYY-MM-DD)

For Internal Use Only – Purchase Order Allocations

Total Current Change Order Value	$		→	PO Line #		$	
				PO Line #		$	
				PO Line #		$	
				Total		$	

*Associated with LP-PJ-02, Contract Management Program

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11.0 APPENDIX B - CM-FORM-405 - MONTHLY CONTRACTOR HOUR / INCIDENT REPORTING

ONTARIO POWER GENERATION Renewable Generation & Power Marketing

CM-FORM-405-R000*
MONTHLY CONTRACTOR HOUR / INCIDENT REPORTING

Operations Group:	☐ Central ☐ Eastern ☐ Niagara ☐ Northeast ☐ Northwest ☐ Southwest	Work Location / Station:	
Project Name:		Project Number:	
OPG OHSA Role:	☐ *Owner-Only* ☐ *Owner-Constructor* ☐ *Owner-Extended Employer*	Purchase Order Number:	

Instructions to Contractors:

- All Contractors providing on-site physical services to OPG are required to complete this form on a **monthly** basis. General contractors are also responsible for collecting and reporting their subcontractor hours and safety statistics. This Form shall be submitted to OPG's Contract Administrator **no later than 5 business days after the end of the previous month.**
- This Form applies to all companies that provide on-site construction, maintenance, or physical services (i.e.: janitorial, landscaping, snow removal, security, etc.). Reporting is not required for consultants, visitors, delivery drivers, off site manufacturing, design, or servicing office equipment such as photo copiers/phones.

Instructions to OPG Contract Administrators:

- Review Contractor hours' summary & safety statistics, verify against Project Logbook if applicable, submit to the local Safety Advisor.

Reference OPG-PROC-0120 Safety Incident And Regulatory Event Response

Summary for the Month / Year of: _____ / 20_____

Name of General Contractor & Sub-Contractor(s)	Contractor Exposure Hours			Medical Treatment Injuries			Construction Occurrences			MOL Orders			Lost Time Injuries			Days Lost		
	Current Period	YTD	LTD	Current Period	YTD	LTD	Current Period	YTD	LTD	Current Period	YTD	LTD	Current Period	YTD	LTD	Current Period	YTD	LTD

Contacts	Name	Contact Number
OPG Contact:		
General Contractor :		

*Associated with LP-PJ-02, Contract Management Program

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12.0 APPENDIX C - CM-FORM-501 - NOTICE OF CONSTRUCTOIN CONTRACT COMPLETION

ONTARIO POWER GENERATION Renewable Generation & Power Marketing

CM-FORM-501-R00*

NOTICE OF CONSTRUCTION CONTRACT COMPLETION

Project Name		Project/File Number	
Site Location		Contract Title	
Contractor Name		Contractor Phone	
Contractor Address			
Contractor Representative			
OPG Contract Administrator			
Purchase Order Number		Substantial Completion Date	

SECTION A CONTRACT ADMINISTRATOR AND CONTRACTOR USE ONLY

We, _____ (Contractor) hereby remise, release, quit claim, and forever discharge Ontario Power Generation from all liens, privileges, claims, and demands arising from our work/services performed on the above contract, except any claims identified on Schedule "A" of the contract.

☐ Schedule "A" attached ☐ No outstanding claims

Contractor Rep. _____ (Print Name) _____ (Signature) Date: _____

EPSCA Labour Clearance Attached *(Contractor Provides to CA)*	☐	WSIB Clearance Certificate Attached *(Contractor Provides to CA)*	☐
☐ Holdback (HB) Applied to Contract		Holdback Amount:	
☐ Letter of Credit (LOC) Applied to Contract		Letter of Credit Value:	

Completed By:			Date:	
	Contract Administrator (Print)	Signature		

Holdback Release Process** -CA sends copy to Contractor, copy to Accounts Payable. A/P completes **Section B

LOC Release Process** - CA sends copy to Contractor, copy to Supply Chain Rep. S/C Rep. Completes **Section C

SECTION B ACCOUNTS PAYABLE USE ONLY - FOR HOLDBACK RELEASE *

Construction Lien Clearance *Requested* ☐	Date:	Construction Lien Clearance *Received* ☐	Date:	
Outstanding Liens Settled?	☐ Yes ☐ No ☐ N/A	If "No" Provide details:		
Approval to Release Final Holdback			Date:	
	A/P Rep (Print Name)	Signature		
Contract Administrator Notified of Lien Clearance & Holdback Release ☐				

OPG Holdback period **60 days or as determined by process. Pay out to conform to OPG 25th of the month requirements*

SECTION C SUPPLY CHAIN USE ONLY - FOR LOC RELEASE

Construction Lien Clearance *Requested* ☐	Date:	Construction Lien Clearance *Received* ☐	Date:
Outstanding Liens Settled?	☐ Yes ☐ No ☐ N/A	If "No" Provide details:	
Approval to Release LOC			Date:
	S/C Rep (Print Name)	Signature	

*Associated with LP-PJ-02, Contract Management Program Page 1 of 1

13.0 APPENDIX D: TERMINAL POINT

BRIEF OVERVIEW OF THE USE OF A TERMINAL POINT

As found in Section TP1 of the OPG Work Protection Code (WPC), a Terminal Point is a device that serves as a division point between equipment under the control of any two authorities. This device may be under the operating control of either entity. This document is designed to clarify the basic rules surrounding the process when dealing with OPG as "Owner" on a project.

When to use a Terminal Point

In general, use the Terminal Point process anytime you are dealing with an "Owner Only" Construction Island situation and the equipment in question will be transferred to the Contractor for all or most of the project. In cases where the equipment transferred may be recalled periodically, such as sluice gates that are sometimes required to be operated for water control, a Condition Guarantee should be issued to the Contractor, instead of using the Terminal Point process. In this situation, the Contractor is also required to apply its own Lockout/Tagout (LOTO) to the guaranteed devices associated with the Condition Guarantee.

Where to create a Terminal Point

Ideally, the Terminal Point should be on the boundary of the Construction Island but this is not a requirement. The Terminal Point can be inside or outside of the island if needed. In these situations the MOU will need to provide details covering access to the device. For example, if the Terminal Point(s) is outside of the Construction Island the Contractor will need to be escorted by OPG when visiting the device except when the hazards are considered to be low when travelling to the Terminal Point(s) location in which case a specific route can be defined that the Contractor can use unescorted. Determination of the hazard level and whether the Contractor must be escorted is the responsibility of the OPG Project Manager and the MOU must provide the details of how this will occur. (See examples)
This process shall be applied to all boundaries of the Construction Island as shown in Example D and there must be a Terminal Point between OPG work and the Construction Island.

Who can operate a Terminal Point Device?

Section TP1.02 requires the agreement of both authorities before a Terminal Point device can be operated however, only one authority can have "operating" control. At the time the Terminal Point is created there must be agreement of which authority will perform any required operations of the device after both have agreed to the operation.

Use of a Terminal Point Device as a Guaranteed Device

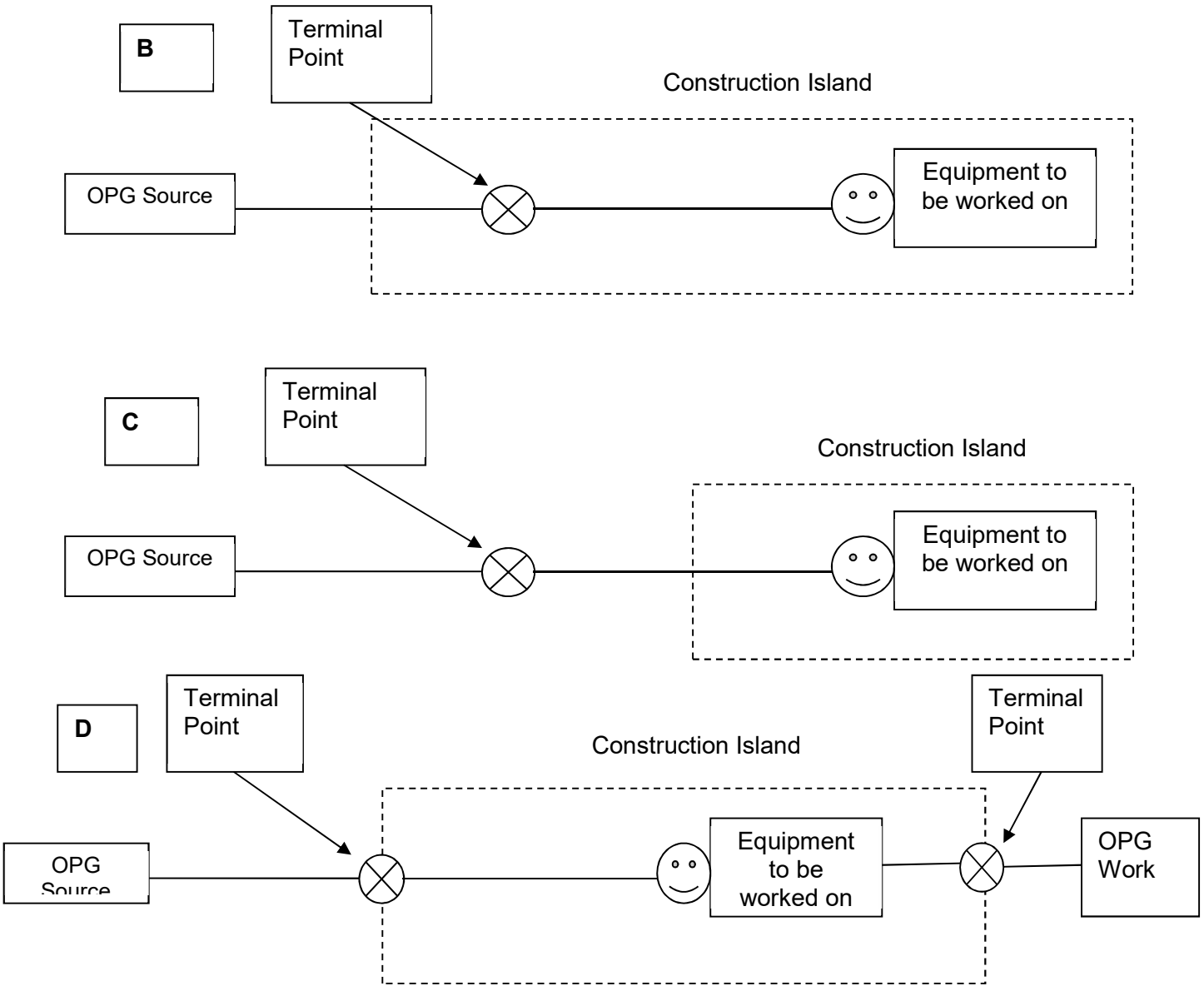
Terminal Points get special treatment in the WPC process in that both entities can apply Lockout/Tagout to the device at the same time. That is, the Contractor must lockout the device (with their own tags and locks) to isolate against OPG sources and OPG must lockout the device (with our WPC) to isolate from the Contractor sources. This means the device can have a number of tags and locks on it; the Terminal Point tag, one or more OPG WPC tags and locks and one or more Contractor Do Not Operate tags and locks.

If there is no way to physically separate the construction and OPG work locations by selecting a Terminal Point device, no work using the Terminal Point process can be done, which requires isolation/control of energy sources from either authority, and all work must be done under an OPG Work Protection.

Examples

Each of the four examples below is acceptable uses of the Terminal Point process.

- Note that in Case B OPG staff would need to be escorted by the Contractor when interacting with the Terminal Point
- In Case C the Contractor may need to be escorted by OPG staff based on the determination of the route to be used.
- In Case B, the OPG-FORM-0173 – *Control of Hazardous Energies Walkdown Sheet* would need an entry to record that the OPG equipment from the edge of the Construction Island up to the Terminal Point is alive, is "not to be isolated" and the Contractor must stay away from it.
- Case D shows the process if OPG work will occur “downstream” of the Construction Island


B
Terminal Point
Construction Island
OPG Source
Equipment to be worked on
C
Terminal Point
Construction Island
OPG Source
Equipment to be worked on
D
Terminal Point
Terminal Point
Construction Island
OPG Source
Equipment to be worked on
OPG Work

Terminal Point TP1.00

TP1.01

Introduction

A Terminal Point is a device that serves as a division point between equipment under the control of any two authorities. The device may be under the operating control of **either** authority.

A Terminal Point Identification Tag **must not** be used for Work Protection purposes.

When a Line of Business has a requirement to modify a tag, an LOB Tripartite procedure must be in place.

As a minimum, each tag must contain all information and color on the sample tag included in this section.

TP1.02

Controlling Authorities Agreement required

Both Controlling Authorities **must** agree to the operation of a terminal point device when that device is tagged with a terminal point tag.

TP1.03

Tagging a terminal point

You **must** do the following when tagging a terminal point:

- Use **non-conducting material** to attach tags.
  This is required to avoid a hazard to personnel, equipment or service security.
- Attach the tag in a conspicuous place, indicating clearly that it is prohibited to operate the tagged device.
- To attach the tag, use an approved insulated tool, or rubber protective equipment within its approved voltage rating to attach tags to any potentially alive part of an electrical isolating device.



14.0 APPENDIX F – REFERENCE DOCUMENTS

OPG Environmental Best Management Practices:

WILDLIFE MANAGEMENT
BMP 019 Encountering Unexpected Flora and Fauna

CONSTRUCTION
BMP 024 Demolitions
BMP 037 Control of Fugitive Dust

WASTE MANAGEMENT
BMP 032 Regulated Waste Storage and Handing
BMP 033 Storage and Handling of Hazardous Materials
BMP 035 Regulated Waste Transportation
BMP 036 Materials Storage and Handling

SPILLS
BMP 034 Spills Response

M.O.L. LEAD GUIDELINES
Guideline Lead on Construction Projects *(April 2011)*
Guideline Silica on Construction Projects *(April 2011)*

ONTARIO TRAFFIC MANUAL
OTM Book 7 Temporary Conditions *(January 2014*

15.0 APPENDIX G: OPG ENVIRONMENTAL POLICY

ONTARIO POWER GENERATION

Internal Use Only		
Document Number: OPG-POL-0021		Revision: R006
Usage Classification: Information	Sheet Number: N/A	Page: 1 of 1

Title: ENVIRONMENTAL POLICY

Policy Statements: Ontario Power Generation (OPG) shall meet all legal requirements and any environmental commitments that it makes, with the objective of exceeding these legal requirements where it makes business sense.

Requirements:

OPG shall establish an environmental management system and maintain registration for this system to the ISO 14001 Environmental Management System standard.

OPG shall work to prevent or mitigate adverse effects on the environment with a long-term objective of continual improvement in its environmental management system and its environmental performance.

OPG shall manage its sites in a manner that strives to maintain, or enhance where it makes business sense, significant natural areas and associated species of concern. OPG will work with its community partners to support regional ecosystems and biodiversity through science-based habitat stewardship. Where disruption is required, OPG shall take reasonable steps to manage the residual impact to these areas and species.

OPG shall set environmental performance targets as part of its annual business planning process. Performance against these targets will be monitored.

OPG shall communicate its environmental performance to employees, governments, local communities, and other stakeholders.

The Senior Vice-President of Legal, Ethics & Compliance is accountable for the development and maintenance of an environmental management system that achieves the requirements of this policy, including reporting to the Board on OPG's overall environmental performance.

The Operating Unit and Function leaders are accountable for the effective implementation of the environmental management system as applicable within their respective organizations and for reporting on their environmental performance. They are also responsible for providing timely notification of any significant environmental event in accordance with the approved procedures.

All employees are accountable for environmental performance and compliance within the scope of their accountabilities.

Sponsoring Unit: Environment **Approval:** Board of Directors

Effective Date: February 11, 2016

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