

Part 1 General

1.1 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from the Departmental Representative.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to the Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

1.2 SUBCONTRACTOR CONTRACT

- .1 Retain the services of sub-contractors appointed by the Departmental Representative for the following work:
 - .1 Section 08 71 00, Locksmith.
 - .2 Section 25 05 01, Energy Monitoring and Control System.
 - .3 Section 28 13 00, System controlled access.
 - .4 Section 28 13 28, Building entrance control system.
 - .5 Relationships and responsibilities between the contractor, subcontractors and suppliers designated by the Departmental Representative shall be in accordance with the contract terms.

1.3 WORK SEQUENCE

- .1 Construct Work in stages to accommodate the Departmental Representative's use of premises during construction.
- .2 Construct Work in stages to provide for continuous public usage of building. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .3 Co-ordinate Progress Schedule and co-ordinate with the Departmental Representative Occupancy during construction.
- .4 Maintain fire access/control.

1.4 CONTRACTOR USE OF PREMISES

- .1 Unrestricted use of site until Substantial Performance.
- .2 Limit use of premises for Work to allow:
 - .1 The Departmental Representative occupancy.
 - .2 Work by other contractors.
 - .3 Public usage.
 - .4 Refer to limits and accès describe on plans.
- .3 Co-ordinate use of premises under direction of Departmental Representative.

- .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.5 OCCUPANCY BY THE DEPARTMENTAL REPRESENTATIVE

- .1 The Departmental Representative will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with the Departmental Representative in scheduling operations to minimize conflict and to facilitate the Departmental Representative usage.
- .3 Work is required in ground floor and basement spaces occupied by others. Achieve the protection and cleaning of these spaces before the opening of building on each day.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to occupants, and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 Use only dumbwaiters existing in building for moving workers and material.
 - .1 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.7 REQUIRED DOCUMENTS

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and Other Safety Related Documents.
 - .11 Other documents as specified.

Part 2 **Products**

2.1 **NOT USED**

.1 Not used.

Part 3 **Execution**

3.1 **NOT USED**

.1 Not used.

END OF SECTION

Part 1 General

1.1 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Where security is reduced by work provide temporary means to maintain security.
- .3 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .4 Use only dumbwaiters, existing in building for moving workers and material.
 - .1 Protect walls of dumbwaiters, to approval of Departmental Representative prior to use.
 - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

1.2 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.3 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel, pedestrian and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.4 SPECIAL REQUIREMENTS

- .1 The building will be occupied and operational at all times.
- .2 The contractor is required to preserve existing security levels, all access to building and ensure that exits are free of all obstacles that can compromise users security or disrupt the flow of daily operations.

- .3 The interior works will be held from **4:00 p.m. to 5:00 a.m.** on working days. Unless otherwise indicated, the construction site will remain closed on Saturdays, Sundays and holidays. For all requests outside working hours or working days, approval is required by Departmental representative.
- .4 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .5 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .6 Keep within limits of work and avenues of ingress and egress.
- .7 Become familiar with the Contractor health, safety and environmental policy handbook prepared by the building manager (01 14 01 section) and ensure compliance with the handbook by all employees under its authority.
- .8 All delivery people shall register with the security office at 105 McGill Street showing ID and shall be escorted on site by a building security representative along with one of the Contractor's managers and deliveries shall be made **only** by way of the garage door on Marguerite-Bourgeois Street.
- .9 The Contractor's manager shall have a two-way radio to communicate with building security regarding deliveries.
- .10 All waste chutes shall be authorized by the PWGSC Departmental Representative prior to their installation. The Contractor shall ensure the following measures are in place:
 - .1 Plans and certificates of compliance are submitted prior to their use (Safety Code for the Construction Industry);
 - .2 The waste chute is sealed;
 - .3 Compliance with noise standards. The lower part of the chute shall be made of polymer material over 60% of its length and the bottom of the container shall have a **noise absorbing material**;
 - .4 Waste shall be watered down before being disposed of down the chute;
 - .5 Before the waste containers are removed or filled up, every access to the chute shall be locked out. The Contractor's superintendent shall assume responsibility for the keys to the locks.
 - .6 The walls and windows soiled during the waste disposal operation shall be cleaned upon completion of the work after the chute has been removed.
 - .7 Restore the site to its original condition upon completion of the work;
 - .8 Work hours for waste chutes are from **4 pm to 7 pm**, except Sundays and statutory holidays.
- .11 Take into account that outside noise is regulated by municipal bylaws. The construction work nuisance by-law (CA-24-102) passed by the Ville-Marie borough in Montreal in March 2008 prohibits nuisances caused by construction, demolition, repair, materials delivery, excavation, compacting and other similar work within the following periods: Monday to Friday from **7 pm to 7 am** the next morning, - Saturday from **7 pm to 7 am** Monday morning, and all day on statutory holidays.

- .12 Noisy works inside the building will be held from **6:00 p.m. to 5:00 a.m.** For all requests outside working hours, approval is required by Departmental representative.
- .13 The construction site is restricted to the zone defined on the A00 plan. Limited works are to be made outside of this zone. Refer to the plans.

1.5 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security clearances:
 - .1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises.
 - .2 Obtain requisite clearance, as instructed, for each individual required to enter premises.
 - .3 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.
- .3 Security escort:
 - .1 Personnel employed on this project must be escorted all the time.
 - .2 Submit an escort request to Departmental Representative at least 5 days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.
 - .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least 4 hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.
 - .4 Calculation of costs will be based on average hourly rate of security officer for minimum of 8 hours per day for late service request and of 4 hours for late cancellations.

1.6 PROJECT MEETING

- .1 Contractor has to hold weekly meetings throughout works duration, or more to Departmental Representative request.
- .2 Direction of meeting by Departmental Representative.

1.7 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

Part 2 **Products**

2.1 **NOT USED**

.1 Not Used.

Part 3 **Execution**

3.1 **NOT USED**

.1 Not Used.

END OF SECTION



Brookfield
Global Integrated Solutions



*INSPIRING
BETTER BUSINESS
PERFORMANCE*



CONTRACTOR HEALTH, SAFETY AND ENVIRONMENTAL POLICY HANDBOOK

HS 105 00

Rev 4 – May 13, 2015

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2 Brookfield GIS Health and Safety Policy

The safety and well-being of our team members is inherent in Brookfield GIS group of companies operating philosophy. It is a value embedded in our corporate culture and a practice reflected in our health and safety program and our business processes. We are the industry leader in workplace management solutions and our focus on the welfare of our team members has helped to position us there.

Brookfield GIS group of companies is committed to all of its employee's and complying with all applicable health and safety legislation, requirements, codes of practice, internal standards and guidelines subscribed to by ourselves and/or our clients.

Through audits, team member feedback, accountability and periodic reviews, we are continually striving to improve upon our safety performance and our program. We set specific performance goals and targets, implement programs and initiatives and provide communication and resources to keep safety at the forefront and move towards a zero incident rate.

Team members are integral in implementing and maintaining a safe and healthy workplace for ourselves, our contractors and all personnel who enter our workspace. We ensure our employees are aware and understand their rights and their responsibilities with respect to health and safety. To this end, we ensure that this policy is communicated to, and understood by all Brookfield GIS group of companies employees and the employees of our sub-contractors who are involved in the delivery of work implemented by Brookfield GIS group of companies, that team members provide input and participate in all health and safety related programs and initiatives and that safety and well-being is the fabric of all our activities. Brookfield GIS group of companies employees understand the importance of safety and well-being at a personal and organizational level, and Brookfield GIS group of companies fosters this culture through our ongoing initiatives. Together, we will ensure that every day is a safe one.

SAFETY FIRST, it is the way we do business!

3 Brookfield GIS Environmental Policy

Environmental stewardship is a cornerstone of Brookfield GIS group of companies operating philosophy. It is a value embedded in our corporate culture and a practice reflected in our national environmental management system and our business processes. Not only do we manage environmental impacts resulting from self-performed and sub-contractor delivered services, we also manage our clients' impact on the environment in thousands of buildings across Canada. We are the industry leader in workplace management solutions and our Focus on environmental stewardship has helped to position us there.

The communication of this policy is paramount to its understanding and effectiveness. Therefore we have taken measures to ensure that it is communicated to, and understood by all Brookfield GIS group of companies' employees and the employees of our sub-contractors who are involved in the delivery of work implemented by Brookfield GIS group of companies.

Brookfield GIS group of companies is committed to complying with all applicable environmental legislation, requirements, and codes of practice, internal standards and guidelines subscribed to by ourselves and/or our clients. Brookfield GIS group of companies and its employees are also committed to conducting our operations in a manner that actively prevents pollution.

Brookfield GIS group of companies is always aiming for continual improvement in our environmental practices. We set specific performance goals and targets, and provide our team with the resources to achieve these objectives. Our progress related to meeting these targets is reviewed and evaluated regularly, while our overall environmental program, policy and management system are reviewed annually.

Brookfield GIS group of companies employees understand the importance of environmental and social responsibility at a personal and organizational level, and we will foster this culture through ongoing training and education.

Together, we can make a difference.

4 Disclaimer

The intent of Brookfield GIS' Health, Safety & Environment Policy Document for Contractors is to provide a written overview of Brookfield GIS' minimum policies and procedures with respect to Health, Safety and Environment (HS&E). This handbook does not address all HS&E issues which may arise during completion of work. Nor is this document intended to address or replace the Contractor's duties and requirements with respect to regulatory compliance and best practices, and in conducting work in a manner that creates a safe and healthy environment for its own employees, Brookfield GIS, building occupants and the public. It is the responsibility of the Contractor to operate in compliance with all applicable legislation and regulations that may pertain to its activities. Compliance with this document does not relieve the Contractor from any liability that may result from the Contractor's actions or from failure to act in accordance with applicable legislation. Where applicable, Brookfield GIS may provide to the Contractor additional HS&E policies and procedures, relating to specific site or job requirements, which the Contractor shall comply with. This document may be modified at any time at Brookfield GIS' discretion.

5 Purpose

The purpose of this document is to assist contractors in understanding Brookfield GIS' minimum HS&E requirements while undertaking work at a Brookfield GIS controlled space. This document is a general overview of Brookfield GIS' protocols and should be used in conjunction with the Contractor's own environment, health and safety policies, procedures and programs. Contractors are responsible for controlling workplace activities and for maintaining and promoting a safe and healthy work environment. It is Brookfield GIS' expectation that the information in this document is communicated to all the Contractor's employees and any of its subcontractors. As a large percentage of contract work is completed at non-Brookfield GIS supervised locations, we expect Contractors to be conscientious of their HS&E practices and their reflection on Brookfield GIS. In the event that the Contractor is unable to meet the requirements outlined in this document, the Contractor is to notify Brookfield GIS immediately. Assistance in meeting the requirements will be reviewed on a case by case basis.

6 Policies

Brookfield GIS is dedicated to becoming "best in class" with respect to HS&E. Our culture is one in which health, safety and environment are more than words in our value statement, and they are integrated into our daily activities and are part of our culture. Our Health and Safety and Environment Policies are located in Appendix A. These policies are reviewed annually. Brookfield GIS maintains both health and safety and environmental management systems and is registered to ISO 14001 for certain contracts.

Contractors will:

- Be aware of Brookfield GIS' HS&E policies
- Review with their designated Brookfield GIS contact any applicable objectives, targets and environmental programs
- Comply with Brookfield GIS' HS&E policies
- Upon request provide evidence of competency and/or compliance
- Understand the HS&E impacts related to contractor's activities and be aware of the appropriate operational controls to address any areas of risk.

7 Auditing

Brookfield GIS reserves the right to audit the Contractor for its adherence to the HS&E requirements of the work being performed. An audit may include workplace inspections, visual observations, interviews and document review, including training records, certifications and HS&E related statistics. Action plans, including person responsible and time line, are to be provided to the Brookfield GIS contact for any observations noted.

8 General Requirements

8.1 Health and Safety Program

All contractors and sub-contractors must have a health and safety program in place. Upon request, contractors must submit to Brookfield GIS evidence of a comprehensive health and safety program and other specialized plans may be required.

8.2 Subcontractors

All Contractors are required to review this manual with all sub-contractors and are responsible for ensuring that all Brookfield GIS policies and procedures are complied with. Brookfield GIS reserves the right to request Contractors audit their sub-contractors and forward action plans for any non-conformances.

8.3 Facility Access and Security

Contractors are to review facility access and security requirements with their designated Brookfield GIS contact. The Contractor is to immediately inform their Brookfield GIS contact of any security or facility access issues

8.4 Working Alone at Remote Sites

Contractors who are working alone at remote sites must have a Work Alone Policy in place.

8.5 Behavior

All contractors are to conduct themselves in a professional manner. Behavior which violates Brookfield GIS' policies or has the potential to endanger the safety and well-being of any of the building occupants is grounds for removal from the site.

Inappropriate behavior includes but is not limited to:

- Use, possession, distribution, offering, sale or being under the influence of alcohol, illicit drugs, illicit drug paraphernalia or non-prescribed drugs for which a prescription is legally required in Canada, while on company business or premises.
- Disorderly or violent conduct
- Theft or intentional damage to property
- Entering restricted areas
- Harassment
- Criminal activities

8.6 Housekeeping

The Contractor is to maintain a clean and orderly work area. Contractors are to clean and remove all non-hazardous solid waste and recyclables at regular intervals throughout the shift and at the end of each shift. Required waste containers are to be provided by the Contractor. Clear access is to be maintained to and in contractor working areas. Access to electrical panels, fire extinguishers, safety showers and eyewash stations, fire hydrants and points of egress are to be kept free and clear of all obstructions unless written approval is obtained from Brookfield GIS.

8.7 Personal Protective Equipment (PPE)

Contractors are responsible for conducting job assessments to determine the appropriate PPE necessary for the work being conducted and are responsible for its provision. Contractors must also be able to demonstrate that the employees have been trained in and conducted proper inspection, maintenance, and safe use of that equipment.

8.8 Training, Licenses and Certifications

Contractors must have all appropriate professional training, licenses and certifications required for the work being performed. Training records and copies of licenses, certifications are to be made available upon request. Contractors are to have their own HS&E program and be able to confirm in writing that the Contractor's employees have received and understood all health, safety and environment training appropriate to the scale of work being undertaken.

8.9 Hazard Identification / Stop Work & Reporting

It is the Contractor's responsibility to be aware of all dangers or hazards associated with the work performed and the work environment and to remove and / or control the hazard or danger prior to commencement of work. To assist the contractor in this regard, Brookfield GIS is in the process of installing hazard stations at managed properties. Should Contractors have questions regarding site hazards they can contact our 24 hour support line at **1-877-445-0611**. All potential or existing dangers or hazards observed by the Contractor shall be reported to the designated Brookfield GIS contact. Any danger or hazard observed beyond the control of the Contractor is to be reported to the designated Brookfield GIS contact immediately and the Contractor is to avoid the hazard or danger until it is eliminated or controlled. The Contractor may not conduct any work that may result in a danger or hazard to people, environment or property. Where an existing danger or hazard is present, or where the Contractor reasonably believes that an imminent danger or hazard is present, the Contractor has the right to stop work so that the danger or hazard is eliminated or safe work practices are incorporated. For the purposes of this policy, a danger or hazard may include, but is not limited to:

- A situation for which the individual is not properly trained or experienced.
- A situation for which the individual is not equipped (i.e. safety or personal protective equipment).
- A situation where the individual believes that proper procedures and work practices are not being followed.
- A hazard that is not typical to the individual's work activities or job.
- A worker unfit for work due to the influence of alcohol or illegal or mind-altering substances.
- A danger that would normally stop work in the affected area.
- A situation where the environment may be adversely affected and regulatory authorities would be involved;
- A situation which may result in equipment / property damage.

Any stop work situations are to be reported immediately to the Brookfield GIS contact. The designated Brookfield GIS contact is to be advised of the danger or hazard, the corrective action and when the situation is resolved.

8.10 First Aid / Medical Emergencies

All Contractors are responsible to ensure that first aid, emergency medical services and transportation are provided to its employees. Contractors are also required to provide trained first aid personnel, supplies, and equipment as applicable. It is possible that professional medical aid may be available at some locations. Please review potential assistance with your Brookfield GIS contact. Any access to professional aid does not release the Contractor of ensuring emergency assistance is provided to its employees.

8.11 Accident / Incident Investigation and Reporting

Contractors are required to report all accidents / incidents, regardless of severity, to their Brookfield GIS contact on the Brookfield GIS Incident Injury Report Form. All incidents resulting in serious injury or illness, damage to property or equipment or environmental contamination are to be reported to Brookfield GIS immediately. All near misses that may have resulted in serious injury or illness, damage to property or equipment or environmental contamination are also to be reported immediately. Contractors must also report immediately to Brookfield GIS any unplanned or uncontrolled fire, explosion or flood, as well as any collapse or failure of a building or structure. Where the incident resulted in a recordable injury (time loss and / or medical aid sought) or where a regulatory authority must be contacted (e.g., Ministry of the Environment or Ministry of Labor), Brookfield GIS is to be notified concurrently and a copy of the investigation report is to be forwarded upon completion. It is the Contractor's responsibility to contact the appropriate regulatory authority when it is required due to the nature of the incident. Where reporting of an incident to a regulatory authority is required, the Contractor shall comply in accordance with applicable health and safety legislation in the course of any subsequent investigation or inspection and, where required, the incident scene shall not be disturbed or altered until the site is released by the appropriate regulatory authority.

8.12 Emergency Evacuation

In order to ensure personal safety, Contractors are required to be aware of the entire emergency evacuation procedures for the location of work. Review this information with your Brookfield GIS contact.

8.13 Work Area Protection and Hazard Notification

All work areas must be appropriately barricaded and signage where required. Contractors are responsible for providing signs, cones, plastic sheets, guardrails and other materials to create an effective barricade to isolate the work environment from the building occupants and to prevent unauthorized access. Any requirements to block means of egress, fire, life or other safety equipment must first be approved by the Brookfield GIS contact. Signs and barricades may not be removed until the work is completed or all hazards are eliminated. Where the work being conducted may create a temporary hazard to the building occupants (e.g., wet floor) the Contractor shall ensure the appropriate signage and / or barriers are posted. The signs / barriers may not be removed until the hazard is eliminated. Where work being conducted could affect the health, well-being or comfort of the building occupants (e.g., paint fumes) the Contractor shall inform the building occupants through the Brookfield GIS contract prior to the start of work.

8.14 Tools and Equipment

Contractors are responsible to provide their own tools, equipment and vehicles and are required to conduct the work in a safe manner in accordance with all regulatory requirements.

Contractors are responsible for the safe operation of any equipment brought on location and must be able to demonstrate that all operators of said tools and equipment are trained and qualified to do so. Contractors are also responsible for the inherent integrity of the tools and equipment itself and must be able to demonstrate that the equipment has been properly maintained and is safe for use.

8.15 Brookfield GIS Owned Tools and Equipment

Unless written authorization is obtained, Contractors may not use Brookfield GIS owned or leased tools or equipment. In cases of written authorization, Contractors will provide copies of any training records / certifications required to operate the tools and / or equipment. The contractor will also sign the Brookfield GIS “Loan of Equipment” waiver.

8.16 Power Tools

All power tools are to be double insulated or equipped with grounded power cords. Ground Fault Interrupters (GFI) or other similar devices must be used in wet or damp locations. The Contractor’s employees must be properly trained in their use and the tools are to be maintained in a safe operating condition.

8.17 Explosive Actuated Tools

Any Contractors using explosive actuated tools must be competent, trained and certified as required. The Contractor is to ensure that all explosive actuated fastening tools are properly inspected before and after each use and that no alterations be carried out to any protective guards. The contractor shall ensure that all requirements regarding safe use, storage and removal process is carried out in accordance with the appropriate legislation. Equipment is to be properly maintained and all Contractors are to be trained in its use and safe operation.

8.18 Electrical Safety

It is the Contractor’s responsibility to have a safe electrical program as required. Contractors working on or near live equipment must be qualified to do so. Contractors must not work on low or high voltage unless specifically retained to do so. Energized parts, circuits, panels and other equipment must be properly guarded. Unguarded energized parts must not be left unattended. All electrical devices must be properly grounded or double insulated.

8.19 Ladders

All Contractor ladders must be labeled with the Contractor’s name. All ladders are to be maintained in good condition at all times and inspected prior to use. Employees using ladders must do so in a safe and responsible manner. Any defective ladders are to be tagged as such and removed from site.

8.20 Working at heights

It is the Contractor's responsibility to select the appropriate fall protection measures for the work to be performed. When working at heights, the area below is to be cordoned off as the work area protection requires. Contractors must be able to demonstrate that all equipment has current inspection certificate and is maintained as per regulatory requirements and that all personnel have current and appropriate training.

8.21 Scaffolding

All scaffolding is to be erected, maintained and inspected in accordance with all applicable regulations, codes and engineering practices. The Contractor is to ensure competent supervision of any modification process and have written approvals of such modifications. Precautions must also be taken to ensure that each scaffold does not exceed structural or design limits set out by applicable provincial legislation. The Contractor must also provide all scaffolds and safety equipment required for the entire project. Copies of the inspection reports are to be available upon request

8.22 Industrial Powered Vehicles, including Lifting Devices

All Contractors operating industrial powered vehicles must be trained and licensed or certified in the operation of the particular equipment to be used. If the Contractor has received written authorization to use Brookfield GIS equipment, the "Loan of Equipment" waiver must be signed prior to use and all Brookfield GIS process and procedures with respect to the equipment must be followed.

8.23 Motor Vehicles

All Contractors operating motor vehicles are to have and maintain a valid driver's license and a responsible driving record. Contractors must exercise due caution when driving on customer sites.

8.24 Material Handling

All Contractors involved in manual material handling should be aware of and trained in proper material handling procedures and are to use material handling equipment where appropriate. Equipment is to be properly maintained and all Contractors are to be trained in its use and safe operation.

8.25 Noise

Contractors must work in a manner that does not create a disruption to the normal course of business. Any activity that produces noise that interferes with the business operation must be completed during off-hours. Contractors shall ensure that their employees have proper and adequate noise and hearing protection.

8.26 Lighting

Contractors shall ensure that proper and adequate workplace lighting is provided in accordance with applicable legislative and regulatory requirements.

8.27 Working in cold and hot environments

Contractors are to have policies and procedures in place to ensure their employees are appropriately protected when working in cold and hot environments.

8.28 Asbestos Containing Material (ACM)

It is possible that the Contractor may be working in an area where ACM is located. Please review potential ACM locations with your Brookfield GIS contact prior to commencing work. The presence of various friable and or non-friable asbestos containing material (ACM) has been identified or is presumed to be present at all Brookfield GIS managed facilities constructed prior to 1992. The contractor / service provider shall review prior to their work, the building asbestos survey or asbestos notification letter (attached in appendix A), either or shall be placed in the site hazard station. Buildings without a hazard station, asbestos survey or notification letter are to be regarded as buildings that may contain ACM. Contractors may not intentionally disturb ACM unless specifically retained to do so, in which case Brookfield GIS' Asbestos Management Program and all Client requirements must be followed. If a Contractor unintentionally disturbs suspected or known ACM, stop work and immediately inform your Brookfield GIS contact.

8.29 Mould

The Contractor is to notify the designated Brookfield GIS contact if any mould or mildew is observed in the work location. The Contractor must not disturb an area suspected to be contaminated with mould.

8.30 Infection Control

All Health Care Centers where the Contractor will be performing construction / maintenance will adhere to the Infection Control and Dust Containment requirements as per Canadian Standards Association CSA Z317.13-12 documentation titled Infection Control during Construction, Renovation or Maintenance of Health Care Facilities (2012).

8.31 Halocarbon Management

Contractors that work on systems that contain halocarbons are required to manage those systems in accordance with Brookfield GIS policy. Brookfield GIS policy dictates that Federal legislation shall be applied in every circumstance. Contractors are required to report any halocarbon release regardless of the quantity to Brookfield GIS immediately. All contractors shall adhere to their legislative requirements of having ODS or ODP qualified personnel to maintain the systems. All leak test tags and onsite report logs shall be updated and or provided by the contractor. Only Brookfield GIS-approved leak-test tags will be utilized.

8.32 Site Specific Hazards / Requirements

Any site specific hazards or requirements not covered by this manual should be identified, reviewed, assessed and controlled with the Brookfield GIS contact immediately.

9 Requirements Brookfield GIS Notifications / Permits

9.1 Fire and Life Safety

Contractors are to provide their own fire protection equipment as required, including but not limited to fire extinguishers. Use and storage of flammable and combustible materials must be conducted in accordance with all codes and regulation and their use and storage must be approved by the Brookfield GIS contact prior to bringing the material on-site. Contractors may not conduct any work that will affect the building's fire life safety systems unless specifically retained to do so and the Brookfield GIS contact is aware of and approved the timing of the work prior to its commencement.

9.2 Hazardous Materials Management, including compressed gases

- Contractors are required to obtain permission prior to bringing hazardous materials to a work location.
- Quantities brought and maintained at location of work should be minimized and appropriate to the nature and scope of work.
- Contractors must maintain an updated inventory of hazardous materials on-site; current Material Safety Data Sheets are to be located in proximity to the hazardous materials storage and areas of use and must be accessible to Brookfield GIS and emergency response personnel.
- It is the Contractor's responsibility that all hazardous materials are properly handled and stored in accordance with all regulatory and code requirements and all WHMIS labeling requirements are met.
- It is also the Contractor's responsibility to have an appropriate spill response plan and required equipment in place.
- The Contractor must be able to demonstrate that its employees have received WHMIS training and are knowledgeable in spill response appropriate to the material at the work location.
- Any releases or spills that results in a requirement to contact a regulatory authority must be investigated and reported as per the Accident / Incident Investigation and Reporting section.
- All Contractors must be able to demonstrate that its employees involved in the transporting of hazardous materials have Transportation of Dangerous Goods training appropriate to their role.

All hazardous waste generated by the Contractor is to be removed through Brookfield GIS unless written authorization is received.

9.3 Lockout / Tag Out

It is the Contractor's responsibility to have a hazardous energy control program in place (Lockout/Tag out) if they are involved in maintaining and / or repairing equipment. This program is to be available to Brookfield GIS for review upon request. Prior to initiating a lockout / tag out, the Contractor must inform the Brookfield GIS contact of the location and estimated duration of the equipment lockout / tag out and will conduct a review of all energy sources and the equipment specific written procedure.

9.4 Welding / Cutting (Hot Work)

It is the Contractor's responsibility to have a hot work program. The Contractor must inform their Brookfield GIS contact and have a Hot Work permit issued prior to the start of any hot work. If hot work is being conducted within a building, it must be planned (through scheduling, engineering controls etc), to minimize building occupant's exposure to fumes and other hazards. Precautions must also be undertaken to prevent interference with fire life safety systems. A work and post-work spotter is required where there is a risk of fire or where the fire life safety systems are impaired or off line. The Contractor is responsible for providing all fire protection equipment and personnel.

9.5 Confined Space

All Contractors entering a permit restricted confined space must follow Brookfield GIS' confined space business process and permit requirements. A Contractor may only enter a permit restricted confined space upon review of the specific confined space entry procedure and issuance of a Brookfield GIS Confined Space Entry and other applicable permits. The Brookfield GIS contact must be informed prior to an entry. It is the Contractor's responsibility to provide their own safety equipment including PPE, monitoring and rescue equipment.

9.6 Crane, Hoist, and Other Lift Equipment

Contractors will obtain approval from their Brookfield GIS contact prior to bringing on-site and using cranes, hoists, and other lifting equipment. All operators must be trained and certified in the equipment being used. The equipment is to be maintained as per the manufacturer's recommended maintenance and safety requirements and an up-to-date inspection report certifying the equipment is to be available upon request. A copy of the crane hand signals that will be used are to be posted. The Contractor must ensure that loads never exceed the set limits and that suspended loads are never left unattended.

9.7 Worksite Inspections

Brookfield GIS requires all contractor worksites to be inspected for hazards, when found corrected or isolated as per the applicable provincial / federal legislated regulations. Brookfield GIS requires that all worksites are to be inspected regardless of size or scope of work. Required frequencies are at the start of a project, when site conditions change, after an accident or at a

minimum once per month thereafter. All inspection reports shall be without delay forwarded to the contractor's Brookfield GIS contact person. In cases where the contractor does not have an Inspection report they can use the Brookfield GIS (HS 253 00 Workplace Safety Checklist Audit Form) which can be obtained from the contractor's Brookfield GIS contact person.

10 Appendix A

10.1 Contractor / Service Provider Asbestos Notification

***Brookfield GIS Facility Management Services, Workplace Solutions Inc. RealSuite Inc.
Letter of Notification:***

WORKING WITH ASBESTOS CAN BE EXTREMELY DANGEROUS INHALING ASBESTOS FIBRES CAN CAUSE VARIOUS TYPES OF LUNG DISEASE, MESOTHELIOMIA OR CANCER.

Asbestos may be present in the following materials as listed: Cement Pipes, Cement Wallboard, Cement Siding, Asphalt Floor Tile, Vinyl Floor Tile, Vinyl Sheet Flooring, Flooring Backing, Constructions Mastics, Acoustical Plaster, Decorative Plaster, Textured Paints/Coatings, Ceiling Tiles and Lay-in Panels, Spray-Applied Insulation, Blown-in insulation, Fireproofing Materials, Taping compounds (thermal), Packing Materials, High Temperature Gaskets, Laboratory Hoods/Table Tops, Laboratory Gloves, Fire Blankets, Fire Curtains, Elevator Equipment Panels, Elevator Brake Shoes, HVAC Duct Insulation, Boiler Insulation, Breaching Insulation, Flexible Fabric Ductwork, Cooling Towers, Pipe Insulation, Heating and Electrical Ducts, Electrical Panel Partitions, Electrical Cloth, Electric Wiring Insulation, Chalkboards, Roofing Shingles, Roofing Felt, Base Flashing, Thermal Paper Products, Fire Doors, Caulking/Putties, Adhesives, Wallboard, Joint Compounds and Spackling, Vinyl Wall Coverings.

The presences of various friable and or non-friable asbestos containing material (ACM) have been identified or are presumed to be present at all Brookfield GIS managed facilities constructed prior to 1992. The contractor / service provider shall review prior to their work, the building asbestos survey or asbestos notification letter, either or shall be placed in the buildings log book. Buildings without a log book, asbestos survey or notification letter are to be regarded as buildings that may contain ACM. Where applicable Brookfield GIS will review with the contractor / service provider personnel the locations of known ACMs as noted on the asbestos survey. The Brookfield GIS Asbestos Management Program applies to all maintenance, repair and renovation work that may disturb asbestos materials. The disturbance of asbestos building materials may only be undertaken by qualified contractors who have received training in asbestos-related precautions and procedures (as per the provincial / federal Occupational Health Safety Act and the governing regulations). As a condition of your contract to provide services and materials to Brookfield GIS, the contractor / service provider shall not disturb asbestos-containing materials without prior notification to Brookfield GIS. The contractor / service provider and its workers, while at any location will follow all procedures specified by the Brookfield GIS Asbestos Management Program.

Thank you for your ongoing support

“SAFETY FIRST, IT’S THE WAY WE DO BUSINESS”

Contractor Health, Safety and Environmental Policy
Handbook
May 14, 2015

Initial Here: _____

11 Appendix B

11.1 Brookfield GIS Required Project Specific Safety Documents

11.1.1 Signed and Initialed Brookfield GIS Contractor Handbook

- This document must be read and initialed and signed by the contractor's representative and provided to the PM prior to work beginning.

11.1.2 Job Hazard Assessment

- A job Hazard Assessment must be done prior to work commencing on a site and depending on the project Job Hazard Assessments must be completed when worksite conditions change or a new Hazard is introduced into the worksite.

The contractor is to have, at minimum, the above documentation provided to the Project Manager at the start of a project.

11.2 The following documentation must be provided to the PM as soon as possible during the project if applicable.

11.2.1 Pre Project Safety Inspection

Where the project involves alterations to the structure of the building a Pre Projection Safety Inspection is to be completed to identify any risks to the tenants of the facility as well as the workers completing the task.

11.2.2 Project Safety Plan

If applicable a Project Safety Plan should be completed prior to a project beginning and to be available and reviewed by all personnel on site prior to commencing work.

11.2.3 Site Safety Orientations

Where one or more individuals are working on a jobsite a Site Safety Orientation must be done in order for the worker(s) to familiarize themselves with the environment they will be working in. There may be Site Specific Rules that will only apply to that location and all workers must be made aware of these rules.

11.2.4 Emergency Response Plan

In case of an emergency there must be a plan in place to respond to the situation. This must be provided to the PM in charge of the project.

11.2.5 Toolbox/Safety Meetings

A Toolbox or Safety Meeting must happen at the beginning of a project and should take place periodically throughout the project as well. The minutes of these meetings must be provided to the PM.

11.2.6 Work Permits (Lockout/Tag out, Hot Work)

A work permit system must be in place as required.

11.2.7 Incident Reports - Near Misses

Any incident or near miss that occurs on a BGIS Project is to be immediately reported to the PM and appropriate documentation including any investigation material provided within 72hours unless client requirements dictate otherwise.



12 CONTRACTOR ACKNOWLEDGEMENT

I _____, the Contractor (or the Contractor Representative), by signing this document acknowledge that I have read and understand the rules and policies outlined in the previous pages. I also acknowledge receipt and acceptance of the Brookfield GIS **“Contractor Health, Safety and Environmental Policy Handbook”**.

Company Name (Please print)

Signature (Contractor / Contractor Representative)

Name (Please print)

Title / Position

Date

Part 1 General

1.1 REFERENCES

- .1 Project Supplementary Conditions

1.2 CASH ALLOWANCES

- .1 Include in Contract Price specified cash allowances.
- .2 Cash allowances, unless otherwise specified, cover net cost to subcontractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation and other authorized expenses incurred in performing Work.
- .3 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
- .4 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
- .5 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
- .6 Include progress payments on accounts of work authorized under cash allowances in Departmental Representative's monthly certificate for payment.
- .7 Prepare schedule jointly with Departmental Representative and Contractor to show when items called for under cash allowances must be authorized by Departmental Representative for ordering purposes so that progress of Work will not be delayed.
- .8 Amount of each allowance, for Work specified in respective specification Sections is as follows:
 - .1 A \$ 9 200,00 allowance for Tyco Integrated Security work specified in section 28 13 00 for purchase and installation of system controlled access.
 - .2 A \$ 20 500,00 allowance for Tyco Integrated Security work specified in section 28 13 28 for purchase and installation of building entrance control system.

1.3 CONTINGENCY ALLOWANCE

- .1 Not Used.

Part 2 Products

- .1 Not Used.

Part 3 Execution

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures .
- .2 Submit to Departmental Representative within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Excavation.
 - .6 Backfill.
 - .7 Building footings.
 - .8 Slab on grade.
 - .9 Structural Steel.
 - .10 Siding and Roofing.
 - .11 Interior Architecture (Walls, Floors and Ceiling).
 - .12 Plumbing.
 - .13 Lighting.
 - .14 Electrical.
 - .15 Piping.

- .16 Controls.
- .17 Heating, Ventilating, and Air Conditioning.
- .18 Millwork.
- .19 Fire Systems.
- .20 Testing and Commissioning.
- .21 Supplied equipment long delivery items.
- .22 Engineer supplied equipment required dates.

1.6 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule once every two week basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in the province of Quebec.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 5 days for Departmental Representative's review of each submission.

- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit 1 electronic copie of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit 1 electronic copie of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

- .12 Submit 1 electronic copie of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit 1 electronic copie of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit 1 electronic copie of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit 1 electronic copie of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit 1 electronic copie of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 No object.

1.5 PHOTOGRAPHIC DOCUMENTATION

- .1 No object.

1.6 CERTIFICATES AND TRANSCRIPTS

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Partie 1 General

GENERAL NOTE: in this section the term “site” includes all the facilities located at the site where the work is taking place (construction site, buildings, access, infrastructure, parkings, bays, etc.).

1.1 RELATED REQUIREMENTS

- .1 Section 02 41 99 - Demolition for Minor Works.

1.2 REFERENCES

- .1 Province of Québec
 - .1 Loi sur la santé et la sécurité du travail L.R.Q., c. S-2.1 (Act respecting occupational health and safety).
 - .2 Code de sécurité pour les travaux de construction L.R.Q., c. S-2.1, r.4 (Safety code for the construction industry).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental representative, the site-specific prevention program, as outlined in the article “GENERAL REQUIREMENTS”, at least 10 days prior to the start of work.
- .3 Departmental representative will review Contractor’s site-specific prevention program and provide comments to Contractor within 10 days after receipt of the document. Revise plan as appropriate and resubmit to Departmental representative within 5 days after receipt of comments from Departmental representative. Departmental representative reserves the right not to authorize the start of work on the construction site as long as the content of the prevention program is not satisfactory. The Contractor shall then update his prevention program and resubmit it to the Departmental representative if the scope of work changes or if the working methods of the Contractor differ from his initial plans or for any other applicable new condition.
- .4 Departmental representative’s review of Contractor’s site-specific prevention program should not be construed as approval of the program and does not reduce the Contractor’s overall responsibility for construction Health and Safety during the work.
- .5 Submit copies of Contractor’s authorized representative’s construction site health and safety inspection reports to Departmental representative, once a week.
- .6 Submit to Departmental representative within 24 hours a copy of any inspection report, correction notice or recommendation issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit to Departmental representative within 24 hours an investigation report for any accident involving injury and any incident exposing a potential hazard.

The investigation report shall contain at least the following:

- 1. date, time and place of accident;

2. name of sub-contractor involved in the accident;
 3. number of persons involved and condition of wounded;
 4. witness identification;
 5. detailed description of tasks performed at the time of the accident;
 6. equipment being used to accomplish the tasks performed at the time of the accident;
 7. corrective measures taken immediately after the accident;
 8. causes of the accident;
 9. preventive measures that have been put in place to prevent a similar accident.
- .8 Submit to Departmental representative WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittals. Contractor must also keep one copy of these documents on the construction site.
- .9 Medical Surveillance: where prescribed by legislation, regulation or prevention program, submit certification of medical surveillance for construction site personnel prior to commencement of Work, and submit additional certifications for any new construction site personnel to Departmental representative.
- .10 Submit to Departmental representative an on-site Emergency Response Plan at the same time as the prevention program. The Emergency Response plan must contain the elements listed in the article “GENERAL REQUIREMENTS” of this section.
- .11 Submit to Departmental representative copies of all training certificates required for the application of the prevention program, in particular (if applicable) for the following:
- .1 first aid in the workplace and cardiopulmonary resuscitation;
 - .2 work likely to release asbestos dust (mandatory for all work where asbestos is present);
 - .3 work in confined spaces (mandatory for all work in confined spaces);
 - .4 lockout-tagout procedures (mandatory for all work requiring lockout);
 - .5 safely operating forklift trucks (mandatory for all forklift usage);
 - .6 safely operating elevating work platforms (mandatory for the use of all elevating platforms);
 - .7 any other requirement of Regulations or the safety program.
- In addition, the certifications of the *Cours de santé et sécurité générale pour les chantiers de construction* (General Health and Safety Training for Construction Sites) shall be available on demand on the construction site.
- .12 Engineer’s plans and certificates of compliance: Contractor must submit to the Departmental representative and to the *Commission des normes, de l’équité, de la santé et de la sécurité du travail* (CNESST) a copy signed and sealed by engineer of all plans and certificates of compliance required pursuant to the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry) or by any other legislation or regulation or by any other clause in the specifications or in the contract. The Contractor must also submit a certificate of conformity signed by an engineer once the

facility for which these plans were prepared has been completed and before a person uses the facility. A copy of these documents must be available on site at all times.

1.4 FILING OF NOTICE OF CONSTRUCTION SITE OPENING

- .1 Notice of construction site opening shall be submitted to the CNESST before work begins. A copy of such notice and acknowledgment of receipt from the CNESST shall be submitted to Departmental representative.

At the completion of all the work, a notice of construction site closing shall be submitted to the CNESST, with a copy to Departmental representative.

- .2 The Contractor shall assume the role of being the Principal Contractor in the limits of the construction site and elsewhere where he must execute work within the framework of this project. The Contractor shall recognize the responsibility of being the Principal Contractor of the project and identify himself as such in the notice of the construction site opening he provides to the CNESST.
- .3 The Contractor shall accept to divide and identify the construction site adequately in order to define time and space at all times throughout the course of the project.

1.5 HAZARD ASSESSMENT

- .1 The contractor must perform construction site specific safety hazard assessment related to project.

1.6 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental representative prior to commencement of Work.
- .2 Contractor's representative with decision power must attend any meetings at which construction site safety and health issues are to be discussed.
- .3 If it is anticipated that there will be 25 workers or more on the construction site at any given time, the Contractor shall set up a worksite committee and hold meetings as required by the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4) (Safety code for the construction industry). A copy of the minutes of the meetings of the committee shall be provided to the Departmental representative no later than 5 days after the committee meeting.

1.7 REGULATORY REQUIREMENTS

- .1 Do the Work in accordance with Section 01 41 00 - Regulatory Requirements.
- .2 Comply with all legislation, regulations and standards applicable to the construction site and its related activities.
- .3 Comply with specified standards and regulations to ensure safe operations on a site containing hazardous or toxic materials.
- .4 Always use the most recent version of the standards specified in the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry), notwithstanding the date indicated in that *Code*.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the *Loi sur la santé et la sécurité du travail* (L.R.Q., c. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r. 4.) (Safety code for the construction industry) in addition to respecting all the requirements of this specification manual.

1.9 RESPONSIBILITIES

- .1 The Contractor must acknowledge and assume all the tasks and obligations which customarily devolve upon a principal Contractor under the terms of the *Loi sur la santé et la sécurité du travail* (L.R.Q., ch. S-2.1) (Act Respecting Occupational Health and Safety) and the *Code de sécurité pour les travaux de construction* (S-2.1, r.4) (Safety code for the construction industry).
- .2 The Contractor must be responsible for health and safety of persons on construction site, safety of property on construction site and for the protection of persons adjacent to construction site and the environment to the extent that they may be affected by conduct of the work.
- .3 No matter the size or location of the construction site, the Contractor must clearly define the limits of the construction site by physical means and respect all specific regulation requirements applicable in this regard. The means chosen to define the limits of the construction site must be submitted to the Departmental representative.
- .4 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific prevention Plan.

1.10 WORK PERFORMED BY EXTERNAL CONTRACTORS

- .1 On this construction site, it is anticipated that work will be performed by an external contractor that has not been hired by the Contractor:
 - .1 Wiring work.
 - .2 Further to an additional request on the Departmental representative.
- .2 The Contractor must take the necessary steps to protect the health and safety of external contractors that have no contractual link with the Contractor but have been mandated by the Departmental representative to perform certain work. In return, these external contractors are obligated to submit to the authority of the Contractor (Principal Contractor). A subordination agreement must be signed by the Contractor and by each external contractor to this effect and submitted to the Departmental representative prior to the start of the work of each contractor (see the wording in the article HEALTH AND SAFETY SUBORDINATION AGREEMENT)

1.11 GENERAL REQUIREMENTS

- .1 Before undertaking the work, prepare a site-specific prevention program based on the hazards identified according to the article “HAZARD ASSESSMENT” and the article “RISKS INHERENT TO THE WORKSITE” in this section. Apply this program in its totality from the start of the project until demobilization of all personnel from the construction site. The prevention program shall take into consideration the specific

characteristics of the project and cover all the work to be executed on the construction site.

The safety program must include at least the following:

- .1 company safety and health policy;
- .2 description of the stages of the work;
- .3 total costs, schedule and projected workforce curves;
- .4 flow chart of safety and health responsibilities;
- .5 physical and material layout of the construction site;
- .6 risk assessment for each stage of the work, including preventive measures and the procedures for applying them;
- .7 identification of the preventive measures relative to the specific risks inherent to the worksite indicated in the article “RISKS INHERENT TO THE WORKSITE”;
- .8 identification of preventive measures for health and safety of employees and / or public works site as indicated in the article “SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC”;
- .9 training requirements;
- .10 procedures in case of accident/injury;
- .11 written commitment from all parties to comply with the safety program;
- .12 construction site inspection checklist based on the preventive measures;
- .13 emergency response plan which shall contain at least the following:
 - .1 construction site evacuation procedures;
 - .2 identification of resources (police, firefighters, ambulance services, etc.);
 - .3 identification of persons in charge of the construction site;
 - .4 identification of the first-aid attendants;
 - .5 communication organizational chart (including the person responsible for the site and the Departmental representative);
 - .6 training required for those responsible for applying the plan;
 - .7 any other information needed, in the light of the construction site’s characteristics.

If available the Departmental representative will provide the evacuation procedures to the Contractor who shall then coordinate the construction site procedure with that of the site and submit it to the Departmental representative.

- .2 Departmental representative may respond in writing, where deficiencies or concerns are noted in the prevention program and may request resubmission with correction of deficiencies or concerns.
- .3 In addition to the prevention program, during the course of the work the Contractor shall elaborate and submit to the Departmental representative specific written procedures for any work having a high risk factor of accident (for example: demolition procedures, specific installation procedures, hoisting plan, procedures for entering a confined space,

- procedures for interrupting electric power, etc.) or at the request of the Departmental representative.
- .4 The Contractor shall plan and organize work so as to eliminate the danger at source or ensure collective protection, thereby minimizing the use of personal protective equipment.
 - .5 Equipment, tools and protective gear which cannot be installed, fitted or used without compromising the health or safety of workers or the public shall be deemed inadequate for the work to be executed.
 - .6 All mechanical equipment (for example, but not limited to: hoisting devices for persons or materials, excavators, concrete pumps, concrete saws) shall be inspected before delivery to the construction site. Before using any mechanical equipment, the Contractor shall obtain a certificate of compliance signed by a qualified mechanic dated less than a week prior to the arrival of each piece of equipment on the construction site; the certificate shall remain on the construction site and transmitted to the Departmental representative on demand.
 - .7 Ensure all inspections (daily, periodic, annual, etc.) for the hoisting devices for persons or materials required by the current standards are carried out and be able to provide a copy of the inspection certificates to the Departmental representative on demand.
 - .8 The Departmental representative can at all times, if he suspects a malfunction or the risk of an accident, order the immediate stop of any piece of equipment and require an inspection by a specialist of his choice.
 - .9 The Departmental representative must be consulted for the location of storing gas cylinders and tanks on the construction site.

1.12 RISKS INHERENT TO THE WORKSITE

- .1 In addition to the risks related to the tasks to be carried out, personnel responsible for the execution of the work on the construction site will be exposed to the following risks, inherent to the area where the work will be executed. Without limiting his prevention program to these, the Contractor shall also include these elements in his program.

At the worksite there is the presence of the following:

- .1 confined spaces;

1.13 SPECIFIC REQUIREMENTS FOR THE HEALTH AND SAFETY OF OCCUPANTS AND PUBLIC

- .1 The worksite is occupied by employees and/or the public during the following times: all the time. The Contractor shall consider the following specific requirements for the protection of employees and / or the public:

- .1 The re-entry common corridor must be free and accessible for evacuation.

These requirements must be included in the Contractor's site-specific safety plan as well as any other measures provided by the Contractor to protect the health and safety of employees and / or the public on the site.

1.14 UNFORESEEN HAZARDS

- .1 Whenever a source of danger not defined in the specifications or identified in the preliminary construction site inspection arises as a result of or in the course of the work, the Contractor must immediately suspend work, notify the person responsible for health and safety on the construction site, take appropriate temporary measures to protect the workers and the public and notify Departmental representative, both verbally and in writing. Then the Contractor must do the necessary modifications to the prevention program or apply the security measures required in order to resume work.

1.15 PERSON IN CHARGE OF HEALTH AND SAFETY

- .1 When a safety officer is hired by the Departmental representative, the Contractor shall designate a competent person to supervise and take responsibility for health and safety, no matter the size of the construction site or how many workers are present at the workplace. This person shall be on construction site at all times and be able to take all necessary measures to ensure the health and safety of persons and property at or in the immediate vicinity of the construction site and likely to be affected by any of the work. The Contractor shall submit the name of this person to the Departmental representative before the start of work.

1.16 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on construction site in accordance with Acts and Regulations of the Province, and in consultation with Departmental representative.
- .2 At a minimum, the following information and documents must be posted in a location readily accessible to all workers:
 - .1 notice of construction site opening;
 - .2 identification of principal Contractor;
 - .3 company OSH policy;
 - .4 site-specific prevention program;
 - .5 emergency plan;
 - .6 minutes of worksite committee meetings;
 - .7 names of worksite committee representatives;
 - .8 names of the first-aid attendants;
 - .9 action reports and correction notices issued by the CNESST.

1.17 INSPECTION OF THE CONSTRUCTION SITE AND CORRECTION OF NON-COMPLIANCES

- .1 Inspect the construction site and complete the construction site inspection checklist and submit it to the Departmental representative in accordance with the article “ACTION AND INFORMATIONAL SUBMITTALS” in this section.
- .2 Immediately take all necessary measures to correct any situations deemed non-compliant during the inspections mentioned in the previous paragraph or noticed by the authorities having jurisdiction or the Departmental representative or his agent.

- .3 Submit to Departmental representative written confirmation of all measures taken to correct the situation in case of non-compliance in matters pertaining to health and safety.
- .4 The Contractor shall give the safety officer or, where there is no safety officer, the person assigned to safety and health responsibilities, full authority to order cessation and resuming of work as and when deemed necessary or desirable in the interests of safety and health. This person should always act so that the safety and health of the public and construction site workers and environmental protection take precedence over cost and scheduling considerations.
- .5 The Departmental representative or his agent may order cessation of work if the Contractor does not make the corrections needed to conditions deemed non-compliant in matters pertaining to health and safety. Without limiting the scope of the preceding articles, the Departmental representative may order cessation of work if, in his view, there is any hazard or threat to the safety or health of construction site personnel or the public or to the environment.

1.18 PREVENTION OF VIOLENCE

- .1 Health and safety management of Public Works and Government Services Canada construction sites includes the implementation of measures designed to protect the psychological health of all persons who access the construction site where the work is taking place. Consequently, in addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the construction site. Any person who demonstrates such actions or behaviors will receive a warning and/or could be definitely expelled from the construction site by the Departmental representative.

1.19 BLASTING

- .1 Not used.

1.20 POWDER ACTUATED DEVICE

- .1 Use powder actuated devices only after receipt of written permission from Departmental representative.
- .2 Any person using an explosive actuated tool shall hold a training certificate and meet all requirements of Section 7 of the *Code de sécurité pour les travaux de construction* (S- 2.1, r. 4). (Safety code for the construction industry)
- .3 Any other explosive-actuated device shall be used in accordance with the manufacturer's directions and applicable standards and regulations.

1.21 USE OF PUBLIC ROADS

- .1 Where it is necessary to encroach on a public road for operational reasons or to ensure the security of the workers, the occupants or the public (for example: the use of scaffolding, cranes, excavation work, etc.), the Contractor shall obtain at his own expense any authorizations and permits required by the competent authority.
- .2 The Contractor shall install at his own expense any signage, barricades or other devices needed to ensure the safety and security of the public and the Contractor's own facilities.

1.22 LOCKOUT-TAGOUT

- .1 For all work on electrically or otherwise energized equipment, the Contractor shall draw up and implement a general lockout-tagout procedure and submit it to the Departmental representative.
- .2 Supervisors and all workers concerned by work requiring lockout-tagout must have received training on lockout-tagout procedures by a recognized organization; Contractor shall submit training certificates to the Departmental representative.
- .3 Before starting the lockout-tagout procedure of a piece of equipment on an occupied site, Contractor must coordinate his work with the representative of the site if the interruption of the power sources can have an impact on the operations of the site or on its occupants.
- .4 Contractor must designate a qualified person as responsible for the lockout-tagout and must make sure that that person prepares a lockout-tagout data sheet for each piece of equipment involved. The lockout-tagout data sheet must be submitted to the Departmental representative at least 48 hours before the beginning of the work. The Departmental representative will review the data sheet with the representative of the site if the work takes place in an existing building. The data sheets for lockout-tagout must contain at least the following information:
 - .1 description of work to carry out;
 - .2 identification, description and location of the circuit and/or ~~piece of~~ equipment to lockout-tagout;
 - .3 identification of energy sources that feeds the ~~piece of~~ equipment;
 - .4 identification of each cutout point;
 - .5 sequence of lockout-tagout and the release of residual energy as well as the sequence of unlocking;
 - .6 list of material needed for the lockout-tagout;
 - .7 method of verification of zero energy implementation;
 - .8 name and signature of the person who prepared the data sheet.

When required by the Departmental representative, Contractor must record all this information on the site's representative form.

- .5 At the time of lockout-tagout, the person responsible must date the data sheet and ensure that each worker involved in the work on the circuit/~~piece of~~ equipment to lockout-tagout puts his name on the data sheet and signs it.

1.23 ELECTRICAL WORK

- .1 Contractor shall ensure that all electrical work is executed by qualified employees in accordance with the provincial regulation respecting vocational training and qualification.
- .2 Contractor shall respect all requirements of standard CSA Z462 *Workplace Electrical Safety Standard*.
- .3 No repairs or alterations shall be carried out on any live equipment except where complete disconnection of the equipment is not feasible.

- .4 Contractor shall respect all requirements prescribed in paragraph “LOCKOUT-TAGOUT” in this section.
- .5 Contractor shall advise in writing the Departmental representative of all the work that cannot be done with de-energized equipment and obtain his authorization. Contractor shall demonstrate to the Departmental representative that it is impossible to do the work with de-energized equipment and provide all the information necessary to request and obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) before the beginning of the work, excluding for the exceptions indicated in standard CSA Z462 Workplace electrical safety.
- .6 The energized electrical work permit on must contain at least the following elements:
 - description of the circuit and equipment and its location;
 - justification for having to do the work in an energized condition;
 - description of safe work practices to apply;
 - results of the shock hazard analysis;
 - limit of the protective perimeter against electric shocks;
 - results of the arc flash hazard analysis;
 - description of the arc flash protection boundary;
 - description of the personal protective equipment required;
 - description of the means to limit access to unqualified persons;
 - proof that an information session has been carried out;
 - approval signature of the energized electrical work (by a person in authority or by the owner).
- .7 If for the operational requirements of the occupants of the site the representative of the site requires that the Contractor performs work in an energized condition, the Contractor shall obtain all the information required to request and obtain obtain an energized electrical work permit (indicate working procedures, arc flash hazard analysis, protective perimeter, protective equipment, etc.) and have it signed by the representative of the site assigned by the Departmental representative before the beginning of the work.

1.24 ASBESTOS EXPOSURE

It is not anticipated that the work covered by the present specifications involves the manipulation of materials containing asbestos; however, if the Contractor or the Departmental representative or his agent discover materials which are susceptible of containing asbestos, the Contractor must immediately stop the work and advise the Departmental representative. If more investigation demonstrates that the materials do contain asbestos, the Contractor shall comply with the following requirements.

Prior to starting any work likely to emit asbestos dust, the Contractor must:

1. Provide a written procedure for the work, identifying the risk level of the work (low, moderate, high), as defined in section 3.23 of the *Code the sécurité pour les travaux de*

construction S-2.1, r- 4, (Safety code for the construction industry). This procedure must take into account all the requirements of that section 3.23.

2. Submit certificates that demonstrate that all workers involved in the work have received training on asbestos hazards and on the procedure required in the preceding paragraph.
3. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.25 FUNGAL CONTAMINATION

It is not anticipated that the work covered by the present specifications involves the manipulation of materials contaminated by mould; however, if the Contractor or the Departmental representative or his agent discover materials which are susceptible of being contaminated by mould, the Contractor must immediately stop the work and advise the Departmental representative. If more investigation demonstrates that the materials do contain mould, the Contractor shall comply with the following requirements.

Prior to starting any work where workers are likely to be in contact with materials contaminated by mould, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de la sécurité pour les travaux de construction S-2.1, r- 4*, (Safety code for the construction industry), as well as the requirements indicated in the document “*Mould Guidelines for the Canadian Construction Industry*” published by the Canadian Construction Association (<http://www.cca-acc.com/documents/electronic/cca82/cca82.pdf>).
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.26 EXPOSURE TO SILICA

For any interior or exterior work generating silica, the Contractor must respect the following requirements, in addition to those in the *Code de sécurité pour les travaux de construction S-2.1, r.4* (Safety code for the construction industry).

1. Work in wet environment or use tools with the inflow of water in order to reduce dustiness, if not, collect dust at the source and retain it with a high-efficiency filters not to propagate dust in the environment.
2. Clean surfaces and tools with water, never with compressed air.
3. Sand and pickle surfaces by using an abrasive containing less than 1% of silica (also called amorphous silica).

4. Install shields or other containment device to prevent silica dust from migrating toward other workers or the public.
5. Wear individual respiratory and ocular protection equipment during all the operations that could generate silica dust in accordance with the requirements of the *Code de sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry).
6. Wear coveralls to prevent contamination outside the construction site.
7. Do not eat, drink, or smoke in a dusty environment.
8. Wash the hands and the face before drinking, eating or smoking.

1.27 SANDBLASTING

- .1 Not used.

1.28 LEAD-BASE PAINT REMOVAL

Prior to all work where workers are likely to handle materials containing lead-base paint or other substances containing lead, the Contractor must:

1. Provide a written procedure for the work which respects all the requirements of the *Code de sécurité pour les travaux de construction S-2.1, r- 4*, (Safety code for the construction industry), as well as the requirements indicated in the document “*Guideline for Lead on Construction Projects*” published by the Ontario Ministry of Labour (http://www.labour.gov.on.ca/english/hs/pdf/gl_lead.pdf). If there is a discrepancy between the Québec regulation and the Ontario document, the most stringent requirement shall apply.
2. Demonstrate that he has all the material and equipment required on hand to respect the procedure and for safely conducting the work.

1.29 EXPOSURE TO ANIMAL’S FECAL DROPPINGS

- .1 Not used.

1.30 RESPIRATORY PROTECTION

1. Contractor must ensure that all workers who must wear a respirator as part of their duties have received training for that purpose as well as fit testing of their respirator, in accordance with CSA Standard Z94.4 *Selection, use and care of respirators*. Submit the certificates of the fit testingS to the Departmental representative on demand.

1.31 FALL PROTECTION

1. Plan and organize work so as to eliminate the risk of fall at the source or ensure collective protection, thereby minimizing the use of personal protective equipment. When personal fall protection is required, workers must use a safety harness that complies with CSA standard CAN/CSA Z-259.10 M90. A safety belt must not be used as fall protection.
2. Every person using an elevating platform (scissors, telescopic mast, articulated mast, rotative mast, etc.) must have a training regarding this equipment.
3. The use of a safety harness is mandatory for all elevating platforms with telescopic, articulate or rotative mast.
4. Define the limits of the danger zone around each elevating platform.
5. All openings in a floor or roof must be surrounded by a guardrail or provided with a cover fixed to the floor able to withstand the loads to which it could be exposed, regardless of the size of the opening and the height of the fall it represents.
6. Everyone who works within two metres from a fall hazard of three metres or more must use a safety harness in accordance with the requirements of the regulation, unless there is a guardrail or another device offering an equivalent safety.
7. Despite the requirements of the regulation, the Departmental representative may require the installation of a guardrail or the use of a safety harness for specific situations presenting a risk of fall less than three metres.

1.32 SCAFFOLDINGS

In addition to the requirements of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Contractor who uses scaffoldings must respect the following requirements:

Foundation

1. Scaffoldings shall be installed on a solid foundation so that it does not slip or rock.
2. Contractors wishing to install scaffoldings on a roof, overhang, canopy or awning shall submit their calculations and loads, as well as plans signed and sealed by an engineer to the Departmental representative and obtain his authorization before beginning installation.

Assembly, bracing and mooring

1. All scaffoldings shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).

2. Where a situation requires the removal of part of the scaffoldingS (e.g., crosspieces), the Contractor shall submit to the Departmental representative an assembly procedure signed and sealed by an engineer certifying that the scaffolding assembled in that manner will allow the work to be done safely given the loads to which it will be subject.
3. For scaffoldingS where the span between two supports is greater than three metres, the Contractor shall provide the Departmental representative an assembly plan signed and sealed by an engineer.

Protection against falls during assembly

1. Workers exposed to the risk of falling more than three metres shall be protected against falls at all times during assembly.

Platforms

1. Scaffolding platforms shall be designed and installed in accordance with the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry).
2. If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry)
3. ScaffoldingS of four sections (or six metres) high or more shall have a full platform covering the entire surface between the putlogs every three metres high or fraction thereof, and the components of that platform shall not be moved at any time to create an intermediate landing.

Guardrails

1. A guardrail shall be installed on every landing.
2. Cross braces shall not be considered as guardrails.
3. If the platforms are not covering the entire surface between the putlogs, the guardrail must be installed just above the edge of the platform so that there is no empty horizontal space between the platform and the guardrail.
4. Where scaffoldingS has four sections (or six metres) high or more and full platforms are required, the guardrails shall be installed on each landing at the start of work and shall remain in place until the work is completed.

Access

1. The Contractor shall ensure that access to the scaffoldingS does not compromise worker safety.
2. Where the platforms of the scaffoldingS are comprised of planks, ladders shall be installed in such a way that planks extending beyond the platform do not block the way up or down.
3. Notwithstanding the provisions of the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), stairs shall be installed on all scaffoldingS that have six or more rows of uprights or is six sections (or nine metres) high or higher.

Protection of the public and occupants

1. When scaffoldings are installed in a zone accessible to the public, the Contractor shall take the necessary measures to prevent the public from having access to them and, if applicable, to the work or storage area located in the vicinity of these scaffolding.
2. Contractor must install covered walkways, nets or other similar devices to protect workers, the public and the occupants against falling objects. The means of protection must be approved by the Departmental representative.

Engineering plans

1. In addition to those required by the *Code de sécurité pour les travaux de construction* (Safety code for the construction industry), the Departmental representative reserves the right to require engineering plans for other types or configurations of scaffoldings.
2. A plan signed and sealed by an engineer is required for all scaffoldings that will be covered with a canvas, a tarpaulin or any other material that has wind resistance.
3. A certificate of conformity signed by an engineer is required in all cases where an engineering plan is required for the installation and this, before anybody uses the facility. A copy of these documents must be available on the construction site at all times.

1.33 CONFINED SPACES

In addition to the requirements of the provincial regulation applicable to confined spaces, the Contractor must respect the requirements in the following paragraphs.

The Departmental representative reserves the right, depending on the nature of the risk of the confined spaces, of the work to be done and/or of the level of competence in confined spaces demonstrated by the Contractor, to require from the latter that he use the services of a firm specialized in health and safety or in confined space work to perform the analysis of the risks inherent to the confined spaces, to complete the entry permit, to conduct surveillance of the work or for any other task related to the work in confined spaces.

Information on confined spaces existing on the construction site

1. The following presents a non-exclusive list of the confined spaces that the Contractor will likely have to access during this project:
 - *Vertical shaft 608-M.*
2. The Contractor shall take into consideration each of these confined spaces and must also add to this list the confined spaces that he is likely to build/install during this project.

Person in charge of the health and safety for the work in confined spaces

1. The Contractor shall designate a person to be in charge of the health and safety for the work in confined spaces. This person shall be qualified, as defined in the article 297 of the

Règlement sur la santé et la sécurité du travail (S-2.1, r.13) (Occupational Health and Safety Regulation). This person must be present at all times during work in confined spaces and must make sure that all the requirements of the regulation and the ones specified in this section are respected. This person must amongst other things fill out and issue the entry permit for the confined spaces.

Training

1. All persons having access to a confined space, including the person in charge and the watcher of the confined space shall have completed training on entry in confined spaces.
2. All persons who have to use supplied-air respirator to access the confined spaces shall have completed training on the use of these apparatus.
3. All persons identified as rescuers for confined spaces shall have completed training on confined spaces rescue.
4. Each training required in the preceding paragraphs must be provided by a firm specialized in health and safety or in confined spaces.
5. The training certificates of the persons mentioned above must be submitted to the Departmental representative before the beginning of the work in confined spaces.

Risk assessment of confined spaces

1. For each of the confined spaces listed at the beginning of this article, the Contractor must obtain the necessary information from the site representative and proceed to the assessment of the risk inherent to each confined space and relative to:
 - a. the prevailing internal atmosphere, namely the concentration of oxygen, inflammable gases and vapours, combustible or explosive dusts as well as the categories of contaminants likely to be present in this enclosed area or nearby;
 - b. the fact that the natural or mechanical ventilation is insufficient
 - c. The materials that are present there and that can cause the worker to sink, to be buried or to drown, such as sand, grain or a liquid;
 - d. the interior configuration;
 - e. pipes and conduits penetrating the confined space;
 - f. energies such as electricity, moving mechanical parts, heat stress, noise and hydraulic energy;
 - g. ignition sources such as open flames, lighting, welding and cutting, static electricity or sparks;
 - h. all other particular circumstances, such as the presence of vermin, rodents or insects.

These risk assessments must be done by the person in charge of the health and safety of the work in confined spaces. They must be submitted to the Departmental representative for analysis at least 10 days before the proposed date for the work in confined spaces and they must also include the following information:

- a. location of the confined space;

- b. description of the confined space;
- c. dimensions of the confined space;
- d. number, location and dimension^S of the openings;
- e. content of the confined space (material, substances, etc.)
- f. date of the assessment;
- g. name and signature of the person who conducted the assessment and the name of his employer.

The Contractor must repeat the same process for each of the confined spaces that he will build/install during this project.

Confined spaces entry permits

1. At least 5 days before the scheduled date for the work in a confined space the Contractor must submit for analysis to the Departmental representative a copy of each entry permit specific to the confined spaces where he must access. The entry permits must be completed by the person in charge of the health and safety of the work in confined spaces, and must contain the following information as a minimum:
 - a. description of the work that will be carried out and the method of work, including the materials and tools needed to do this work;
 - b. description of the risks and corresponding preventive measures according to the risk assessment inherent to the confined space done previously and according to the work to be carried out;
 - c. safety equipment that will be used to control the risks of confined spaces (e.g.: fan, gas detectors, local exhaust ventilation, personal protective equipment, etc.);
 - d. rescue procedure covering at least the following:
 - e. means of communication between the supervisor of the confined space and the workers in the confined space;
 - f. lifesaving equipment specific to each confined space;
 - g. confirmation that the municipal emergency response service has been advised that work in confined spaces would be going on at this specific construction site and that they may intervene do to a confined space rescue; otherwise, the Contractor must identify the workers on the construction site that will act as rescuers in a confined space in the case where such rescuers must enter the confined space (rescue training is mandatory);
 - h. location of telephone and phone number of the municipal emergency response service (if applicable);
 - i. date of entry permit;
 - j. name of person who issued the permit and the name of his employer;
 - k. name of the confined space safety watcher and the name of his employer;
 - l. name of the workers who must enter the confined space and the name of each one's employer.
2. In cases where the site representative requires the use of a confined space entry permit specific to his site, the Contractor must comply with the requirements of that permit.

Medical surveillance

1. The Contractor must submit to the Departmental representative a medical certificate dated in the last two years for all persons who must use a supplied-air respirator. The certificate must confirm the ability of each person to use this type of apparel.
2. It is recommended that the persons who have to work in sewer collection systems or other similar systems be vaccinated against diphtheria, tetanus and hepatitis “B”.

Requirements while working in confined spaces

1. Before each entry into a confined space, the person in **charge** of the health and safety for the work in confined spaces shall take readings of oxygen concentration, flammable gases and all toxic gases likely to be present and record these readings on the entry permit required earlier.
2. No worker can access the confined space if the following requirements are not respected:
 - a. the concentration of oxygen shall be greater than or equal to 19.5% and less than or equal to 23%;
 - b. the concentration of inflammable gases or vapours shall be less than or equal to 10% of the lower explosion limit;
 - c. the concentration of other gases must not exceed the standards prescribed in annex I of the *Règlement sur la santé et la sécurité du travail* (S-2.1, r.13) (Occupational Health and Safety Regulation).
3. If the oxygen and gas concentrations measured respect the regulatory values, the person in charge of the health and safety for the work in confined spaces must ensure that all preventive measures indicated on the permit are in place and then must complete the entry permit (date, time, signatures, etc.) before issuing the permit and allow entry into the confined space.
4. A permit is only valid for one work shift; the Contractor must submit a new permit for each extra shift.
5. During the work inside the confined space, the gas concentration must be measured continuously and the gas detector must be installed at ~~the level of the~~ the breathing area of the workers. If the conditions inside the confined space are such that the workers might not hear/see the detector’s alarm, the Contractor must find a way for the confined space safety watcher to watch the concentration measures while maintaining the measurements at the level of the breathing zone of the workers.
6. If the work is organized in a way that the workers are scattered far away from each other in a large confined space, the Contractor needs to provide additional gas detectors.
7. The Contractor must provide the gas detectors and maintain them in good condition. He must be able to show that the gas detectors used have been calibrated and adjusted by the person in **charge** of the health and safety for the work in confined spaces or by a qualified person, in accordance with the manufacturer’s recommendations. The Departmental representative can at all times have the accuracy of the measuring devices checked. In the event of the failure of a detection device, the work must be stopped immediately and all workers must leave the confined space.

8. The manufacturer's manual of the gas detectors must be available on the construction site.
9. The Contractor shall provide a ventilation system to keep concentrations of contaminants below the regulatory limits.
10. If work generating contaminants are performed (welding, use of products, etc.), the Contractor must, if needed, install an aspiration system for the contaminants so that the regulatory values of air quality can be maintained at all times.
11. If a detecting device alarm goes off, all workers shall leave the confined space. The measured levels of concentration must then be recorded on the entry permit. The Contractor shall then find the source of contamination, neutralize it, ventilate the confined space to eliminate contaminant residues and authorize access to the confined space only when concentrations of oxygen and gas have returned to normal.
12. Compressed gas cylinders or welding equipment shall not be brought into confined spaces: this equipment shall remain outside and shall not block entrances or exits; all cylinders shall be properly secured.
13. Tools and electrical devices used to work in the confined spaces shall be grounded and, when necessary, designed to be explosion-proof. All equipment must be connected to a ground fault interrupter outlet or to a step-down transformer. The Contractor shall, at his own cost, hire a qualified electrician to adjust power receptacles and/or circuit breakers that he intends to use which do not meet these criteria.
14. The Contractor shall obtain a Hot Work Permit and respect the requirements to that effect when the work to be carried out includes hot work.
15. The Contractor must assign a competent person to assume the duties of confined space safety watcher. The supervisor shall be exclusively dedicated to these duties and must constantly remain outside of the confined space as long as there is a worker in it. He must also:
 - a. ensure that the entry permit has been filled, signed and posted near the confined space;
 - b. be familiar with the work procedure specific to the confined space and ensure that it is respected;
 - c. ensure continuous communication with all the workers in the confined space and ensure that all the equipment required in case of emergency is present;
 - d. have a good knowledge of the backup-ventilation systems and ensure their proper functioning for the duration of the work;
 - e. prevent access to unauthorized persons;
 - f. ensure that the conditions around the confined space zone is not a health or security risk for the workers inside the confined space;
 - g. initiate the emergency procedure if needed.
16. The same person may act as a confined space safety watcher and as the person in charge of the health and safety of the work in confined spaces, provided all requirements of both functions are met.

1.34 EXCAVATION WORK

- .1 Not used.

1.35 LIFTING LOADS WITH CRANE OR BOOM TRUCK

- .1 Not used.

1.36 HOT WORK

Hot work means any work where a flame is used or a source of ignition may be produced, i.e., riveting, welding, cutting, grinding, burning, heating, etc.

1. Before the beginning of each shift of work and for each sector, the Contractor must obtain a “Hot Work Permit” emitted by the person responsible for the site.
2. A working portable fire extinguisher suitable to the fire risk shall be available and easily accessible within a 5 m radius from any flame, spark source or intense heat.
3. The Contractor must appoint an individual to do continuous monitoring of the fire risks for a period of one (1) hour after the end of the shift of hot work. This individual shall sign the section for this purpose on the permit and give it to the person in charge of the construction site after the one-hour period.
4. When the hot work is done in areas where there is combustible materials or where the walls, ceilings or floors are made of or covered with combustible materials, a final inspection of the work area must be scheduled four (4) hours after the work has finished. Unless specified otherwise by the Departmental representative, the Contractor must assign a person to carry out this monitoring.

Welding and cutting

In addition to the requirements prescribed in the preceding paragraphs, the Contractor must respect the following requirements:

1. Welding and cutting work must be carried out in accordance with the requirements of the *Code de Sécurité pour les travaux de construction, S-2.1, r.4* (Safety code for the construction industry) and CSA standard W117.2, Safety in Cutting, Welding and Allied Processes.
2. Air extraction system with filters must be used for all welding and cutting work performed inside.
3. Stop all activities producing flammable or combustible gas, vapours or dust in the vicinity of the welding or cutting work.
4. Store all compressed gas cylinder on a fireproof fabric and make sure that the room is well ventilated.
5. Store all oxygen cylinders more than 6 metres from a flammable gas cylinder (ex: acetylene) or a combustible such as oil or grease, unless the oxygen cylinder is separated from it by a wall made

of non-combustible material as mentioned in the article 3.13.4 of the *Code de sécurité pour les travaux de construction, S-2, r. 6* (Safety code for the construction industry)

6. Store the cylinders far from all heat sources.
7. Not to store the cylinders close to the staircases, exits, corridors and elevators.
8. Do not put acetylene in contact with metals such as silver, mercury, copper and alloys of brass having more than 65% copper, to avoid the risk of an explosive reaction.
9. Check that welding equipment with electric arc has the necessary tension and are grounded.
10. Ensure that the conducting wires of the electric welding equipment are not damaged.
11. Place the welding equipment on a flat ground away from the bad weather.
12. Install fireproof canvas when the welding work is done in a superposition and where there is the risk of falling sparks.
13. Move away or protect the combustible materials which are closer than 15 metres from the welding work.
14. Prohibition to weld or cut any closed container.
15. Do not perform any cutting, welding or work with a naked flame on a container, a tank, a pipe or other container containing a flammable or explosive substance unless:
 - a. they have been cleaned and air samples indicating that work can be done without danger has been taken; and
 - b. provisions to ensure the safety of the workers have been made.

1.37 ROOFING WORK

- .1 Not used.

1.38 INTERIOR USE OF INTERNAL COMBUSTION ENGINES

1. In addition to respecting article 3.10.17 of the *Code de sécurité pour les travaux de construction (S-2.1, r.4)* (Safety code for the Construction Industry), the Contractor must also respect the requirements described in the following paragraphs.
2. The use of a gas-powered equipment inside a building is prohibited even if the building is provided with openings.
3. The use of other equipment powered by an internal combustion engine inside a building must be submitted to the approval of the Departmental representative.
4. For the use of any piece of equipment powered by an internal combustion engine inside a building, even if the building is provided with openings, the Contractor must install a ventilation system able to maintain the concentrations of toxic gases below the regulatory values. The stale air shall be exhausted outside the building.
 - a. Before using equipment powered by an internal combustion engine, the Contractor must plan and write the following:
 - b. number of fans to install;
 - c. power of the fans;
 - d. location of the fans;
 - e. dimensions of the openings that will be open during the work.

5. During the operation of equipment with internal combustion engine, the Contractor must measure the concentrations of carbon monoxide and nitrogen oxides in the work area and at the breathing area of the workers; the concentration levels measured must be recorded in a register every 30 minutes that must be available for consultation.
6. If work is in an occupied building, the Contractor must also measure the concentrations of carbon monoxide and nitrogen oxides in the rooms next to the work area and the concentration levels measured must be recorded in a register every 30 minutes.
7. If the carbon monoxide or nitrogen oxides detector alarm goes off during the work, the Contractor must stop the work and take the corrective measures required before resuming the work.
8. A portable fire extinguisher must be available at all times in the work area during the use of equipment with internal combustion engines.
9. The equipment must be maintained at a safe distance from all combustible material.
10. The storage of fuel for any equipment with internal combustion engine is prohibited inside a building.

1.39 TEMPORARY HEATING

- .1 Not used.

1.40 WORK NEAR OVERHEAD POWER LINES

- .1 Not used.

1.41 HEALTH AND SAFETY SUBORDINATION AGREEMENT

Project: _____ **Address:** _____

EXTERNAL CONTRACTOR

I hereby agree to submit to the authority of (name of the Principal Contractor's business) _____, which is the Principal Contractor for the project indicated above during the entire duration of our work on the construction site. Accordingly, I confirm that I have reviewed the Principal Contractor's prevention program, and I agree to:

- inform my employees of the content of the Principal Contractor's prevention program and ensure that its content are complied with at all times;
- apply the prevention program that is specific to the activities that we carry out under this project;
- inform the Principal Contractor of my actions or dealings on the construction site and obtain the Principal Contractor's agreement before the start of work; and
- follow the health and safety directives provided by the representative of the Principal Contractor on the construction site and, depending on requirements, attend training sessions and health and safety meetings organized by the representative of the Principal Contractor.

Name of representative: _____

Name of business: _____

Description of work to be done on the construction site: _____

Approximate dates of work (start-end): _____

Signature: _____ Date: _____

PRINCIPAL CONTRACTOR

I hereby agree to allow the business (name of external contractor) _____ to perform the work under this project indicated above and, as Principal Contractor, to take the necessary steps to protect the health and safety of workers on the construction site. Should the Contractor repeatedly refuse or fail to comply with my directives, I agree to inform PWGSC's Departmental representative of this and to provide documentary evidence of my actions or dealings with the Contractor.

Name of representative: _____

Name of the Principal Contractor's business: _____

Signature: _____ Date: _____

Submit a completed and signed copy to PWGSC's Departmental representative

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Definitions:

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures .
- .2 Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review by Departmental Representative.
- .3 Ensure Environmental Protection Plan includes comprehensive overview of known or potential environmental issues to be addressed during construction.
- .4 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - .6 Spill Control Plan including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
 - .8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

- .9 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

1.3 FIRES

- .1 Fires and burning of rubbish on site permitted when approved by Departmental Representative.
- .2 Provide supervision, attendance and fire protection measures as directed.

1.4 DRAINAGE

- .1 No object.

1.5 SITE CLEARING AND PLANT PROTECTION

- .1 No object.

1.6 WORK ADJACENT TO WATERWAYS

- .1 No object.

1.7 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.

1.8 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 No object.

1.9 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning .
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

1.4 NATIONAL PARKS ACT

- .1 Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.6 REPORTS

- .1 Submit 4 copies of inspection and test reports to Departmental Representative .
- .2 Provide copies to subcontractor of work being inspected or tested or manufacturer or fabricator of material being inspected or tested .

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.8 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative as specified in specific Section.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7 Mock-ups may remain as part of Work.
- .8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.9 MILL TESTS

- .1 Submit mill test certificates as requested or required of specification Sections.

1.10 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- .2 Refer to Section for definitive requirements.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.3 DEWATERING

- .1 Not Used.

1.4 WATER SUPPLY

- .1 Departmental Representative will provide continuous supply of potable water for construction use.
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

1.5 TEMPORARY HEATING AND VENTILATION

- .1 Departmental Representative will provide heating and ventilation required during construction period.

1.6 TEMPORARY POWER AND LIGHT

- .1 Departmental Representative will pay for temporary power during construction for temporary lighting and operating of power tools.
- .2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 150 lx.
- .4 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.7 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone, cell phones, fax, data hook up, lines equipment necessary for own use and use of Departmental Representative.

1.8 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
 - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC).

1.2 SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs.

1.5 HOISTING

- .1 Not uses.

1.6 ELEVATORS

- .1 Designated existing and permanent elevators to be used by construction personnel and transporting of materials . Co-ordinate use with Departmental Representative .
- .2 Provide protective coverings for finish surfaces of cars and entrances.

1.7 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.8 CONSTRUCTION PARKING

- .1 Parking will be permitted on site if it does not disrupt performance of Work and parking for users and visitors.

1.9 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.10 OFFICES

- .1 Room 671 (vacant) is at the contractor's disposal for office set-up.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.12 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.13 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on site.

1.14 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Not used.

1.15 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
 - .2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-O121-M1978(R2003), Douglas Fir Plywood.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC).

1.2 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.3 HOARDING

- .1 Not used.

1.4 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors.
- .2 Provide as required by governing authorities.

1.5 WEATHER ENCLOSURES

- .1 Not used.

1.6 DUST TIGHT SCREENS

- .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.
- .3 Provide protections against dust and water on surfaces of workstations occupied by others and remove them at the end of each shift.

1.7 ACCESS TO SITE

- .1 Not used.

1.8 PUBLIC TRAFFIC FLOW

- .1 Not used.

1.9 FIRE ROUTES

- .1 Not used.

1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Not used.

1.11 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.12 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal .

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

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

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

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.

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

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.10 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

1.12 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.15 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures .
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures .

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping , full thickness of the construction element.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal .

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC).

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.

- .4 Remove waste products and debris other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .14 Remove dirt and other disfiguration from exterior surfaces.
- .15 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .16 Sweep and wash clean paved areas.
- .17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .18 Clean roofs, downspouts, and drainage systems.
- .19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal .

Part 2 **Products**

2.1 **NOT USED**

.1 Not Used.

Part 3 **Execution**

3.1 **NOT USED**

.1 Not Used.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.
- .2 PWGSC's Waste Management Goal is to reduce to a minimum the quantity Waste to be diverted from landfill sites. Provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Accomplish maximum control of solid construction waste.
- .4 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Inert Fill: inert waste - exclusively asphalt and concrete.
- .3 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .7 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .9 Separate Condition: refers to waste sorted into individual types.
- .10 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures .
- .2 Submit, prior to final payment , a summary of waste recuperated for reuse and/or recycling or disposal.
 - .1 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.

1.4 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
 - .1 Ship materials to site operating under Certificate of Approval premises of Owner.
 - .2 Materials must be immediately separated into required categories for reuse or recycling.

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .6 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
 - .1 On-site source separation is recommended.

- .2 Remove co-mingled materials to off-site processing facility for separation.
- .3 Provide waybills for separated materials.

1.6 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil or paint thinner into waterways, storm, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in the waste audit.

1.7 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility and/or provide temporary security measures approved by Departmental Representative.

1.8 SCHEDULING

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 SELECTIVE DEMOLITION

- .1 Reuse of Building Elements when possible.

3.2 APPLICATION

- .1 Do Work in compliance with MSSP.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.3 CLEANING

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

- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.4 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

- .1 Schedule A - Government Chief Responsibility for the Environment:

Province	Address	General Inquires	Fax
Québec	Ministère de l'Environnement et de la Faune, Siège social 150, boul, René-Lévesque Est Québec QC G1R 4Y1	418-643-3127 800-561-1616	418-646-5974
	Conseil de la conservation et de l'environnement 800, place d'Youville, 19e étage Québec QC G1R 3P4	418-643-3818	

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems: tested, adjusted and balanced and fully operational.
 - .4 Operation of systems: demonstrated to Owner's personnel.
 - .5 Commissioning of mechanical systems: completed in accordance with 01 91 13 - General Commissioning (Cx) Requirements and and copies of final Commissioning Report submitted to Departmental Representative.
 - .6 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor.
 - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Final Payment:
 - .1 When Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

1.2 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning .

- .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting prior to contract completion with contractor's representative and Departmental Representative to:
 - .1 Verify Project requirements.
 - .2 Review manufacturer's installation instructions and warranty requirements.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures .
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control .
- .6 Training: refer to Section 01 79 00 - Demonstration and Training .

1.5 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.

- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative .

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Not used.

1.7 FINAL SURVEY

- .1 Not used.

1.8 EQUIPMENT AND SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
 - .1 Give function, normal operation characteristics and limiting conditions.
 - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
 - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
 - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.

- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and 01 91 13 - General Commissioning (Cx) Requirements.
- .15 Additional requirements: as specified in individual specification sections.

1.9 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.10 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.

- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.
 - .3 Deliver to site location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.11 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.12 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.

- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and commissioned systems such as fire protection, alarm systems, sprinkler systems, lightning protection systems, .
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
 - .4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.
 - .5 Procedure and status of tagging of equipment covered by extended warranties.
 - .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.

- .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.13 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Demonstrate operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection.
- .2 Owner: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
 - .3 Ensure equipment has been inspected and put into operation in accordance with Section 019113 - General Commissioning (cx) Requirements.
 - .4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, , servicing, and maintenance of each item of equipment at scheduled agreed upon times, at the designated location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.
 - .5 Time allocated for Instructions: since the work is related to modifications of existing systems, no minimal duration is required for Instructions.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures .
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.3 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Owner's personnel.
 - .2 Provide written report that demonstration and instructions have been completed.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

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PART 2 PRODUCTS

- 2.1 NOT USED

PART 3 EXECUTION

- 3.1 NOT USED



Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.
- .2 Related Requirements
 - .1 Section 01 32 16.07 – Construction progress schedule – Bar (Gantt) chart.
 - .2 Section 01 33 00 – Submittal procedure.
 - .3 Section 01 91 31 – Commissioning (CX) plan.
 - .4 Section 01 91 33 – Commissioning forms.
 - .5 Section 01 91 41 – Commissioning training.
- .3 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.
 - .8 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.



- .3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.
- .4 AFD managed projects the term Departmental Representative in Cx specifications to be interpreted as AFD Service Provider.

1.3 COMMISSIONING OVERVIEW

- .1 Section 01 91 31 - Commissioning (Cx) Plan.
- .2 For Cx responsibilities refer to Section 01 91 31 - Commissioning (Cx) Plan.
- .3 Cx to be a line item of Contractor's cost breakdown.
- .4 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built (facility) is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.
- .6 Departmental Representative will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by (Departmental Representative) (DCC Representative) (Consultant).
 - .2 Equipment, components and systems have been commissioned.
 - .3 O M training has been completed.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

- .1 Before Construction:
 - .1 Review contract documents, confirm by writing to Departmental Representative.
 - .1 Adequacy of provisions for Cx.
 - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
 - .1 Co-ordinate provision, location and installation of provisions for Cx.



- .3 Before start of Cx:
 - .1 Have completed Cx Plan up-to-date.
 - .2 Ensure installation of related components, equipment, sub-systems, systems is complete.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf-ready.
 - .5 Understand completely design criteria and intent and special features.
 - .6 Submit complete start-up documentation to Departmental Representative.
 - .7 Have Cx schedules up-to-date.
 - .8 Ensure systems have been cleaned thoroughly.
 - .9 Complete TAB procedures on systems, submit TAB reports to Departmental Representative for review and approval.
 - .10 Ensure "As-Built" system schematics are available.
- .4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than four (4) weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least eight (8) weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least four (4) weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

- .1 Refer to Section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms for requirements and instructions for use.
- .2 Departmental Representative to review and approve Cx documentation.
- .3 Provide completed and approved Cx documentation to Departmental Representative.



1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule in accordance with Section (01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart).
- .2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, retesting, re-commissioning, re-verification.
 - .4 Training.

1.10 COMMISSIONING MEETINGS

- .1 Convene Cx meetings following project meetings: Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart and as specified herein.
- .2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .4 At 60% construction completion stage. Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart. Departmental Representative to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by Departmental Representative, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required.

1.11 STARTING AND TESTING

- .1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.12 WITNESSING OF STARTING AND TESTING

- .1 Provide fourteen (14) days notice prior to commencement.
- .2 Departmental Representative to witness of start-up and testing.
- .3 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.



1.13 MANUFACTURER'S INVOLVEMENT

- .1 Factory testing: manufacturer to:
 - .1 Coordinate time and location of testing.
 - .2 Provide testing documentation for approval by Departmental Representative.
 - .3 Arrange for Departmental Representative to witness tests.
 - .4 Obtain written approval of test results and documentation from Departmental Representative before delivery to site.
- .2 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .3 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.
- .4 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 To report results in clear, concise, logical manner.

1.14 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: to include fine-tuning.
- .3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.
- .4 Document require tests on approved PV forms.



- .5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:
 - .1 Minor equipment/systems: implement corrective measures approved by Departmental Representative.
 - .2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.
 - .3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.
 - .1 Rejected equipment to be remove from site and replace with new.
 - .2 Subject new equipment/systems to specified start-up procedures.

1.15 START-UP DOCUMENTATION

- .1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.
- .2 Start-up documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Pre-start-up inspection reports.
 - .3 Signed installation/start-up check lists.
 - .4 Start-up reports,
 - .5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.17 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

- .1 Notify Departmental Representative at least twenty-one (21) days prior to start of Cx.



- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.19 INSTRUMENTS / EQUIPMENT

- .1 Submit to Departmental Representative for review and approval:
 - .1 Complete list of instruments proposed to be used.
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.
- .2 Provide the following equipment as required:
 - .1 2-way radios.
 - .2 Ladders.
 - .3 Equipment as required to complete work.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

- .1 Departmental Representative to witness activities and verify results.

1.22 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .3 Provide copies to Departmental Representative within five (5) days of test and with Cx report.

1.23 COMMISSIONING CONSTRAINTS

- .1 Since access into secure or sensitive areas will be very difficult after occupancy) it is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems in these areas before issuance of the Interim Certificate, using, if necessary, simulated thermal loads.



1.24 EXTRAPOLATION OF RESULTS

- .1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.25 EXTENT OF VERIFICATION

- .1 Laboratory areas:
 - .1 Provide manpower and instrumentation to verify up to 100% of reported results.
 - .2 .
- .2 Elsewhere:
 - .1 Provide manpower and instrumentation to verify up to 30% of reported results, unless specified otherwise in other sections.
- .3 Number and location to be at discretion of Departmental Representative.
- .4 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .5 Review and repeat commissioning of systems if inconsistencies found in more than 20% of reported results.
- .6 Perform additional commissioning until results are acceptable to Departmental Representative.

1.26 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Departmental Representative for third and subsequent verifications where:
 - .1 Verification of reported results fail to receive Departmental Representative's approval.
 - .2 Repetition of second verification again fails to receive approval.
 - .3 Departmental Representative deems Contractor's request for second verification was premature.

1.27 SUNDRY CHECKS AND ADJUSTMENTS

- .1 Make adjustments and changes which become apparent as Cx proceeds.
- .2 Perform static and operational checks as applicable and as required.

1.28 DEFICIENCIES, FAULTS, DEFECTS

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.
- .2 Report problems, faults or defects affecting Cx to (Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.



1.29 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.30 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.31 TRAINING

- .1 In accordance with Section 01 91 41 - Commissioning (Cx) - Training.

1.32 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.33 OCCUPANCY

- .1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy of facility.

1.34 INSTALLED INSTRUMENTATION

- .1 Use instruments installed under Contract for TAB and PV if:
 - .1 Accuracy complies with these specifications.
 - .2 Calibration certificates have been deposited with Departmental Representative.
- .2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.35 PERFORMANCE VERIFICATION TOLERANCES

- .1 Application tolerances:
 - .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within +/- 10% of specified values.
- .2 Instrument accuracy tolerances:
 - .1 To be of higher order of magnitude than equipment or system being tested.
- .3 Measurement tolerances during verification:
 - .1 Unless otherwise specified actual values to be within +/- 2% of recorded values.

1.36 OWNER'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.



Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION



PART 1 GENERAL

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PART 2 PRODUCT

2.1 NOT USED

PART 3 EXECUTION

3.1 NOT USED



Part 1 GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 Description of overall structure of Cx Plan and roles and responsibilities of Cx team.
 - .2 Related Requirements
 - .1 Section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.
 - .2 Section 01 91 41 - Commissioning (Cx) - Training.

1.2 REFERENCES

- .1 American Water Works Association (AWWA)
- .2 National Fire Protection Association (NFPA)
 - .1 NFPA-13-(02), Installation of Sprinkler Systems Handbook.
 - .2 NFPA-14-(02), Automatic Sprinkler Systems Handbook.
 - .3 NFPA-20-(03), Standard for the Installation of Stationary Fire Pumps for Fire Protection.
- .3 Public Works and Government Services Canada (PWGSC)
 - .1 PWGSC - Commissioning Guidelines CP.4 -3rd edition-(03).
- .4 Underwriters' Laboratories of Canada (ULC)

1.3 GENERAL

- .1 Provide a fully functional facility:
 - .1 Systems, equipment and components meet user's functional requirements before date of acceptance, and operate consistently at peak efficiencies and within specified energy budgets under normal loads.
 - .2 Facility O M personnel have been fully trained in aspects of installed systems.
 - .3 Optimized life cycle costs.
 - .4 Complete documentation relating to installed equipment and systems.
- .2 Term "Cx" in this section means "Commissioning".
- .3 Use this Cx Plan as master planning document for Cx:
 - .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.
 - .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.
 - .3 Sets out deliverables relating to O M, process and administration of Cx.
 - .4 Describes process of verification of how built works meet design requirements.



- .5 Produces a complete functional system prior to issuance of Certificate of Occupancy.
- .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
 - .1 Overview of Cx.
 - .2 General description of elements that make up Cx Plan.
 - .3 Process and methodology for successful Cx.
- .4 Acronyms:
 - .1 Cx - Commissioning.
 - .2 BMM - Building Management Manual.
 - .3 EMCS - Energy Monitoring and Control Systems.
 - .4 MSDS - Material Safety Data Sheets.
 - .5 PI - Product Information.
 - .6 PV - Performance Verification.
 - .7 TAB - Testing, Adjusting and Balancing.
 - .8 WHMIS - Workplace Hazardous Materials Information System.
- .5 Commissioning terms used in this Section:
 - .1 Bumping: short term start-up to prove ability to start and prove correct rotation.
 - .2 Deferred Cx - Cx activities delayed for reasons beyond Contractor's control due to lack of occupancy, weather conditions, need for heating/cooling loads.

1.4 DEVELOPMENT OF 100% CX PLAN

- .1 Cx Plan to be 95% completed before added into Project Specifications.
- .2 Cx Plan to be 100% completed within eight (8) weeks of award of contract to take into account:
 - .1 Approved shop drawings and product data.
 - .2 Approved changes to contract.
 - .3 Contractor's project schedule.
 - .4 Cx schedule.
 - .5 Contractor's, sub-contractor's, suppliers' requirements.
 - .6 Project construction team's and Cx team's requirements.
- .3 Submit completed Cx Plan to Departmental Representative and obtain written approval.

1.5 REFINEMENT OF CX PLAN

- .1 During construction phase, revise, refine and update Cx Plan to include:
 - .1 Changes resulting from Client program modifications.
 - .2 Approved design and construction changes.
- .2 Revise, refine and update every three (3) weeks during construction phase. At each revision, indicate revision number and date.
- .3 Submit each revised Cx Plan to Consultant for review and obtain written approval.



- .4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.6 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

- .1 Departmental Representative to maintain overall responsibility for project and is sole point of contact between members of commissioning team.
- .2 Project Manager will select Cx Team consisting of following members:
 - .1 PWGSC Design Quality Review Team: during construction, will conduct periodic site reviews to observe general progress.
 - .2 PWGSC Quality Assurance Commissioning Manager: ensures Cx activities are carried out to ensure delivery of a fully operational project including:
 - .1 Review of Cx documentation from operational perspective.
 - .2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.
 - .3 Protection of health, safety and comfort of occupants and O M personnel.
 - .4 Monitoring of Cx activities, training, development of Cx documentation.
 - .5 Work closely with members of Cx Team.
 - .3 Consultant is responsible for:
 - .1 Organizing Cx.
 - .2 Monitoring operations Cx activities.
 - .3 Witnessing, certifying accuracy of reported results.
 - .4 Witnessing and certifying TAB and other tests.
 - .5 Developing BMM.
 - .6 Ensuring implementation of final Cx Plan.
 - .7 Performing verification of performance of installed systems and equipment.
 - .8 Implementation of Training Plan.
 - .4 Construction Team: contractor, sub-contractors, suppliers and support disciplines, is responsible for construction/installation in accordance with contract documents, including:
 - .1 Testing.
 - .2 TAB.
 - .3 Performance of Cx activities.
 - .4 Delivery of training and Cx documentation.
 - .5 Assigning one person as point of contact with Consultant and PWGSC Cx Manager for administrative and coordination purposes.
 - .5 Contractor's Cx agent implements specified Cx activities including:
 - .1 Demonstrations.
 - .2 Training.
 - .3 Testing.
 - .4 Preparation, submission of test reports.



- .6 Property Manager: represents lead role in Operation Phase and onwards. Brookfield Solutions Globales intégrées. He is responsible for:
 - .1 Receiving facility.
 - .2 Day-To-Day operation and maintenance of facility.

1.7 CX PARTICIPANTS

- .1 Employ the following Cx participants to verify performance of equipment and systems:
 - .1 Installation contractor/subcontractor:
 - .1 Equipment and systems except as noted.
 - .2 Equipment manufacturer: equipment specified to be installed and started by manufacturer.
 - .1 To include performance verification.
 - .3 Specialist subcontractor: equipment and systems supplied and installed by specialist subcontractor.
 - .4 Specialist Cx agency:
 - .1 Possessing specialist qualifications and installations providing environments essential to client's program but are outside scope or expertise of Cx specialists on this project.
 - .5 Client: responsible for intrusion and access security systems.
 - .6 Ensure that Cx participant:
 - .1 Could complete work within scheduled time frame.
 - .2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O M personnel, including:
 - .1 Modify ventilation rates to meet changes in off-gassing.
 - .2 Changes to heating or cooling loads beyond scope of EMCS.
 - .3 Changes to EMCS control strategies beyond level of training provided to O M personnel.
 - .4 Redistribution of electrical services.
 - .5 Modifications of fire alarm systems.
 - .6 Modifications to voice communications systems.
 - .7 Provide names of participants to Departmental Representative and details of instruments and procedures to be followed for Cx three (3) months prior to starting date of Cx for review and approval.

1.8 EXTENT OF CX

- .1 Cx Structural and Architectural Systems:
 - .1 Architectural and structural:
 - .1 Exterior systems:
 - .1 Protection of the heritage value of the building.



- .2 Interior partitions:
 - .1 Fire protection / fire system and smoke control.
- .3 Doors, windows, related hardware:
 - .1 New door and window hardware.
- .2 Commission mechanical systems and associated equipment:
 - .1 Plumbing systems:
 - .1 Domestic CWS and HWS.
 - .2 Regular sanitary waste systems.
 - .2 HVAC and exhaust systems:
 - .1 HVAC systems UTA-06.1 and UTA-06.2.
 - .2 Air transfer system.
 - .3 Kitchenette Exhaust systems.
 - .4 Computer room air conditioning.
 - .3 Fire and life safety systems:
 - .1 Wet pipe sprinkler systems.
 - .2 Fire extinguishers.
 - .4 Noise and vibration control systems for mechanical systems.
 - .5 Seismic restraint and control measures.
 - .6 IAQ environmental control systems:
 - .1 Indoor conditions in areas shown on drawings:
 - .2 Control systems of environmental conditions in the drawings specified areas.
 - .3 Changes and additions to the control system graphics.
 - .7 EMCS:
 - .1 Changes to the Building management system.
 - .2 Connection to the existing network.
 - .3 Local controller and panels.
- .3 Commission electrical systems and equipment:
 - .1 Low voltage below 750 V:
 - .1 Low voltage equipment.
 - .2 Low voltage distribution systems.
 - .2 Lighting systems:
 - .1 Lighting equipment.
 - .2 Distribution systems.
 - .3 Emergency lighting systems, including battery packs.
 - .4 Fire exit emergency signage.



- .3 Fire alarm systems, equipment:
 - .1 Annunciators.
 - .2 Control panels.
 - .3 Emergency lighting systems, including power supplies by batteries
 - .4 Emergency exit indicator light.
- .4 Other systems and equipment:
 - .1 Intrusion and access security and safety systems.

1.9 DELIVERABLES RELATING TO O M PERSPECTIVES

- .1 General requirements:
 - .1 Compile French documentation.
 - .2 Documentation to be computer-compatible format ready for inputting for data management.
- .2 Provide deliverables:
 - .1 Warranties.
 - .2 Project record documentation.
 - .3 Inventory of spare parts, special tools and maintenance materials.
 - .4 Maintenance Management System (MMS) identification system used.
 - .5 WHMIS information.
 - .6 MSDS data sheets.
 - .7 Electrical Panel inventory containing detailed inventory of electrical circuitry for each panel board. Duplicate of inventory inside each panel.

1.10 DELIVERABLES RELATING TO THE CX PROCESS

- .1 General:
 - .1 Start-up, testing and Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.
- .2 Definitions:
 - .1 Cx as used in this section includes:
 - .1 Cx of components, equipment, systems, subsystems, and integrated systems.
 - .2 Factory inspections and performance verification tests.
- .3 Deliverables: provide:
 - .1 Cx Specifications.
 - .2 Startup, pre-Cx activities and documentation for systems, and equipment.
 - .3 Completed installation checklists (ICL).
 - .4 Completed product information (PI) report forms.
 - .5 Completed performance verification (PV) report forms.
 - .6 Results of Performance Verification Tests and Inspections.
 - .7 Description of Cx activities and documentation.



- .8 Description of Cx of integrated systems and documentation.
- .9 Tests of following witnessed by PWGSC Design Quality Review Team:
 - .1 Computer room air conditioning.
 - .2 Access control system.
 - .3 Control system for IAQ and environmental conditions.
- .10 Tests performed by User.
- .11 Training Plans.
- .12 Cx Reports.
- .13 Prescribed activities during warranty period.
- .4 Departmental Representative to witness and certify tests and reports of results provided to Departmental Representative.
- .5 Consultant to participate.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Items listed in this Cx Plan include the following:
 - .1 Pre-Start-Up inspections: by Consultant prior to permission to start up and rectification of deficiencies to Consultant's satisfaction.
 - .2 Consultant to use approved check lists.
 - .3 Consultant will monitor all of these pre-start-up inspections.
 - .4 Include completed documentation with Cx report.
 - .5 Conduct pre-start-up tests: conduct pressure, static, flushing, cleaning, and "bumping" during construction as specified in technical sections. To be witnessed and certified by Consultant and does not form part of Cx specifications.
 - .6 Consultant will monitor (some) of these inspections and tests.
 - .7 Include completed documentation in Cx report.
- .2 Pre-Cx activities - MECHANICAL:
 - .1 Plumbing systems:
 - .1 "Bump" each item of equipment in its "stand-alone" mode.
 - .2 Complete pre-start-up checks and complete relevant documentation.
 - .3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.
 - .2 HVAC equipment and systems:
 - .1 "Bump" each item of equipment in its "stand-alone" mode.
 - .2 At this time, complete pre-start-up checks and complete relevant documentation.
 - .3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.
 - .4 Perform TAB on systems. TAB reports to be approved by Consultant.
 - .3 EMCS:
 - .1 EMCS trending to be available as supporting documentation for performance verification.



- .2 Perform point-by-point testing in parallel with start-up.
 - .3 Carry out point-by-point verification.
 - .4 Demonstrate performance of systems, to be witnessed by Departmental Representative and Consultant prior to start of thirty (30) day Final Acceptance Test period.
 - .5 Perform final Cx and operational tests during demonstration period and thirty (30) day test period.
 - .6 Only additional testing after foregoing have been successfully completed to be "Off-Season Tests".
- .3 Pre-Cx activities - LIFE SAFETY SYSTEMS
- .1 Include equipment and systems identified above.
 - .2 An independent testing agency must conduct testing
- .4 Pre-Cx activities - ELECTRICAL:
- .1 Low voltage distribution systems under 750 V:
 - .1 Requires independent testing agency to perform pre- energization and post-energization tests.
 - .2 Emergency power generation systems
 - .1 Uninterruptible power systems: test under partial load for the condenser and evaporator.
 - .3 Lighting systems:
 - .1 Emergency lighting systems:
 - .1 Tests to include verification of lighting levels and coverage, initially by disrupting normal power.
 - .4 Fire alarm systems: test after other safety and security systems are completed. Testing to include a complete verification in accordance with ULC requirements. Consultant has witnessed and certified report, demonstrate devices and zones to Departmental Representative.

1.12 START-UP

- .1 Start-up components, equipment and systems.
- .2 Equipment manufacturer, supplier, installing specialist sub-contractor, as appropriate, to start-up, under Contractor's direction, following equipment, systems:
 - .1 Computer room air conditioning.
 - .2 Fire alarm system.
 - .3 Uninterruptible power systems
- .3 Departmental Representative to monitor some of these start-up activities.
 - .1 Rectify start-up deficiencies to satisfaction of Departmental Representative.
- .4 Performance Verification (PV):
 - .1 Approved Cx Agent to perform.
 - .1 Repeat when necessary until results are acceptable to Departmental Representative.



- .2 Use procedures modified generic procedures to suit project requirements.
- .3 Consultant to witness and certify reported results using approved PI and PV forms.
- .4 Consultant to approve completed PV reports and provide to Departmental Representative.
- .5 Departmental Representative reserves right to verify up to 30% of reported results at random.
- .6 Failure of randomly selected item shall result in rejection of PV report or report of system start-up and testing.

1.13 CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Perform Cx by specified Cx agency using procedures developed by Consultant and approved by Departmental Representative.
- .2 Consultant to monitor Cx activities.
- .3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.
- .4 Consultant to witness, certify reported results of, Cx activities and forward to Departmental Representative.
- .5 Departmental Representative reserves right to verify a percentage of reported results at no cost to contract.

1.14 CX OF INTEGRATED SYSTEMS AND RELATED DOCUMENTATION

- .1 Cx to be performed by specified Cx specialist, using procedures developed by Departmental Representative and approved by Departmental Representative.
- .2 Tests to be witnessed by (Departmental Representative) (DCC Representative) (Consultant) and documented on approved report forms.
- .3 Upon satisfactory completion, Cx specialist to prepare Cx Report, to be certified by Consultant and submitted to Departmental Representative for review.
- .4 Departmental Representative reserves right to verify percentage of reported results.
- .5 Integrated systems to include:
 - .1 HVAC and associated systems forming part of integrated HVAC systems.
 - .2 Environmental space conditions control system.
 - .3 Fire alarm systems.
 - .4 Emergency lighting systems.
- .6 Identification:
 - .1 In later stages of Cx, before hand-over and acceptance Departmental Representative, Consultant, Contractor, Project Manager and Cx Manager to cooperate to complete inventory data sheets and provide assistance to PWGSC in full implementation of MMS identification system of components, equipment, sub-systems, systems.



1.15 INSTALLATION CHECK LISTS (ICL)

- .1 Refer to Section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.16 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Refer to Section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.17 PERFORMANCE VERIFICATION (PV) REPORT

- .1 Refer to Section (01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms).

1.18 DELIVERABLES RELATING TO ADMINISTRATION OF CX

- .1 General:
 - .1 Because of risk assessment, complete Cx of occupancy, weather and seasonal-sensitive equipment and systems in these areas before building is occupied.

1.19 CX SCHEDULES

- .1 Prepare detailed critical path Cx Schedule and submit to Departmental Representative for review and approval same time as project Construction Schedule. Include:
 - .1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems, including:
 - .1 Design criteria, design intents.
 - .2 Pre-TAB review: twenty-eight (28) days after contract award, and before construction starts.
 - .3 Cx agents' credentials: sixty (60) days before start of Cx.
 - .4 Cx procedures: two (2) months after award of contract.
 - .5 Cx Report format: two (2) months after contract award.
 - .6 Discussion of heating/cooling loads for Cx: three (3) months before start-up.
 - .7 Submission of list of instrumentation with relevant certificates: twenty-one (21) days before start of Cx.
 - .8 Notification of intention to start TAB: twenty-one (21) days before start of TAB.
 - .9 TAB: after successful start-up, correction of deficiencies and verification of normal and safe operation.
 - .10 Notification of intention to start Cx: fourteen (14) days before start of Cx.
 - .11 Notification of intention to start Cx of integrated systems: after Cx of related systems is completed fourteen (14) days before start of integrated system Cx.
 - .12 Identification of deferred Cx.
 - .13 Implementation of training plans.



- .14 Cx reports: immediately upon successful completion of Cx.
- .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to Property Manager.
- .2 After approval, incorporate Cx Schedule into Construction Schedule.
- .3 Consultant, Contractor, Contractor's Cx agent, and Departmental Representative will monitor progress of Cx against this schedule.

1.20 CX REPORTS

- .1 Submit reports of tests, witnessed and certified by Consultant to Departmental Representative who will verify reported results.
- .2 Include completed and certified PV reports in properly formatted Cx Reports.
- .3 Before reports are accepted, reported results to be subject to verification by Departmental Representative.

1.21 ACTIVITIES DURING WARRANTY PERIOD

- .1 Cx activities must be completed before issuance of Interim Certificate, it is anticipated that certain Cx activities may be necessary during Warranty Period, including:
 - .1 Fine tuning of HVAC systems.
 - .2 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings.
 - .3 Full-scale emergency evacuation exercises.

1.22 TESTS TO BE PERFORMED BY OWNER/USER

- .1 None is anticipated on this project.

1.23 TRAINING PLANS

- .1 Refer to Section 01 91 41 - Commissioning (Cx) - Training.

1.24 FINAL SETTINGS

- .1 Upon completion of Cx to satisfaction of Consultant lock control devices in their final positions, indelibly mark settings marked and include in Cx Reports.

Part 2 Product

2.1 NOT USED

- .1 Not Used.



Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION



TABLE DES MATIÈRES

PART 1 GENERAL

- 1.1 SUMMARY
- 1.2 INSTALLATION/START-UP CHECK LISTS
- 1.3 PRODUCT INFORMATION (PI) REPORT FORMS
- 1.4 PERFORMANCE VERIFICATION (PV) FORMS
- 1.5 SAMPLES OF COMMISSIONING FORMS
- 1.6 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS
- 1.7 COMMISSIONING FORMS
- 1.8 LANGUAGE

PART 2 PRODUCTS

- 2.1 NOT USED

PART 3 EXECUTION

- 3.1 NOT USED



Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Commissioning forms to be completed for equipment, system and integrated system.
 - .2 Related Requirements
 - .1 Section 01 91 51 - Building Management Manual (BMM).

1.2 INSTALLATION/START-UP CHECK LISTS

- .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
- .2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions.
- .3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
- .4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
- .5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
- .2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.



1.4 PERFORMANCE VERIFICATION (PV) FORMS

- .1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
- .2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
- .3 Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.

1.5 SAMPLES OF COMMISSIONING FORMS

- .1 Departmental Representative will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.
 - .1 Fire alarm.
 - .2 HVAC.
 - .3 HVAC – VAV Box.
 - .4 CVAC – Reheat Coils.
 - .5 Lightning.
 - .6 Plumbing – Performance verification.
 - .7 Plumbing – Installation verification.
 - .8 Fire protection – Portable fire extinguisher.
 - .9 EMCS – Points.
 - .10 EMCS – Sequence of operation.
 - .11 Transformer.
- .2 Revise items on Commissioning forms to suit project requirements.
- .3 Samples of Commissioning forms and a complete index of produced to date will be attached to this section.

1.6 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

- .1 When additional forms are required, but are not available from Departmental Representative develop appropriate verification forms and submit to Departmental Representative for approval prior to use.
 - .1 Additional commissioning forms to be in same format as provided by Departmental Representative.

1.7 COMMISSIONING FORMS

- .1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.
- .2 Strategy for Use:
 - .1 Departmental Representative provides Contractor project-specific Commissioning forms with Specification data included.



- .2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
- .3 Confirm operation as per design criteria and intent.
- .4 Identify variances between design and operation and reasons for variances.
- .5 Verify operation in specified normal and emergency modes and under specified load conditions.
- .6 Record analytical and substantiating data.
- .7 Verify reported results.
- .8 Form to bear signatures of recording technician and reviewed and signed off by Departmental Representative.
- .9 Submit immediately after tests are performed.
- .10 Reported results in true measured SI unit values.
- .11 Provide Departmental Representative with originals of completed forms.
- .12 Maintain copy on site during start-up, testing and commissioning period.
- .13 Forms to be both hard copy and electronic format with typed written results in Building Management Manual in accordance with Section 01 91 51 - Building Management Manual (BMM).

1.8 LANGUAGE

- .1 To suit the language profile of the awarded contract.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



PROJET : TPSGC	TPSGC	Fiche : 28 31 00	No :
	Édifice des Douanes - 105, rue McGill	1 de 1	
FICHE DE MISE EN SERVICE			

ALARME INCENDIE

IDENTIFICATION	N° du panneau :		N°s des plans :	
	Raccordé à :		Localisation :	
	Manufacturier :		Tél. manufacturier :	
	Installateur :		Tél. installateur :	
	Modèle / série :		Certificat fourni par le fabricant :	<input type="checkbox"/> O <input type="checkbox"/> N
	Système :	<input type="checkbox"/> Conventionnel <input type="checkbox"/> Adressable	Liaison avec service d'incendie :	<input type="checkbox"/> O <input type="checkbox"/> N
	Nombre de zones :		Nombre de boucles :	
	Batteries :		Réserve :	

INSPECTION ET ESSAI	Description	O	N	S/O	Commentaires / Observations
	Plaque signalétique lisible				
	Montage correct				
	Bonnes connexions électriques				
	Tension de batteries adéquate				
	Détecteurs bien identifiés				
	Mesure de sensibilité				
	Diagnostic complet sans erreur				

NOTE DE SERVICE (Déficiences, réparations effectuées, bruits, entretiens, etc.)	STATUT
	<input type="checkbox"/> Conforme
	<input type="checkbox"/> À vérifier
	<input type="checkbox"/> À compléter
	<input type="checkbox"/> Hors fonction
	<input type="checkbox"/> Non conforme

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

PROJET : TPSGC	TPSGC	Fiche	No :
	Édifice des Douanes - 105, rue McGill	1 de 2	
FICHE DE MISE EN SERVICE			

RÉSEAU AÉRAULIQUE

IDENTIFICATION	Identification :	N° de plan :
	Localisation :	
	Secteur desservi :	

RAPPORTS	INCLUS	S/O	COMMENTAIRES
Nettoyage	<input type="checkbox"/>	<input type="checkbox"/>	
Balancement	<input type="checkbox"/>	<input type="checkbox"/>	
Mise en service des contrôles	<input type="checkbox"/>	<input type="checkbox"/>	
Rapport parasismique	<input type="checkbox"/>	<input type="checkbox"/>	
Test de pression	<input type="checkbox"/>	<input type="checkbox"/>	

ENTRETIEN REQUIS

NOTE DE SERVICE (Déficiences, réparations effectuées, bruit, entretiens, etc.)	STATUT
	<input type="checkbox"/> Conforme
	<input type="checkbox"/> À vérifier
	<input type="checkbox"/> À compléter
	<input type="checkbox"/> Hors fonction
	<input type="checkbox"/> Non conforme

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

PROJET : TPSGC	TPSGC	Fiche : 23 36 00	No :
	Édifice des Douanes - 105, rue McGill	1 de 2	
FICHE DE MISE EN SERVICE			

BOÎTE VAV

IDENTIFICATION	N° d'équipement :	N° de série :
	Type :	Localisation :
	Marque :	Entrepreneur :
	Modèle :	Fournisseur :
	Secteur desservi :	
	Éléments inclus :	
<input type="checkbox"/> Ventilateur d'alimentation	<input type="checkbox"/> Serpentin de refroidissement	<input type="checkbox"/> Coordonnée avec SGE
<input type="checkbox"/> Ventilateur de retour / évac.	<input type="checkbox"/> Roue thermique	<input type="checkbox"/> S/O
<input type="checkbox"/> Serpentin de chauffage	<input type="checkbox"/> Variateur de vitesse / Volet de contournement	

<input type="checkbox"/> Rapport du manufacturier	<input type="checkbox"/> Performance ci-incluse	<input type="checkbox"/> Manuel d'opération et d'entretien
---	---	--

Révision de l'installation			
Article	Oui	Non	Commentaires
État général du cabinet / Montage adéquat			
Raccordement étanche (boite-conduit)			
Accessibilité pour la maintenance			
Câblage électrique serré			
Vérification du bruit et des vibrations			

NOTE DE SERVICE (Déficiences, réparations effectuées, bruit, entretiens, etc.)	STATUT
	<input type="checkbox"/> Conforme
	<input type="checkbox"/> À vérifier
	<input type="checkbox"/> À compléter
	<input type="checkbox"/> Hors fonction
	<input type="checkbox"/> Non conforme

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

PROJET : TPSGC	TPSGC	Fiche : 23 36 00	No :
	Édifice des Douanes - 105, rue McGill	2 de 2	
FICHE DE MISE EN SERVICE			

BOÎTE VAV

PERFORMANCE	Ventilateur	Design	Mesure
	Débit MAX.		
	Débit MIN.		
	Perte de pression (au débit MAX.)		
	Modulation du volet pour atteindre le point de consigne		
	Fonctionnement du serpentin électrique		
	Fonctionnement de la protection thermique du serpentin		

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

PROJET : TPSGC R.001890.001	TPSGC	Fiche : 23 36 00	No :
	Édifice des Douanes - 105, rue McGill	1 de 1	

FICHE DE MISE EN SERVICE

SERPENTIN ÉLECTRIQUE

IDENTIFICATION	N° d'équipement :	N° de série :
	Type :	Localisation :
	Marque :	Entrepreneur :
	Modèle :	Fournisseur :
	Dimensions :	
	Secteur desservi :	
	Accessoires :	
<input type="checkbox"/> Détecteur de haute limite d'humidité	<input type="checkbox"/> Pneumatique	Communication / Intégration :
<input type="checkbox"/> Preuve de débit	<input type="checkbox"/> Électrique	<input type="checkbox"/> Coordonnée avec SGE
<input type="checkbox"/> Contrôle interne	<input type="checkbox"/> Numérique	
<input type="checkbox"/> Contrôle externe		

<input type="checkbox"/> Rapport du manufacturier	<input type="checkbox"/> Performance ci-incluse	<input type="checkbox"/> Manuel d'opération et d'entretien
---	---	--

PERFORMANCE	Conditions d'opération	Design	Mesure
	Débit d'air		
	Fonctionnement de la protection haute température		
	Fonctionnement de l'interrupteur de débit		

*** Joindre la fiche de vérification de l'entrepreneur.**

NOTE DE SERVICE (Déficiences, réparations effectuées, bruit, entretiens, vibration, etc.)	STATUT
	<input type="checkbox"/> Conforme
	<input type="checkbox"/> À vérifier
	<input type="checkbox"/> À compléter
	<input type="checkbox"/> Hors fonction
	<input type="checkbox"/> Non conforme

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

PROJET : TPSGC	TPSGC	Fiche : 26 50 00	No :
	Édifice des Douanes - 105, rue McGill	1 de 1	
FICHE DE MISE EN SERVICE			

ÉCLAIRAGE

IDENTIF.	Bloc :		Niveau :		Secteur :	
	Panneau à relais :		Marque :		Modèle :	
	N ^{os} des plans :					

ESSAIS	Vérification de l'éclairage et de la commande d'éclairage	O	N	S/O	N ^{os}
	Les luminaires sont installés conformément aux plans				
	Tous les luminaires fonctionnent correctement (pas de lampes brûlées, pas de clignotement, etc.)				
	Le niveau d'éclairage est adéquat				
	L'éclairage est uniforme (pas de taches noires, etc.)				
	Les commandes par interrupteurs fonctionnent correctement				
	Les commandes par détecteurs de mouvement fonctionnent correctement				
	Les commandes par gradateurs fonctionnent correctement				
	L'éclairage est normal à tous les niveaux de gradation depuis le minimum jusqu'à 100 %				
	Le panneau à relais fonctionne correctement				

DÉFAUT / ANOMALIE	N ^o	Salle	Élément	Description du défaut / Commentaires
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
	10			
	11			

NOTE DE SERVICE (Déficiences, réparations effectuées, bruits, entretiens, etc.)	STATUT
	<input type="checkbox"/> Conforme
	<input type="checkbox"/> À vérifier
	<input type="checkbox"/> À compléter
	<input type="checkbox"/> Hors fonction
	<input type="checkbox"/> Non conforme

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

Brookfield Solutions Globales Intégrées - Formulaire d'équipement de Collecte de Données (FCD) - Ver 1.5				
Version 1.5 révisée pour répondre au besoin du portefeuille du Québec. Formulaire non approuvé qui sera soumis pour approbation.				
INSCRIRE UNIQUEMENT l'équipement dont Brookfield Solutions Globales Intégrées EST RESPONSABLE d'effectuer l'entretien prévu				
INFORMATIONS GÉNÉRALES				
Date d'émission (2010-09-22): _____	No. Projet: _____	Tous les O & M liants doivent être soumis au GI. Les versions pdf, de ce formulaire, peuvent être soumis afin d'être stockées sur le Portail Brookfield Solutions Globales Intégrées		
CBG (ex: TD, CIBC, RP-1, etc) **: _____	TPSGC RP-1			Nom du demandeur **: _____
No. d'Édifice du Client **: _____	No. de Téléphone du demandeur: _____			Adresse du bâtiment: _____
No. d'Édifice (Brookfield) **: _____				
** Indique un champ obligatoire				
Information de retrait (si applicable)		EITO		
Date de retrait (2010-09-22): _____		Statut de retrait: _____		
		Par (Entreprise): _____		
INFORMATION SUR L'ÉQUIPEMENT				
<input type="checkbox"/> ajouter de l'équipement <input type="checkbox"/> Remplace un équipement <input type="checkbox"/> Mise à jour matériel <input type="checkbox"/> Inactiver Equipement				
No. d'Équipement (s'il existe déjà): _____		Criticité (1-critique, 2-Impact minimal, 3-Non-critique, 4-Critical Environment): 3-Non-Critique		
Remplace No. d'Équipement: _____				
Description de l'Équipement **: _____				
Appartient à l'équipement No.: _____				
Emplacement (35 Car. Max.) **: _____				
Emplacement spécifique (35 Car. Max.) **: _____				
À quoi sert cet équipement? (ex: Unité de climatisation desservant la salle informatique): _____				
Type de système (2 chiffres): _____				
Type d'Équipement (3 chiffres): _____				
Nom du Fabricant: _____		Nom du modèle: _____		
No. de Modèle: _____		No. de Série: _____		
No. Unité: _____		No. d'étiquette (Brookfield): _____		
Propriétaire: _____		Menu déroulant Propriétaire: 101 - CON (Hydro, etc.) / 110 - TEN (Locataire) / 112 - LAN (Propriétaire) / 200 - RP (TPSGC)		
INFORMATIONS DE GARANTIE				
Nom du garant: _____		Date d'installation: _____		
Garantie/Termes: _____		Date d'expiration de la garantie (Main d'œuvre): _____		
Durée de Vie Estimée (Ans) **: 0 _____		Date d'expiration de la garantie (Pièces): _____		
Information sur l'équipement EITO				
Prix d'achat (sans taxes) *1 _____		Taxes Féd. (TPS, Harmonisées) *1 _____		
Date d'achat _____		Taxes prov. (TVQ, etc.) *1 _____		
Quantité de contenu environnemental: _____		Acheté de (Entreprise): _____		
Capacité de refroidissement (Tonnes): _____		Unité de mesure (Kg, Litres): _____		
Code d'emplacement du réservoir: _____		Contenu Environnemental: _____		
		Huile #2, Diesel, HCFC, PCB, Glycol, Produit chimique, etc.		
No. d'enregistrement d'Environnement Canada: _____		Menu déroulant Code emplacement du réservoir: 1 - Extérieur en surface / 2 - Entoué / 3 - Intérieur du bâtiment		
Transformateur Testé pour le PCB: _____		Réservoirs de carburant et Transformateurs avec huile		
Test diélectrique: (AAAAAMJJ) _____		Si NON, pour quelle raison: _____		
Code de catégorie d'équipement (GFE) (Outils): _____		Numéro de la voute du transformateur: _____		
		Concentration de PCB: _____		
COMMENTAIRES DEMANDEUR				
<p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>				
PM INFORMATION SUR L'HORAIRE (optionnel)				
S'il vous plaît indiquer la date annuelle doit être effectuée dans ainsi que tout prestataire de services si elle est connue				
Fournisseur de services 1: _____		Premier Jour: _____		
Fournisseur de services 2: _____		Fréquence: _____ ***		
Fournisseur de services 3: _____		Premier Jour: _____		
		Fréquence: _____ ***		
		Fréquence: _____ ***		
*** Hebdomadaire, Bi-hebdomadaire, Mensuel, Bi-mensuelle, Trois mois, Semi-annuel, Annuel, 2 Ans, 3 Ans, 5 Ans, 6 Ans, 10 Ans, 12 Ans, 15 Ans				
Retournez tous les formulaires remplis à CMMS@BrookfieldGIS.com				

Description	Vérifié	Initiale	Date
1) Généralités			
a) Les opérations d'ERÉ et de VR doivent être effectuées seulement après que:			
i) Tous les éléments touchant au rendement des systèmes aient été terminés.			
ii) La vérification de tous les systèmes doit être terminée, du moins du point de vue statique.			
iii) Toutes les procédures de mise en marche initiale doivent avoir été réalisées de façon satisfaisante, compte tenu des correctifs à apporter afin de régler les défauts lors de cette mise en marche initiale.			
2) Réseau d'alimentation en eau potable			
a) Appareils de plomberie - Robinetterie			
i) Vérifier la pression et le débit d'eau à l'emplacement de tous les appareils, sorties et pièces d'équipement pour s'assurer qu'ils sont toujours adéquats. Indiquer les pressions mesurées :			
b) Systèmes de recirculation d'eau chaude			
i) Équilibrer au(x) débit(s) indiqué(s).			
ii) Vérifier les paramètres des autres circuits de l'étage. ; Indiquer les lectures de débits :			
iii) Valider que la température de l'eau dans la boucle de recirculation n'est pas inférieure à 55°C.			
iv) Indiquer la température mesurée :			
3) Réseau d'évacuation sanitaire et de ventilation			
a) Appareils de plomberie – Évier de cuisine			
i) Évacuation de l'eau adéquate.			

Nom/ Compagnie	Rôles	Signatures	Dates
Michel Thomas - Plomberie Versailles	Équipe de construction		
Mario Couture - MGB Associés	Agent de mise service		

LISTE DE CONTRÔLE D'INSTALLATION		
Date	Vérifié <input checked="" type="checkbox"/>	APPAREILS ET SYSTÈMES – PLOMBERIE
		1. Appareils de plomberie: 1. Bien assujettis
		2. Réseau d'alimentation en eau potable: 1. Tuyauterie de recirculation en eau chaude. 2. Nettoyage, purge et désinfection - approuvés par les autorités compétentes. 3. Soupapes d'isolement à l'emplacement des embranchements. 4. Amortisseurs aux appareils.

Nom/Compagnie	Rôle:	Signature	Date
	Équipe de construction		
	Agent de mise en service		

Project: _____ Project Number: _____ Date: _____
 Projet: _____ Numéro de projet: _____

PORTABLE EXTINGUISHERS

EXTINCTEURS PORTATIFS

_____ Page 1

	Spec'd/Spéc.	Instal' d/Installé	Spec'd/Spéc.	Instal' d/Installé	Spec'd/Spéc.	Instal' d/Installé
PMSS Identification Identification SSEP						
Location/Lieu						
Manufacturer/Manufacturier						
Model/Size / Modèle/Dim.						
Class of fire/Classif. de feu						
Capacity/Capacité						
Extinguishing Agent Agent extincteur						
Pressure/Pression						
Checked and Tagged by Vérifié et étiqueté par						

	Spec'd/Spéc.	Instal' d/Installé	Spec'd/Spéc.	Instal' d/Installé	Spec'd/Spéc.	Instal' d/Installé
PMSS Identification Identification SSEP						
Location/Lieu						
Manufacturer/Manufacturier						
Model/Size / Modèle/Dim.						
Class of fire/Classif. de feu						
Capacity/Capacité						
Extinguishing Agent Agent extincteur						
Pressure/Pression						
Checked and Tagged by Vérifié et étiqueté par						

Nom/ Compagnie	Rôle	Signature	Date
	Équipe de construction		
	Agent de mise en service		

PROJET : TPSGC	TPSGC	Fiche : 25 90 01	No :
	Édifice des Douanes - 105, rue McGill	1 de 1	
FICHE DE MISE EN SERVICE			

SÉQUENCES DE CONTRÔLE

IDENTIFICATION	Nom du système :
	Description du système :
	Contrôle : <input type="checkbox"/> S/O <input type="checkbox"/> Interne <input type="checkbox"/> Externe <input type="checkbox"/> Pneumatique <input type="checkbox"/> Électrique <input type="checkbox"/> Numérique <input type="checkbox"/> Communication / Intégration : <input type="checkbox"/> Coordonnée avec SGE <input type="checkbox"/> S/O

SÉQUENCE DE CONTRÔLE	VÉRIFIÉ	COMMENTAIRES
Toutes les sondes ainsi que les actionneurs sont calibrés, bien localisés et fonctionnent correctement		
Horaires d'occupation, mode prédémarrage ou abaissement de nuit configurés		
Position minimale du volet d'air neuf		
Modulation des soupapes et des volets		
Boucles de contrôle de pression, de température et d'humidité		
Boucles de contrôle de la température d'alimentation et de mélange		
Protections mécaniques (gel, haute pression, preuve de débit, haute température et haute humidité)		
Point de consigne de pression statique (en fonction du circuit de contournement sur l'air ou d'un variateur de vitesse)		
Position des systèmes à l'arrêt		
Variateur de vitesse (vitesse minimale, rampe d'accélération et décélération) et circuit de contournement		
Alarmes de pression, de température, d'humidité et de CO ₂		
Fonctionnement des boîtes terminales		
Boucles de refroidissement et de chauffage		
Système de détection de gaz (CO, CO ₂ , NO ₂ et réfrigérant)		
Systèmes spéciaux (récupération et mesurage d'énergie)		

Nom du technicien :	Date :
Approuvé par : (responsable MES)	Date :

MISE EN SERVICE**FORMULAIRE D'INFORMATION SUR LE PRODUIT
ET VÉRIFICATION DE RENDEMENT****TRANSFORMATEUR**

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INFORMATION SUR LE PRODUIT :

Identification SIGÉ :	Localisation :				
Raccordé à :	Schéma unifilaire :	Aire(s) desservie(s) :			
ÉLÉMENT PRESCRIT	CARACTÉRISTIQUE	DESSINS D'ATELIER	INSTALLÉ	INSP.	VÉRIF.
TYPE DE SYSTÈME :					
FABRICANT :					
CONFIGURATION :					
MODÈLE :					
RÉGIME EN KVA :					
TENSION PRIMAIRE/SECONDAIRE :					
ISOLANT :					
IMPÉDANCE :					
NIVEAU D'IMPULSION DE BASE :					
GROSSEUR DE CONDUIT ET DE FIL PRIMAIRE :					
GROSSEUR DE CONDUIT ET DE FIL SECONDAIRE :					
GROSSEUR DU FIL DE MISE À LA TERRE :					
COULEUR DE PEINTURE :					
PRISES DE TENSION :					
COUVERCLE D'ÉGOUTTEMENT :					
JAUGE À TEMPÉRATURE :					
VENTILATEURS DE REFROIDISSEMENT :					
INTENSITÉ SONORE :					
GROSSEUR DU CONDUCTEUR DE MISE À LA TERRE :					
GROSSEUR DU CONDUCTEUR PRIMAIRE :					
GROSSEUR DU CONDUCTEUR SECONDAIRE :					

MISE EN SERVICE**FORMULAIRE D'INFORMATION SUR LE PRODUIT
ET VÉRIFICATION DE RENDEMENT****TRANSFORMATEUR**

Page 2 de 3

DONNÉES D'INSTALLATION	Spécifié :	Installé :	Vérifié :
PLAQUE SIGNALÉTIQUE COMPLÉTÉE :			
IDENTIFICATION LAMICOÏD :			
PHASE DE TERMINAISON IDENTIFIÉE :			
PHASE DES CÂBLES IDENTIFIÉE CORRECTEMENT :			
ISOLANTS ANTIVIBRATOIRES :			
CONNEXION DE CÂBLE :			
DÉGAGEMENT DES SURFACES ADJACENTES :			
VENTILATION :			
PROPRETÉ ET INTÉGRITÉ DES ISOLATEURS :			
ESSAI DE MISE À LA TERRE DE L'ÂME :			
SERRAGE DES COSES DE CÂBLE :			
ESSAI DU RAPPORT :			
COURANT C.C. HAUTE TENSION			
FACTEUR DE PUISSANCE DIÉLECTRIQUE :			
ÉTAT APRÈS INSTALLATION :			
Dégagement		Supports	
Peinture		Filerie	
Propreté		Conducteurs	
Contacts d'alarme auxiliaire			
REMARQUES :			

MISE EN SERVICE**FORMULAIRE D'INFORMATION SUR LE PRODUIT
ET VÉRIFICATION DE RENDEMENT****TRANSFORMATEUR**

Page 3 de 3

VÉRIFICATION DU RENDEMENT :

DONNÉES MESURÉES :	Spécifié :	Installé :	Vérifié :
AMPÉRAGE PRIMAIRE :			
AMPÉRAGE SECONDAIRE :			
VOLTAGE PRIMAIRE :			
VOLTAGE SECONDAIRE :			
RÉSISTANCE À LA TERRE (PRI.)			
RÉSISTANCE À LA TERRE (SEC.)			
TENSION DE LIGNE PRIMAIRE :			
TENSION DE LIGNE DU SECONDAIRE :			
RÉSISTANCE DU PRIMAIRE :			
RÉSISTANCE DU SECONDAIRE :			
CONNEXION PRIMAIRE :			
CONNEXION SECONDAIRE :			
TEMP. AMBIANTE DE LA PIÈCE :			
TEMP. DE L'ÂME :			
TEMP. DU SERPENTIN :			
RÉGLAGE DE PRISE DU PRIMAIRE :			
RÉGLAGE DE PRISE DU SECONDAIRE :			

Technicien : _____

Superviseur : _____

Date : _____

Témoïn : _____

Titre : _____

Date: _____

TABLE DES MATIÈRES

PART 1 GENERAL

- 1.1 SUMMARY
- 1.2 TRAINEES
- 1.3 INSTRUCTORS
- 1.4 TRAINING OBJECTIVES
- 1.5 TRAINING MATERIALS
- 1.6 SCHEDULING
- 1.7 RESPONSIBILITIES
- 1.8 TRAINING CONTENT
- 1.9 VIDEO-BASED TRAINING

PART 2 PRODUCTS

- 2.1 NOT USED

PART 3 EXECUTION

- 3.1 NOT USED



Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 This Section specifies roles and responsibilities of Commissioning Training.

1.2 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.3 INSTRUCTORS

- .1 Departmental Representative will provide:
 - .1 Descriptions of systems.
 - .2 Instruction on design philosophy, design criteria, and design intent.
- .2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
 - .1 Start-Up, operation, shut-down of equipment, components and systems.
 - .2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
 - .3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .3 Contractor and equipment manufacturer to provide instruction on:
 - .1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.4 TRAINING OBJECTIVES

- .1 Training to be detailed and duration to ensure:
 - .1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
 - .2 Effective on-going inspection, measurements of system performance.
 - .3 Proper preventive maintenance, diagnosis and trouble-shooting.
 - .4 Ability to update documentation.
 - .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.5 TRAINING MATERIALS

- .1 Instructors to be responsible for content and quality.



- .2 Training materials to include:
 - .1 "As-Built" Contract Documents.
 - .2 Operating Manual.
 - .3 Maintenance Manual.
 - .4 Management Manual.
 - .5 TAB and PV Reports.
- .3 Project Manager, Commissioning Manager and (Facility) (Property) Manager will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to same degree of detail.
- .5 Supplement training materials:
 - .1 Transparencies for overhead projectors.
 - .2 Multimedia presentations.
 - .3 Manufacturer's training videos.
 - .4 Equipment models.

1.6 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours, training sessions to be (3) hours in length.
- .3 Training to be completed prior to acceptance of facility.

1.7 RESPONSIBILITIES

- .1 Be responsible for:
 - .1 Implementation of training activities,
 - .2 Coordination among instructors,
 - .3 Quality of training, training materials,
- .2 Departmental Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

1.8 TRAINING CONTENT

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
 - .1 Review of facility and occupancy profile.
 - .2 Functional requirements.
 - .3 System philosophy, limitations of systems and emergency procedures.
 - .4 Review of system layout, equipment, components and controls.
 - .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.



- .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
 - .7 Maintenance and servicing.
 - .8 Trouble-shooting diagnosis.
 - .9 Inter-Action among systems during integrated operation.
 - .10 Review of O M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.9 VIDEO-BASED TRAINING

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval three (3) months prior to commencement of scheduled training.
- .2 On-Site training videos:
 - .1 Videotape training sessions for use during future training.
 - .2 To be performed after systems are fully commissioned.
 - .3 Organize into several short modules to permit incorporation of changes.
- .3 Production methods to be high quality.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



TABLE DES MATIÈRES

PART 1 GENERAL

- 1.1 SUMMARY
- 1.2 GENERAL REQUIREMENTS
- 1.3 APPROVALS
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- 1.6 LIFE SAFETY COMPLIANCE (LSC) MANUAL
- 1.7 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES
- 1.8 LANGUAGE
- 1.9 USE OF CURRENT TECHNOLOGY

PART 2 PRODUCTS

- 2.1 NOT USED

PART 3 EXECUTION

- 3.1 NOT USED



Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 This section is limited to portions of the Building Management Manual (BMM) provided to Departmental Representative by Contractor.
- .2 Related Requirements
 - .1 Section 01 78 00 - Closeout Submittals.
- .3 Acronyms:
 - .1 BMM - Building Management Manual.
 - .2 Cx - Commissioning.
 - .3 HVAC - Heating, Ventilation and Air Conditioning.
 - .4 PI - Product Information.
 - .5 PV - Performance Verification.
 - .6 TAB - Testing, Adjusting and Balancing.
 - .7 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

- .1 Standard letter size paper 216 mm x 279 mm.
- .2 Methodology used to facilitate updating.
- .3 Drawings, diagrams and schematics to be professionally developed.
- .4 Electronic copy of data to be in a format accepted and approved by Departmental Representative.

1.3 APPROVALS

- .1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Departmental Representative.

1.4 GENERAL INFORMATION

- .1 Provide Departmental Representative the following for insertion into appropriate Part and Section of BMM:
 - .1 Complete list of names, addresses, telephone and fax numbers of contractor, sub-contractors that participated in delivery of project - as indicated in Section 1.2 of BMM.
 - .2 Summary of architectural, structural, fire protection, mechanical and electrical systems installed and commissioned - as indicated in Section 1.4 of BMM.
 - .1 Including sequence of operation as finalized after commissioning is complete as indicated in Section 2.0 of BMM.



- .3 Description of building operation under conditions of heightened security and emergencies as indicated in Section 2.0 of BMM.
- .4 System, equipment and components Maintenance Management System (MMS) identification - Section 2.1 of BMM.
- .5 Information on operation and maintenance of architectural systems and equipment installed and commissioned - Section 2.0 of BMM.
- .6 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned - Section 2.0 of BMM.
- .7 Information on operation and maintenance of mechanical systems and equipment installed and commissioned - Section 2.0 of BMM.
- .8 Operating and maintenance manual - Section 3.2 of BMM.
- .9 Final commissioning plan as actually implemented.
- .10 Completed commissioning checklists.
- .11 Commissioning test procedures employed.
- .12 Completed Product Information (PI) and Performance Verification (PV) report forms, approved and accepted by Departmental Representative.
- .13 Commissioning reports.

1.5 CONTENTS OF OPERATING AND MAINTENANCE MANUAL

- .1 For detailed requirements refer to Section 01 78 00 - Closeout Submittal.
- .2 Departmental Representative to review and approve format and organization within twelve (12) weeks of award of contract.
- .3 Include original manufactures brochures and written information on products and equipment installed on this project.
- .4 Record and organize for easy access and retrieval of information contained in BMM.
- .5 Include completed PI report forms, data and information from other sources as required.
- .6 Inventory directory relating to information on installed systems, equipment and components.
- .7 Approved project shop-drawings, product and maintenance data.
- .8 Manufacturer's data and recommendations relating: manufacturing process, installation, commissioning, start-up, O M, shutdown and training materials.
- .9 Inventory and location of spare parts, special tools and maintenance materials.
- .10 Warranty information.
- .11 Inspection certificates with expiration dates, which require on-going re-certification inspections.
- .12 Maintenance program supporting information including:
 - .1 Recommended maintenance procedures and schedule.
 - .2 Information to removal and replacement of equipment including, required equipment, points of lift and means of entry and egress.



1.6 LIFE SAFETY COMPLIANCE (LSC) MANUAL

- .1 Samples of LSC Manual will be available from Departmental Representative.
- .2 Content of Manual:
 - .1 All possible Emergency situations modes including: presence of fire and smoke, power failure, loss of water or pressure, chemical spills and refrigerant release.
 - .2 Failure of elevators and escalators.
 - .3 HVAC emergencies and fuel supply failures.
 - .4 Intrusion and security breach.
 - .5 Emergency provisions for natural disasters, bomb threats and other disruptive situations.
 - .6 Dedicated emergency generators for high security projects, medical facilities and computer systems.
 - .7 Emergency control procedures for fire, power and major equipment failure.
 - .8 Emergency contacts and numbers.
 - .9 Manual to be readily available and comprehensible to non- technical readers.

1.7 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES

- .1 Provide (Departmental Representative) (DCC Representative) (Consultant) supporting documentation relating to installed equipment and system, including:
 - .1 General:
 - .1 Finalized commissioning plan.
 - .2 WHMIS information manual.
 - .3 Approved "as-built" drawings and specifications.
 - .4 Procedures used during commissioning.
 - .5 Cross-Reference to specification sections.
 - .2 Architectural and structural:
 - .1 Inspection certificates, construction permits.
 - .2 PV reports.
 - .3 Fire prevention, suppression and protection:
 - .1 Test reports.
 - .2 Smoke test reports.
 - .3 PV reports.
 - .4 Mechanical:
 - .1 Installation permits, inspection certificates.
 - .2 Piping pressure test certificates.
 - .3 Ducting leakage test reports.
 - .4 TAB and PV reports.
 - .5 Charts of valves and steam traps.
 - .6 Copies of posted instructions.



- .5 Electrical:
 - .1 Installation permits, inspection certificates.
 - .2 TAB and PV reports.
 - .3 Electrical work log book.
 - .4 Charts and schedules.
 - .5 Locations of cables and components.
 - .6 Copies of posted instructions.
- .2 Assist Departmental Representative with preparation of BMM.

1.8 LANGUAGE

- .1 English and French Language to be in separate binders.

1.9 USE OF CURRENT TECHNOLOGY

- .1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.
- .2 Obtain Departmental Representative's approval before starting Work.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

