

Part 1 General**1.1 MINIMUM STANDARDS**

- .1 Materials shall be new and work shall conform to the minimum applicable standards of the Canadian General Standards Board, the Canadian Standards Association, the National Building Code of Canada 2020 (NBC) and all applicable Provincial and Municipal codes. In the case of conflict or discrepancy the most stringent requirement shall apply.

1.2 PRECEDENCE

- .1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions.

1.3 WORK ZONE LOCATIONS AND IDENTIFICATION

- .1 Contractor shall be responsible and assume the role of "Constructor" for all work zone locations. Submit written acknowledgement to Departmental Representative of this responsibility within 3 weeks of contract award.
- .2 Install proper site separation and identification in order to maintain "Time and Space" at all times throughout the duration of the contract. Contractor is to provide access to site for the Departmental Representative and any other personnel required as organized by the Departmental Representative to do testing and inspection

1.4 TAXES

- .1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

1.5 FEES, PERMITS AND CERTIFICATES

- .1 Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction.

1.6 FIRE SAFETY REQUIREMENTS

- .1 Comply with the National Building Code of Canada 2020 (NBC) for fire safety in construction and the National Fire Code of Canada 2020 (NFC) for fire prevention, fire fighting and life safety in building in use.
- .2 Welding and cutting:
 - .1 Before welding, soldering, grinding and/or cutting work, obtain a permit from the Real Property Service provider as directed by the Departmental Representative. Store flammable liquids in approved CSA containers
 - .2 At least 7 days prior to commencing cutting, welding or soldering procedure, provide to Departmental Representative:
 - .1 Notice of intent, indicating devices affected, time and duration of isolation or bypass.
 - .2 Completed welding permit as defined in the-NFC (2020).
 - .3 Return welding permit to Departmental Representative immediately upon completion of procedures for which permit was issued.

- .3 A fire watcher shall be assigned when welding or cutting operations are carried out in areas where combustible materials within 15m may be ignited by conduction or radiation.
- .4 Where work requires interruption of fire alarms or fire suppression, extinguishing or protection systems:
 - .1 Provide watchman service as described in NFC (2020); In general, watchman service is defined as an individual conversant with Fire Emergency Procedures, performing fire picket duty within an unprotected and unoccupied (no workers) area once per hour.
 - .2 Retain services of manufacturer for fire protection systems on daily basis or as approved by Departmental Representative, to isolate and protect all devices relating to:
 - .1 Modification of fire alarms, fire suppression, extinguishing or protection systems; and/or.
 - .2 Cutting, welding, soldering or other construction activities which might activate fire protection systems.
- .5 Inform fire alarm system monitoring agency and local Fire Department immediately prior to isolation.
- .6 Fire alarm system must stay operational until the building is unoccupied and demolition is underway. Standpipe must remain operational as per the national Fire Code (2020).

1.7 FIELD QUALITY CONTROL

- .1 Carry out Work using qualified licensed workers or apprentices in accordance with Provincial Act respecting manpower vocational training and qualification.
- .2 Permit employees registered in Provincial apprenticeship program to perform specific tasks only if under direct supervision of qualified licensed workers.
- .3 Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.

1.8 HAZARDOUS MATERIALS

- .1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and the provision of Material Safety Data Sheets (SDS).

1.9 REMOVED AND SALVAGED MATERIALS FOR REINSTALLATION

- .1 Existing exterior podium metal handrails to be carefully removed and stored ready for reinstallation on the Brooke Claxton building where indicated.
- .2 Existing armour stone around emergency generator, at south east corner of site, to be carefully removed and stored ready for reinstallation as a retaining wall at new poured concrete pathway. Refer to drawing L-1 for details. Contractor is responsible for removal of any excess stone.

1.10 TEMPORARY UTILITIES

- .1 Existing services required for the work, excluding power required for space heating, may be used by the Contractor without charge. Ensure capacity is adequate prior to imposing additional loads. Connect and disconnect at own expense and responsibility.

- .2 Maximum power supply of 15 amps at 120V, single phase, is available and will be provided for general construction usage at no cost. Connect to existing power supply in accordance with Canadian Electrical Code. Power provided must not be used for space heating at any time.
 - .1 Contractor is responsible for power generation once service to building is cut off, maintaining implementation of noise control requirements.
- .3 Water Supply. Departmental Representative will provide continuous supply of potable water for construction use, while building water is still in use.
 - .1 Contractor is responsible for potable water supply once service to building is cut off.
- .4 Permanent 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.
- .5 Remove all temporary facilities from site after use.
- .6 Where Work involves interruption of existing power service to adjacent portions of other buildings or campus systems, give Departmental Representative a minimum of 14 working days notice for necessary interruption throughout course of work. Keep duration of interruptions to a minimum. Carry out interruptions after normal working hours, preferably on weekends.

1.11 PROTECTION

- .1 Protect finished work against damage until take-over.
- .2 Protect adjacent work against the spread of dust and dirt beyond the work areas.
- .3 Protect operatives and other users of site from all hazards.
- .4 Protect Adjacent, landscaping, roadways, parking areas and pathways. Reinstate any damage to existing areas caused by the work to the approval of the Departmental Representative.
- .5 Inspect and locate adjacent facilities air-intake system. Ensure dust infiltration into adjacent building HVAC system does not take place while ensuring air-intake draw is not affected. (Provide new filters for adjacent facility upon completion of demolition activities.)

1.12 USE OF SITE AND FACILITIES

- .1 Execute all work within "Limits of Site" as identified on the drawings.
- .2 Provide temporary construction fencing for entire perimeter of exterior construction zone and exterior storage area, except on the eastern side of site where there is a requirement for a temporary engineered acoustical wall, using mesh wire fencing system. Ensure tight connections between construction fencing and acoustical wall. Reinstate site upon removal of temporary construction fencing.
- .3 Upon award of contract, contractor to provide dust mitigation plan as outlined in 1.27 below.
- .4 Execute work with least possible interference or disturbance to the normal use of adjacent premises and operations (adjacent to the construction zones). Make arrangements with Departmental Representative to facilitate work as stated.
- .5 Provide temporary Contractor's Site office within limits of site as follows:

- .1 Locate all Contractor site offices and trailers within the "Limits of Site" to the approval of the Departmental Representative.
- .2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 4 operable windows and one lockable door.
- .3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature.
- .4 Provide marked and fully stocked first-aid case in a readily available location.
- .5 Provide and pay for temporary telephone, fax and data hook up, lines and equipment necessary for own use.
- .6 Parking. No contractor or sub-contractor parking is provided on site. Contractor and sub contractors are responsible for parking arrangements. Limited parking may be allowed in the staging area at the discretion of the Departmental Representative.
- .7 Turf disturbed by vehicular traffic, storage and staging shall be reinstated to new condition with sod and maintained for a period of not less than one year following the substantial completion.
- .8 Maintain existing services to adjacent buildings and provide for personnel and vehicle access.
- .9 Schedule all construction deliveries within regular construction hours with the Departmental Representative. Deliveries are not to occur after hours.
- .10 Protect work temporarily until permanent enclosures are completed.
- .11 Sanitary facilities: Provide temporary sanitary facilities for work force in accordance with governing regulations and ordinances (minimum one male and one female temporary toilet) on site in location approved by the Departmental Representative. Maintain supply of paper towels and toilet tissue. Maintain facilities to approval of Departmental Representative. Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition
- .12 Clean adjacent roadways daily where affected by Contractor's equipment.

1.13 SITE STORAGE

- .1 The Departmental Representative will assign storage area on site within the limits of construction which shall be equipped and maintained by the Contractor.
- .2 Do not unreasonably encumber site with materials or equipment.
- .3 Move stored products or equipment which interfere with operations of Departmental Representative or other contractors.

1.14 CUT PATCH AND MAKE GOOD

- .1 Cut existing surfaces as required to accommodate new work.
- .2 Remove all items so shown or specified.
- .3 Patch and make good surfaces cut, damaged or disturbed, to Departmental Representative's approval. Match existing material, colour, finish and texture.

1.15 EXAMINATION

- .1 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.

- .2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

1.16 TESTING LABORATORY SERVICES

- .1 Departmental Representative will appoint and pay for costs of inspection and testing services, unless indicated otherwise.
- .2 Provide safe working areas and assist with testing procedures, including provisions for materials or services and co-ordination, as required by testing agency and as authorized by Departmental Representative.
- .3 Where tests indicate non-compliance with specifications, contractor to pay for initial test and all subsequent testing of work to verify acceptability of corrected work.

1.17 SIGNS

- .1 Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, etc, in both official languages or by the use of commonly-understood graphic symbols to the Departmental Representative's approval.
- .2 No advertising will be permitted on this project.

1.18 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" site and work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.19 TEMPORARY SCAFFOLDS AND WORK PLATFORMS

- .1 Design, install, and inspect temporary scaffolds and work platforms required for work in accordance with relevant municipal, provincial and other regulations. Temporary scaffolds and stairs shall provide the only site access as described in the drawings.
- .2 Provide engineered design drawings, signed and sealed by qualified Professional Engineer licensed in the province of Ontario, for temporary shoring, scaffolds and work platforms.
- .3 Additions or modifications to scaffolding must be approved by the Professional Engineer in writing.

1.20 NOISE CONTROL

- .1 Early in construction, sever the physical connection between the EHC and Brooke Claxton buildings created by the shared concrete podium prior to deconstruction in order to reduce vibration transmission. The exterior wall of Brooke Claxton building must be made weather tight when exposed, prior to finishing wall upgrades.
- .2 Limit the number of heavy construction vehicles (excavators or equivalent) operating on site at the same time to 6.
- .3 Hours of operation for the deconstruction site must comply with the City of Ottawa Noise By-Law and should be limited to the hours of 7:00am-5:00pm.
- .4 Multiple, independent deconstruction activities that produce high noise levels should be arranged to occur simultaneously when permissible in order to limit the total duration of noise exposure at noise sensitive points of reception. This work should be performed in the middle of the day when it is least likely to be disruptive to nearby residences.

- .5 All equipment should be properly and regularly maintained. This will help to minimize the operating noise levels.
- .6 All large diesel-powered construction vehicles/equipment (excavators, etc.) should be equipped with mufflers to reduce engine and exhaust noise.
- .7 Locate stationary noise sources such as air compressors as far away as possible from noise sensitive points of reception.
- .8 Use equipment that is most suitable for the job - avoid using over or under-powered equipment, as this will result in higher noise levels.
- .9 Do not leave engines idling when not in use.
- .10 Where possible, use equipment that breaks concrete by crushing it instead of drilling.
- .11 Back-up beepers installed on construction vehicles should have a maximum sound power level of 100 dBA (corresponding to a SPL rating of 92 dBA at 1m).

1.21 HOISTING

- .1 Provide, operate and maintain hoists and cranes as required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operator.

1.22 RECORDS

- .1 As work progresses, maintain accurate records to show deviations from contract drawings. Just prior to Departmental Representative's inspection for issuance of final certificate of completion, supply to the Departmental Representative 1 set of white prints with all deviations neatly inked in. The Departmental Representative will provide two sets of clean white prints for this purpose.

1.23 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is not permitted in the Building or on site. Obey smoking restrictions on building property.

1.24 TRAFFIC MANAGEMENT

- .1 As stated in drawings, the only vehicle access to the site will be via Goldenrod Street to the north of site.
- .2 Contractor to provide a traffic management plan, to be approved by Departmental Representative prior to any demolition work.
- .3 Traffic Management plan must include:
 - .1 Identification of vehicle access points and moments permitted for all vehicle types.
 - .2 Show access control points and gates. Clearly show full site enclosure for off hours.
 - .3 Material loading/unloading zones and truck routing through site.
 - .4 The pedestrian sidewalk on the south side of Goldenrod street will be closed during the majority of deconstruction activities. Show temporary re-routing of pedestrians in that area.

- .5 When traffic is being stopped to allow trucks to leave the site, only 2 trucks at a time can leave the site.
- .4 Additional information to develop traffic management plan:
 - .1 Flag person must be provided for trucks entering and exiting site.
 - .2 Contractor must maintain the integrity of traffic management plan throughout the entirety of the demolition/construction project.
 - .3 Construction vehicle marshalling on the Tunney's Pasture Campus is not permitted. Vehicles are to arrive, be loaded/unloaded and leave site.
 - .4 Trucks accessing the site will only be permitted to travel on designated truck routes, in accordance with Ottawa's truck route map.
 - .5 Trucks are not permitted to use Parkdale Avenue to the east of the site or Sir Frederic Banting Blvd to the west, as a general rule, however, under special circumstances and if required, seek advance approval from the Departmental Representative.
 - .6 Contractor is to ensure that all roadways used for construction vehicle traffic are kept free from the accumulation of debris, dust nuisance, mud and ponding water.
- .5 Contractor to respond to any complaints, in writing indicating action to be taken, to resolve issues brought forth by the Departmental Representative or residents of the area.

1.25 TRAFFIC VIBRATION CONTROL

- .1 Contractor to provide in description writing, to the Departmental Representative for approval, how they will address traffic vibration control.
- .2 Required information:
 - .1 No construction traffic on Parkdale Avenue.
 - .2 Construction traffic not permitted after regular working hours or on weekends or holidays.

1.26 DEMOLITION VIBRATION CONTROL

- .1 It is the responsibility of the contractor to ensure minimum vibration transfer between the EHC building and Brooke Claxton.
 - .1 It is recommended that the physical connection be severed between the EHC and Brooke Claxton building along the construction joint, outlined on the drawings, as the first phase of structural demolitions.
 - .2 The adjacent Brooke Claxton building is of historical significance. A detailed pre-demolition survey on the shared podium must be performed prior to demolition.
 - .1 pre-construction survey to include inspection of the sanitary sewers and tunnels.
 - .2 Provide and install an adequate number of seismographs to monitor vibrations for the duration of demolition activities.
 - .3 Ensure construction vibrations are within the requirements of Tables 1.26.3 and 1.26.4. Alert Levels need to be implemented within the seismographs.
 - .4 Prepare and implement a plan to monitor and mitigate construction vibration. The results will be shared with the Departmental Representative on a weekly basis. As soon as the onsite activities trigger vibrations above the threshold values, stop work until the sources of the vibrations are

identified and mitigation measures are put forward to avoid the situation. An Incident Report will then be shared with the Departmental Representative with all relevant information.

- .5 For construction activities that may impact other asset owners (e.g. Hydro Ottawa, Gazifère/Enbridge, City of Ottawa, etc.) with different vibration limits for their infrastructure, those different vibration limits shall apply. It will be the responsibility of the Contractor to ascertain and comply such different vibration limits.
- .3 Peak vibration limits on the EHC and Brooke Claxton podium podium during demolition are as follows:

Frequency Range (Hz)	< 10	10 to 40	> 40
Peak Particle Velocity (mm/s)	5	5 to12 (sliding scale)	12

Table 1.26.3

- .4 General demolition activity peak vibration limits are as follows:

Frequency Range (Hz)	< 10	10 to 40	> 40
Peak Particle Velocity (mm/s)	5	5 to50 (sliding scale)	50

Table 1.26.4

1.27 DUST CONTROL AND TEMPORARY CONSTRUCTION ENCLOSURE

- .1 Contactor to provide a dust management plan, to be approved by Departmental Representative prior to any demolition work.
- .2 Dust management plan must include:
 - .1 Objectives to be achieved:
 - .1 Minimize dust migration to surrounding businesses and residential areas.
 - .2 Ensure the safety of all people in the area including workers.
 - .3 Minimize environmental impacts from dust migration.
 - .2 Identify/recognize areas that are in need of protection from potential emissions from demolition activities.
 - .3 Methods to be applied in addressing potential emissions.
 - .1 Pollution prevention practises are preferred to controls that contain the pollution after it has been generated.
 - .4 The people responsible for managing and implementing the plan,
 - .5 The records to be maintained that demonstrate adoption of actions and compliance with any government environmental requirements
 - .6 Contractors dust management plan should integrate as much as possible the Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities prepared for Environment Canada in 2005.
 - .7 The contractor's dust management plan should document the size, location, timing, prevailing winds, geographical features, landscape, and nature of the construction activities and relate them to communities that will be sensitive to potential emissions from the site. It is important that the contractor

identify/recognize areas that are in need of protection from the potential emissions from construction activities.

- .3 Provide dust tight screens or partitions to localize dust generating activities within building, and for protection of workers.
- .4 Construction fencing Type 1: purpose made self supporting interlocking welded wire mesh panels and posts minimum 2440 mm high. Support posts with purpose made concrete support blocks or spread footing sufficient for self support.

1.28**SCHEDULING**

- .1 On award of contract; submit a detailed bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed by the Departmental Representative, take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative.
- .2 Identify phasing, critical path, and long lead items in schedule. See broad brush project phasing listed below.
- .3 Carry out work during "Regular Business Hours" unless noted otherwise, defined as follows:
 - .1 Monday to Friday from 7:00 to 17:00 hours.
 - .2 All work within the Brooke Claxton building is to be coordinated through the BGIS representative and carried out after-hours:
 - .1 Monday to Friday from 17:00 to 07:00 hours or during the day on Saturday's, Sunday's or statutory holidays.
- .4 Give the Departmental Representative a minimum of five working days' notice for work to be carried out during "off hours".
- .5 Access to service tunnel must be granted by the Departmental Representatives third-party operator. Departmental Representative will provide forms. Forms must be filled out a minimum of five business days in advance of access date. Access approvals are valid for a maximum of one month and request needs to be resubmitted upon expiry.
 - .1 Minimum security clearance required for access to service tunnel is CSID reliability.

1.29**PROJECT PHASING**

- .1 Within the main project construction schedule indicate detailed phasing required to complete the project.
- .2 The following indicates minimum phasing requirements to be included in the project construction schedule as dictated by user identified restrictions. This phasing is meant as a guide to which the contractor will add more detailed sub-phasing. Minimum Project Phasing Requirements:
 - .1 Phase 1 – Abatement: Will involve abatements of the remaining hazardous materials including the PHC impacted soil. In accordance with Section 01 14 25 – Designated Substance Report.
 - .2 Phase 2 – Deconstruction:
 - .1 Structurally disconnect the EHC building from the west side of the Brooke Claxton podium, to ensure minimal demolition vibration

transfer between buildings, make good wall, insulate, and waterproof.

.2 Strip out interiors:

- .1 Remove fittings, fixtures, millwork, remove interior finishes
- .2 Sequentially remove HVAC units, plumbing fixtures, piping and ductwork
- .3 Sequentially de-energize electrical panels, disconnect and remove electrical equipment, remove de-energized wiring
- .4 Demolish non-structural interior partitions, door frames, and doors

.3 Phase 3 – Exterior Demolitions:

- .1 Sequentially cut off, remove, and cap existing building site services (obtain Departmental Representative approval for exact timing)
- .2 Demolish and re-build campus service tunnel stump (safeguard steam valve) and waterproof.
- .3 Remove exterior windows and frames, remove pre-cast exterior wall panels, remove non-structural infill exterior walls
- .4 Demolish concrete structure, remove foundation walls and footings
- .5 Remove underground services below the basement slab and footings
- .6 Remove generator and concrete pad near end of de-construction

.4 Phase 4 - Greenfield Landscaping:

- .1 Carry out Landscaping and make good site.

- .3 The contractor is to include in the schedule any additional detailed sub-phasing required to complete the construction work.
- .4 Schedule all site measurement, shop drawings submittals and allow for specified approval times by Departmental Representative to suit the order of operations as indicated above.

1.30 DEMOLITION RESTRICTIONS

- .1 Demolition by explosives is not permitted.
- .2 Demolition to be performed to mitigate dust/silica migration and outlined in dust management plan.
- .3 Demolition process must make provision for species at risk and follow the Departmental Representatives direction and implement the Wildlife Protection Protocol. *To be provided by the Departmental Representative at a later date. Refer to 1.34 of this section.*

1.31 COST BREAKDOWN

- .1 Before submitting first progress claim submit breakdown of Contract Amount in detail as directed by Departmental Representative and aggregating the Contract Amount. After

approval by Departmental Representative cost breakdown will be used as the basis of progress payments.

1.32 TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction/demolition period, including attendance, maintenance and fuel.
- .2 Construction heaters used inside building must be vented to outside or be flameless type. Solid fuel salamanders are not permitted.
- .3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress and protect Work against dampness and cold.
 - .2 Prevent moisture condensation on surfaces.
 - .3 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .4 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .5 Permanent heating system of building not to be used unless written permission is provided from Departmental Representative. Be responsible for damage to heating system if use is permitted. Pay costs for maintaining temporary heat when using permanent heating system.
- .6 Pay costs for maintaining temporary heat. When using permanent heating system pay utility charges.
- .7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Vent direct-fired combustion units to outside.
- .8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction/demolition.

1.33 EXISTING STORM SEWER CCTV SCAN

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

- .1 CCTV scan of existing large storm sewer (at west property line) both before and after construction.

1.34 WILDLIFE PROTECTION MEASURES

- .1 Prior to commencement of exterior construction, demolition and site work activities, Contractor to review and implement the Wildlife Protection Protocol that will be developed separately by a qualified biologist. The Departmental Representative will submit the Wildlife Protection Protocol to the Contractor upon completion. The Protocol will be developed in accordance with the recommendations of the Tunney's Pasture Species at Risk Phase I and Habitat Assessment and will follow the intent of the City of Ottawa *Protocol for Wildlife Protection during Construction*. Example of mitigation measures that may be included in the Wildlife Protection Protocol are available in the *Appendix 1: Example of On-site Reference Handout from the City of Ottawa Protocol for Wildlife Protection during Construction* (https://documents.ottawa.ca/sites/documents/files/documents/construction_en.pdf).

1.35 DEWATERING

- .1 Contractor to obtain a Category III Ontario Ministry of the Environment and Climate Change (MOECC) Permit to Take Water (PTTW) for temporary dewatering of excavations at this site. Contractor to have hydrogeological study completed to support the PTTW applications and to confirm this requirement.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

PART 1 – GENERAL

1.1 REFERENCES

1. Federal Legislation
 1. Canada Labour Code, Part II, section 124 and 125. Canada Occupational Health and Safety Regulations
 2. Transportation of Dangerous Goods Act, 1992 (TDGA)
 3. Canada Consumer Product Safety Act
 1. Surface Coating Materials Regulations SOR/2005-109.
 4. Canadian Environmental Protection Act, 1999 (CEPA)
 1. PCB Regulations (SOR/2008-273)
 2. Federal Halocarbon Regulations, 2003 (SOR/2003-289)
2. Provincial Legislation
 1. Ontario Occupational Health and Safety Act, R.S.O. 1990, 2010 edition.
 1. Ontario Regulation 490/09 – Designated Substances (*O.Reg. 490/09*).
 2. Ontario Regulation 278/05 – Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations, (*O.Reg. 278/05*).
 3. Ontario Regulation 213/91 for Construction Projects (*O.Reg. 213/91*).
 2. Ontario Environmental Protection Act, R.R.O. 1990,
 1. Ontario Regulation 347/09, General – Waste Management (*O.Reg. 347/09*).
 2. Ontario Regulations 362/90 – Waste Management, PCBs (*O.Reg. 362/90*)
 3. Ontario Regulation 463/10, Ozone Depleting Substances and Other Halocarbons (*O.Reg. 463/10*).
3. Canadian General Standards Board (CGSB).
4. Canadian Standards Association (CSA International). CAN/CSA-Z94.4-18 - Respiratory Protection
5. Underwriters' Laboratories of Canada (ULC).

1.2 DEFINITIONS

Asbestos-Containing Materials (ACMs): means material that contains 0.5 per cent or more asbestos by dry weight as per Ontario Regulation 278/05.

Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

Time-weighted average exposure limit (TWAEL): the time-weighted average airborne concentration of a biological or chemical agent to which a worker may be exposed in a work day or work week as prescribed by Ontario Regulation 490/09 Designated Substances, as amended.

1.3 RELATED SECTIONS

Not used

1.4 DESIGNATED SUBSTANCES

Confirm with the Departmental Representative that no additional designated substances have been brought to the project area prior to beginning work.

Should any additional material, suspected to be a designated substance, be encountered within the building, any disturbance of such material must be stopped, precautionary measures taken, and the Departmental Representative must be notified immediately. Do not proceed until written instructions have been received.

1. ACRYLONITRILE: Not Identified
2. ARSENIC: Not Identified
3. ASBESTOS: **Identified**

For detailed information for identified ACMs, such as friability, locations, quantities and conditions, refer to the room-by-room database for ACMs, included in this tender package.

Bulk sampling and subsequent laboratory analysis has determined that the following **friable** materials contain regulated amounts of asbestos:

- Aircell pipe insulation, assumed to contain asbestos, was observed throughout the building;
- Magblock pipe insulation, assumed to contain asbestos, was observed throughout the building;
- Sweatwrap pipe insulation, assumed to contain asbestos, was observed in remnant quantities in the basement mechanical room;
- Parging on pipe fittings (including tees/valves/ends/hangers), assumed to contain asbestos, was observed throughout the building;
- Parging used as an adhesive and as a sporadically applied outer sealant for canvas on tar (also asbestos-containing) on fibreglass over ductwork, observed throughout the building, contains 60% Chrysotile asbestos. Ductwork with just canvas over fibreglass insulation (no tar layer) does not have parging adhesive;
- Parging applied as a layer over cellulose insulation, in the voids of select steel columns in the Penthouse;
- Parging applied to the outer sides of air handling units in the Penthouse and also applied to the associated ducting;
- Parging applied to a generator exhaust system in the separate generator room of the Penthouse;

- 600x1200mm Lay-in acoustic ceiling tiles, with a long fissure and pinhole pattern, observed in select areas of the building, contain 4.1% Amosite asbestos;
- Select internal components of the System 3 generator exhaust in the Penthouse mechanical room are suspected to be comprised of friable asbestos (could not be accessed without destructive means, and still operational); and
- Inaccessible cavities behind Transite wall panels in the Penthouse are suspected to contain friable asbestos-containing materials until proven otherwise. Further destructive investigation, utilizing asbestos precautions will be necessary to access these cavities to verify their contents.

Bulk sampling and subsequent laboratory analysis has determined that the following **non-friable** materials contain regulated amounts of asbestos:

- A black tar layer, under canvas but over fibreglass on ducting throughout the building contains 0.55 - 1.16% Chrysotile asbestos;
- Black tar, in minor remnant quantities on components associated with the chiller in the basement mechanical room contains 20.33% Chrysotile asbestos;
- Firestop caulking, applied around pipe wall penetrations in sporadic locations throughout the building contains 1.09% Chrysotile asbestos;
- 300x300mm Vinyl floor tiles, beige streaked, observed under a raised floor in server room B-52 B and C (rooms are combined), contain 2.21% Chrysotile asbestos;
- Black tar on Styrofoam pipe insulation debris, observed in the ceiling cavity of server room B-52 B and C, contains 7.85% Chrysotile asbestos (this material is not homogenous with non-asbestos-containing black tar and Styrofoam wall panel material);
- 300x300mm Vinyl floor tiles, beige with black flecks, and associated mastic, observed in select areas of the building contains 0.78% Chrysotile asbestos;
- Drywall joint compound associated with drywall finishes, observed throughout the building, contains 1% Chrysotile asbestos (unless otherwise noted);
- Grey-streaked linoleum flooring, observed in select areas of the building, contains 5% Chrysotile asbestos;
- Grey streaked or painted 225x225mm vinyl floor tiles and associated mastic, observed in select areas of the building, contain 1% Chrysotile asbestos;
- Caulking, applied to the joints between lower Transite wall panels in the Penthouse mechanical room contains 0.56% Chrysotile asbestos;

- 300 x 300mm Vinyl floor tiles, beige streaked, observed in select areas of the building contain 0.72% Chrysotile asbestos;
- 300 x 300mm Vinyl floor tiles, light beige streaked, observed in select areas of the building contain 0.72% Chrysotile asbestos;
- Grey caulking applied to roof vent penetrations, on the Penthouse upper roof, contains 0.54% Chrysotile asbestos;
- Transite fume hoods, observed in select laboratories, are assumed to contain asbestos;
- Transite ceiling tiles, observed in select rooms in the basement, are assumed to contain asbestos;
- Transite wall panels (double-sided with cork insulation in-between), installed along the interior perimeter walls of the Penthouse are assumed to contain asbestos;
- Transite wall panels as single panels on the walls comprising the courtyard area (accessible from within the Penthouse mechanical room), are assumed to contain asbestos;
- Transite panels, used as partition walls between room B-50 and in the adjoining corridor (Basement level);
- Duct vibration dampers throughout the building; and
- Cast iron drainpipe joint caulking, observed throughout the building, is suspected of containing asbestos (bulk sampling was not performed to avoid compromising the waterproof seal).

Bulk sampling and subsequent laboratory analysis or visual observations have determined that the following materials do not contain or are not suspected to contain regulated amounts of asbestos:

- A cementitious scratch coat finish, applied to ceilings and columns in the select areas of the building;
- Black tar, used to adhere Styrofoam insulation, observed on interior walls throughout the building and behind radiators on the 2nd and 3rd floors;
- 600x1200mm Lay-in acoustic ceiling tiles with pinholes, observed in various locations throughout the building;
- Drywall joint compound associated with drywall finishes in the room B-50A. Please note: all other occurrences of drywall joint compound outside this room are considered to be asbestos-containing unless further delineation proves otherwise;
- 300 x 300mm Vinyl floor tiles with beige stripes, observed in select areas of the building;
- A mastic application for the raised floor installation in the B-52 server room;

- Mastic used to adhere 300 x 300mm' cellulose ceiling tiles, observed in select areas of the building;
- 600 x 1200mm Ceiling tiles, with fissures and pinholes, observed in select areas of the building;
- Smooth plaster (all layers), observed throughout the building;
- Beige streaked linoleum, observed in select areas of the building;
- 300 x 300mm Vinyl floor tiles with white and brown flecks, observed in select areas of the building;
- 300 x 300mm Vinyl floor tiles, beige with dense grey flecks, observed in select areas of the building;
- A rough plaster application, observed on a section of the upper ceiling in room B-57 (basement);
- A textured concrete ceiling finish, observed in select areas of the building;
- Levelling compound beneath carpet finishes, observed in select areas of the building;
- 600 x 1500mm Ceiling tiles with small pinholes, observed in select areas of the building;
- 600 x 1500mm Ceiling tiles with large pinholes, observed throughout the building;
- Baseboard mastic, throughout the building;
- A stippled ceiling finish, observed in the ground floor lobby and adjacent stairwell vestibule;
- 225 x 225mm Vinyl floor tiles, maroon coloured, observed in select areas of the building;
- 300 x 300mm Vinyl floor tiles, beige with white and brown streaks, observed in select areas of the building;
- 300 x 300mm Vinyl floor tiles, blue/beige mottled, observed in select areas of the building;
- 300 x 300mm Vinyl floor tiles, brown mottled, observed in select areas of the building;
- 225 x 225mm Vinyl floor tiles, mottled light beige, observed in select areas of the building;
- Grey sealant applied to ductwork joints, observed in select areas of the building;
- Light grey-streaked linoleum flooring, observed in select areas of the building;
- 600 x 1500mm Ceiling tiles with pinholes, observed throughout the 3rd floor of the building;
- Window and door caulking;
- Grey caulking applied to the flashing at the base of exterior columns;

- Black caulking on upper Penthouse roof penetrations, and on select areas of the parapet flashing comprising the lower roof;
- Grey caulking between stone wall slabs, exterior of building;
- Grey caulking on the parapet flashing comprising the lower roof;
- Roofing materials, upper penthouse roof;
- Roofing materials, lower penthouse roof;
- Roofing materials, courtyard at Penthouse floor level;
- Additional ceiling tiles observed throughout the building are not suspected to contain asbestos based on manufacture date codes, which would post-date the use of asbestos in ceiling tiles; and
- Additional vinyl floor tile and linoleum flooring products of a new vintage in various renovated laboratory spaces.

4. BENZENE: Not Identified

5. COKE OVEN EMISSIONS: Not identified

6. ETHYLENE OXIDE: Not Identified

7. ISOCYANATES: Not Identified

8. **LEAD: Identified**

Based on sample results for the bulk lead (in paint) samples collected, detectable concentrations of lead were confirmed in all paint applications. The following is a summary of paints with detectable levels of lead identified at the building:

- Grey floor paint with a red under layer (sample LP-01) contains 1,130 ppm lead and was observed in the basement mechanical room, in good condition.
- White wall paint (sample LP-02) contains 244 ppm lead, and was observed throughout the basement level, in good condition;
- Blue paint applied to the chiller in the basement mechanical room contains 8,270 ppm lead (sample LP-03), and was observed in good condition;
- White wall and ceiling paint, observed throughout the ground floor of the building in good condition, contains 544 ppm lead (sample LP-04);
- White wall and ceiling paint, observed throughout the second floor of the building in good condition, contains 995 ppm lead (sample LP-05);
- White wall and ceiling paint, observed throughout the third floor of the building in good condition, contains 345 ppm lead (sample LP-06);
- Beige paint, observed throughout the third floor of the building in good condition, contains 699 ppm lead (sample LP-07); and

- Grey floor paint with under layers (sample LP-08) contains 915 ppm lead and was observed in the Penthouse mechanical room, in good condition

No other lead paint samples were collected for lead content analysis, as other paints and surface coatings encountered in the building were in good condition and sampling without matrix interference (i.e. removing the paint without the substrate material) would have proved difficult. All other paints and surface coatings, including structural steel coatings, throughout the building and building exterior, shall be assumed to contain detectable concentrations of lead, unless specific bulk sampling and laboratory analysis confirms otherwise.

Lead is also suspected to be present in the following materials:

- Solder on the joints of copper piping;
- Cast-iron drainpipe joint caulking;
- Terrazzo floor joints;
- Ceramic tile glazing; and
- Emergency light and mechanical room batteries.

9. MERCURY: **Identified**

Mercury is suspected to be present in the following:

- Fluorescent light fixtures containing fluorescent light tubes were observed throughout the building. Fluorescent light tubes contain mercury in a vapour form and in the phosphor coating on the lamp tube; and
- Thermometers, thermostats and mechanical switches.

10. SILICA: **Identified**

Based on the historic composition of building materials, silica is expected to be present in:

- Concrete and cement materials;
- Drywall and associated materials;
- Spray texture coat materials;
- Vinyl floor tiles;
- Ceramic tiles, mortar, grout;
- Mastics;
- Floor leveling compounds;
- Plaster;
- Ceiling tiles;
- Terracotta and mortar;
- Roofing materials; and
- Stone panels.

11. VINYL CHLORIDE MONOMER: Not Identified

12. POLYCHLORINATED BIPHENYLS (PCBs): **Identified**

Light fixtures with T12 lamps are more likely to contain ballasts that were manufactured prior to 1981. T8 lamps are associated with light fixtures that were manufactured after the phase-out of PCB-containing ballasts. The letter "T" denotes the shape of the light fixture (e.g. tubular) and the number which follows indicates the diameter in eighths of an inch.

Light fixtures in the building were not disassembled to identify the presence of ballasts, as the light fixtures were energized at the time of site visit. Based on limited visual observations, T12 and T8 lamps throughout the project areas. Light fixtures with T12 light ballasts are suspected to contain PCBs, until proven otherwise. One ballast associated with a T-12 light fixture in Room 303 was observed to have leaked onto the lighting fixture. All other ballasts, where accessible, were observed to be intact. A box of used ballasts, suspected of containing PCBs, was observed in the basement mechanical room.

As part of the site investigation, black tar used to adhere 1" white Styrofoam insulating panels, concealed by solid building finishes was observed. The tar was submitted for asbestos analysis and was confirmed as not containing regulated amounts of asbestos (samples 20124-04A-C). One representative bulk sample of this tar was also submitted for PCB content analysis. Based on the analytical laboratory results, 54.4 ppm PCBs were detected in the sample (Sample PCB-04). This result exceeds the 50 ppm limit for PCBs in solid materials, as per the *PCB Regulations SOR 2008/273*, as amended. As such, the black tar material is considered PCB-containing. This tar application was observed adhering Styrofoam panels on all perimeter wall surfaces at the building, including behind the radiators on the 2nd and third floors. Further verification to confirm the extent of this PCB-containing tar was not possible due to the constraints of the survey being non-destructive in nature. As such, it is assumed that this tar application is present on all perimeter wall surfaces at the building, and behind the radiators on the 2nd and 3rd floors.

13. MOULD: **Suspected**

Suspected mould was observed in the following areas:

- 4 square metres of suspected mould-impacted canvas on piping and ductwork in the ceiling cavity of room B-92, Basement Level; and

- 10 linear metres of suspected mould-impacted canvas on piping, in the ceiling cavity of the basement south-east main corridor (survey location 4).

14. HALOCARBONS: **Suspected**

The chiller unit in the Penthouse mechanical room has been drained of halocarbons (as per tags attached to the unit). Base-building drinking fountains are suspected to contain halocarbon refrigerants. A cooling unit in the ceiling cavity of room B-5D contains 1.22Kgs of Refrigerant-22.

15. OTHER HAZARDOUS MATERIALS: **Identified**

The following additional hazardous materials were identified:

- Various containers of chemicals, degreasers and cleaning products in the basement and penthouse mechanical rooms;
- A heat exchanger system in the Penthouse mechanical room includes a Glycol-containing dispenser.

Since the building is primarily used for laboratory space, many instances of chemicals being stored throughout the building were observed. In addition, laboratory equipment and ventilation systems that may be contaminated with chemical residues are also known to be present. It is assumed that all stored chemicals will be removed prior to the planned deconstruction of the building, and a comprehensive decommissioning of laboratory equipment will be undertaken as part of a separate project at the building.

1.5 RECOMMENDATIONS

1.5.1 **ASBESTOS**

All work must be done in accordance with O.Reg 278/05 (as amended).

1.5.1.1 The disturbance of ACMs on construction and demolition projects in the province of Ontario is governed by *O.Reg 278/05*, as amended. This regulation classifies all asbestos disturbances as Low Risk (Type 1), Moderate Risk (Type 2), or High Risk (Type 3), each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ontario Ministry of Labour (MoL) must be notified of any project involving removal of more than a minor amount (e.g. typically 1 square metre) of friable asbestos material.

1.5.1.2 Identified friable ACMs require a minimum of Type 2 abatement procedures under Ontario Regulation 278/05, as amended, when disturbing/removing/repairing one (1) square metre or less of the material. Should demolition, disturbance, or repair be required of more than one (1) square metre of friable ACM, Type 3 abatement procedures are required. It should be noted that the removal of good condition pipe

fitting insulation can be completed using Type 2 glovebag procedures, provided the glovebag seal can be maintained throughout the removal process.

- 1.5.1.3 The removal or disturbance of less than one square metre of drywall in which joint-filling compounds that are asbestos-containing material have been used can be completed using Type 1 asbestos procedures. The removal or disturbance of one square metre or more of drywall in which joint-filling compounds that are asbestos-containing material have been used must be completed using a minimum of Type 2 asbestos procedures.
- 1.5.1.4 Type 1 work procedures can be used for the removal of non-friable ACMs, provided that the material can be wetted and removed using only non-powered hand tools. If these conditions cannot be met, then more stringent (e.g., Type 2 or Type 3) procedures are necessary.
- 1.5.1.5 Disposal of asbestos waste must be done in accordance with “General – Waste Management” O.Reg 347/90 (as amended) under the Ontario Environmental Protection Act and the federal Transportation of Dangerous Goods Act. The waste must be disposed at a licensed waste disposal site. Proper notification must be issued to the Departmental Representative prior to transportation of waste.

1.5.2 LEAD

Follow recommendations provided in the Ontario Ministry of Labour (MoL) Guideline entitled “Guideline: Lead on Construction Projects”. This guideline classifies all lead disturbances as Type 1, Type 2a, Type 2b, Type 3a or Type 3b work, and assigns different levels of respiratory protection and work procedures for each classification.

- 1.5.2.1 Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne lead levels that exceed the TWAEL of 0.05 milligram per cubic metre (mg/m³) prescribed by O.Reg 490/09.
- 1.5.2.2 The use of mechanically-powered tools or torches on lead-containing materials increases the concentration of airborne lead dust or fumes requiring more stringent respiratory protection and controlled work procedures.
 - a. The welding or high temperature cutting of lead-containing coatings or materials (e.g. a structural ceiling beam with a lead-containing coating) indoors or in a confined space is a Type 3a operation.
- 1.5.2.3 Even at low concentrations, there may be a potential for exposure to high concentrations of lead depending on the activities performed that disturb the lead-containing materials. At low lead concentrations, conducting a risk assessment to assess the potential for exposure is required to determine the need to follow precautionary measures.
- 1.5.2.4 Disposal of construction waste containing lead must be done in accordance with O.Reg 347/90 – General Waste Management, as amended, under the Ontario

Environmental Protection Act and the federal Transportation of Dangerous Goods Act. The classification of the waste is dependent upon the result(s) of leachate test(s). The waste can be classified as “hazardous, “non-hazardous” or “registerable solid waste” depending on the results of the leachate test.

1.5.3 MERCURY

All work involving disturbance of mercury-containing equipment must be done in accordance with O.Reg 490/09.

- 1.5.3.1 Follow recommendations provided in the MoL Guideline entitled “The Safe Handling of Mercury: A Guide for the Construction Industry”. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills.
- 1.5.3.2 When removal of fluorescent light tubes is required, the tubes should be removed intact from the fixtures. Other sources of liquid mercury should be removed intact to prevent worker exposure.
- 1.5.3.3 Disposal of waste containing mercury must be done in accordance with “General – Waste Management” O.Reg 347/90 (as amended) under the Ontario Environmental Protection Act and the federal Transportation of Dangerous Goods Act.

1.5.4 SILICA

Comply with Ontario Regulations O.Reg 490/09 when performing works that may disturb silica-containing materials. The regulation provides requirements for allowable exposure levels.

- 1.5.4.1 Silica dust can be generated through such processes as blasting, grinding, crushing, and sandblasting silica-containing material. Since silica is present in select materials within the project area, appropriate respiratory protection and ventilation must be donned during the demolition and modifications of these structures.
- 1.5.4.2 Follow recommendations provided in the MoL Guideline entitled “Guideline: Silica on Construction Projects”. This document classifies all silica disturbances as Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. These work procedures should be followed when performing work involving the disturbance of silica-containing materials.

1.5.5 PCBs

- 1.5.5.1 Prior to removal or disposal, the PCB content of equipment and/or liquids should be confirmed to determine proper procedures to be followed, unless conservatively assumed to contain PCBs. When the fluorescent light fixtures are taken out of service, these ballasts, as well as other ballasts, should be examined to determine

whether they contain PCBs. This can be done by comparing the manufacturer date codes stamped on the ballasts to information contained in the document titled Identification of Lamp Ballasts Containing PCBs, published by Environment Canada. Ballasts that contain PCBs must be packaged, transported and disposed of in accordance with all appropriate provincial and federal regulations.

- 1.5.5.2 The leaked PCB light ballast oil, on top of one light fixture in Room 303 on the 3rd floor of the building, is assumed to contain PCBs unless proven otherwise by laboratory analysis. The oil has dried and does not pose an immediate risk of dripping onto occupants below. The light fixture and any adjacent building materials, such as ceiling tiles, which may have been impacted by this leak, should be treated as PCB-contaminated and disposed of as such.
- 1.5.5.3 The tar adhering Styrofoam insulating panels, assumed present on all perimeter wall surfaces at the building, is considered PCB-containing and shall be handled and disposed of as such. As per a Ministry of Environment and Climate Change (MOECC) decision for this project-specific situation, concrete with residual tar adhered to it can be disposed of as non-PCB-containing waste, subject to the results of its toxicity classification (typical bulk sample of concrete and residual tar from the waste stream), using the Leachate test, with the result not exceeding 0.3 mg/L. This concrete shall not be used as clean backfill material.
- 1.5.5.4 If PCB-containing equipment and/or materials are identified and must be removed, they should be disposed of in accordance with the Canadian Environment Protection Act's PCB Regulations, O. Reg. 362/90 – Waste Management, PCBs and O. Reg. 347, General – Waste Management, as amended, are regulated under the Environmental Protection Act to regulate the handling, storage and transportation of hazardous substances and waste dangerous goods. The transport of PCB waste to the disposal site is controlled by the federal Transportation of Dangerous Goods Act.

1.5.6 MOULD

- 1.5.6.1 Currently, there are no regulations pertaining to mould or other microorganisms on construction projects. Most jurisdictions have issued alerts or bulletins concerning the hazard of mould in indoor environments. The Canadian Construction Association (CCA) published the following document as a response to concerns in the construction industry: CCA 82-2004, "Mould Guidelines for the Canadian Construction Industry", 2004. The Guideline recommends Level I, II and III mould abatement procedures for small (<1 m²), medium (1 m² to 10 m²) and large scale (>10 m²) mould abatement operations that are to be determined by professionals based on the extent and density of mould on site. The removal of suspected mould impacted building materials should follow the above noted guideline. In the case of conflict between mould and other requirements, the more stringent precautionary measures shall apply.

1.5.7 HALOCARBONS

- 1.5.7.1 The handling, transport and disposal of halocarbons is governed by the following:
- Ozone-depleting Substances Regulations, 1998, as amended;
 - O.Reg 463/10, Ozone Depleting Substances and Other Halocarbons; and
 - Federal Halocarbon Regulations, 2003 (FHR).
- 1.5.7.2 When suspected halocarbon-containing equipment is taken out of service, the halocarbon refrigerants must be captured and reclaimed by a licensed technician. The presence of halocarbon refrigerants within unit's no longer in service should be verified. If halocarbon refrigerants are found to be present, they must be captured and reclaimed by a licensed technician. Appropriate records of equipment decommissioning must be maintained in accordance with requirements of the FHR.

1.5.8 OTHER HAZARDOUS MATERIALS

- 1.5.8.1 The handling and use of these materials should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, etc.).
- 1.5.8.2 Prior to renovation operations, they should be disposed of appropriately. The transport and disposal of chemical waste is governed by O. Reg. 347/90 – General – Waste Management, as amended.

END OF SECTION

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Part 1 General**1.1 ADMINISTRATIVE**

- .1 Submit to Departmental Representative, all submittals listed for review. Submit promptly and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 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 shall be considered REJECTED.
- .6 Delays resulting from incomplete or unsatisfactory submittals of Shop Drawings shall be the responsibility of the Contractor.
- .7 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Verify field measurements and affected adjacent Work are coordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .11 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWING LOG

- .1 Prepare a shop drawing log and maintain the log during the complete construction period. Submit draft Shop Drawing log within 14 days of contract award and update log weekly or more frequently as directed by Departmental Representative.
- .2 Log to include a comprehensive schedule for the submission of all shop drawings required for the execution of the work. Provide for a review time by Departmental Representative for each submission as appropriate for construction element and as approved by Departmental Representative.
- .3 Present updated log at each project meeting.

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

- .2 Submit shop drawings bearing stamp and signature of qualified Professional Engineer registered or licensed in Provinces of Ontario, Canada.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 7 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 any revisions other than those requested.
- .7 Accompany submissions with transmittal letter 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 shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of subcontractor, supplier and 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 electronic copies of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit 2 paper copies and one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .17 Delete information not applicable to project. Supplement standard information to provide details applicable to project.
- .18 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, transparency or marked up electronic copy 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.
- .19 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

- .20 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 - General**1.1 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 51-GP-51.34-M86, Polyethylene Sheet for Use in Building Construction.
- .2 Transportation and Dangerous Goods Act (1999)
- .3 Canadian Council of Ministers of the Environment (CCME) Documentation
- .4 Ontario Provincial Standard Specifications and Drawings (OPSS 805), Light-Duty Silt Fence Barrier, OPSD-219.110.
- .5 City of Ottawa Sewer Use By-Law 2003-514.
- .6 Ontario Ministry of the Environment, Conservation and Parks (MECP).
 - .1 Ontario Regulation 153, as amended – Record of Site Condition – Part XV.1 of the Act, and Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.
 - .2 Ontario Regulation 387, as amended – Water Taking.
 - .3 Ontario Regulation 903, as amended – Wells.
 - .4 Environmental Activity and Sector Registry (EASR).
 - .5 Ontario Regulation 406/19: On-Site and Excess Soil Management

1.2 BACKGROUND INFORMATION

- .1 Based on previous studies conducted on-site, the subsurface soil conditions at the boreholes completed inside and outside of the EHC building primarily consisted of concrete or asphalt ground cover (or grass on the lawn areas), underlain by silty sand and gravel fill material. Bedrock was encountered at depths ranging from 0.50 to 6.46 m below grade.
- .2 Groundwater was encountered in the limestone bedrock at elevations ranging from 57.14 to 57.66 meters above sea level (mASL) (January 26, 2017). Based on the measured groundwater elevations, the on-site aquifer is present at the overburden/bedrock interface or within the bedrock.

- .3 This site has been the subject of several environmental investigations, remediations and risk assessments from 2003 to present. Previous work has identified the presence of select petroleum hydrocarbons (PHC) and polycyclic aromatic hydrocarbons (PAH) in soil and groundwater above applicable provincial and/or federal guidelines. PHC-impacted soil is primarily concentrated near the loading bay of the EHC building (east side of building). Drawing EN100 – Environmental Soil and Groundwater Management Plan and Drawing EN105 – Environmental Soil and Groundwater Management Details present the horizontal and vertical extents of PHC-impacted soil. Exceedances of PAH in soil are randomly distributed across the site. PAH impacts are attributed to poor quality fill. Based on previous studies, the on-site soil is reportedly considered a non-hazardous solid material suitable for disposal at a MECP-licensed landfill site.
- .4 The on-site groundwater was found to be impacted by PHC (fraction 2), PAH, benzene, sulphate, nitrate and metals above the federal guidelines and/or provincial standards.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit written documentation of impacted soil and groundwater inspections on a weekly basis.
- .3 Submit, prior to start of work, the City of Ottawa sewer discharge agreement and proof of registration on theMECP's EASR for excavation dewatering.
- .4 Submittals for Progress Meetings: make submittals at least 24 hours prior to scheduled progress meetings as follows:
 - .1 Updated progress schedule detailing activities, including review of progress with respect to previously established dates for starting and stopping various stages of Work, major problems and action taken, injury reports, equipment breakdown, and material removal.
 - .2 Copies of transport manifests, trip tickets, and disposal receipts, including gross and tare weights, for waste materials, soil (PHC-impacted or not) and groundwater removed from work area. Prepare all deliverables to be compliant with Ontario Regulation 409/19.
 - .3 Weekly copies of site entry and work area logbooks with information on worker and visitor access.
 - .4 Weekly logs documenting engineering controls.
 - .5 Weekly logs documenting excavation water and waste water discharges into municipal sewer, associated analytical results, and submissions and communications related to the sewer use permit and registration on theMECP's EASR.
 - .6 Weekly logs documenting off-site disposal of excavation water and/or waste waters, if any, volumes, pumping rates, and associated analytical results.
 - .7 Other information required by Departmental Representative or relevant to agenda for upcoming progress meeting.
- .5 Site Layout: within 7 days after date of Notice to Proceed and prior to mobilization to site, submit site layout drawings showing existing conditions and facilities, construction facilities and temporary controls provided by Contractor including following:

- .1 Equipment and personnel decontamination areas.
- .2 Means of ingress, egress and temporary traffic control facilities.
- .3 Equipment and material staging areas.
- .4 Imported fill and demolition debris stockpile areas.
- .5 Exclusion Zones, Contaminant Reduction Zones, and other zones specified in Contractor's site-specific Health and Safety Plan.
- .6 Grading, including contours, required to construct temporary facilities.
- .7 Excavation water and wastewater storage tanks.
- .6 Equipment Decontamination Pad: submit equipment decontamination pad design to Departmental Representative for review prior to commencing construction.
- .7 Submit documentation verifying that employees working with impacted soils and groundwater have been trained, tested, and certified to safely and effectively carry out their assigned duties in reference to contaminated sites.
- .8 Erosion and Sediment Control Plan.
- .9 Waste Water Management Plan submitted as part of the Environmental Protection Plan (Sections 01 35 43 – Environmental Procedures).

1.4 REGULATORY REQUIREMENTS

- .1 Provide erosion and sediment control in accordance with federal/provincial regulations.
- .2 Comply with federal, provincial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.
- .3 Work to meet or exceed minimum requirements established by federal, provincial, and local laws and regulations which are applicable.
 - .1 Contractor: responsible for complying with amendments as they become effective.
- .4 In the event that compliance exceeds or conflicts with specific requirements of contract notify Departmental Representative immediately.

1.5 SEQUENCING AND SCHEDULING

- .1 Do not commence Work involving contact with potentially contaminated materials until decontamination facilities are operational and approved by Departmental Representative.
- .2 Refer to Section 01 00 10 – General Instructions.

1.6 EQUIPMENT DECONTAMINATION FACILITY

- .1 Prior to commencing work involving equipment contact with potentially contaminated materials, construct equipment decontamination pad to accommodate largest piece of equipment on the site that is potentially contaminated.

- .2 Provide, operate, and maintain necessary equipment, pumps, and piping required to collect and contain equipment decontamination pad wastewater and sediment and transfer materials to approved storage facilities.

1.7 SOIL STOCKPILING FACILITIES

- .1 Excavated topsoil and non-impacted subsoil can be stockpiled on the site. Only PHC-impacted soil requires off-site disposal at a licensed landfill..

1.8 WATER TREATMENT FACILITY

- .1 Design Requirements:
 - .1 Design and Operating Criteria: design water filtering plant capable of filtering water generated from dewatering excavations and work areas to meet sewer discharge requirements of City of Ottawa, capable of removing oil, suspended solids, and particulates greater than 5 microns in size.
 - .2 Ensure that discharges from site are in compliance with applicable permit requirements and limitations (City of Ottawa and MECP).
 - .3 Provide piping to transfer liquid/solid mixtures generated by dewatering operations which require water filtering to water filtering plant.
 - .4 Design water filtering operations capable of receiving liquid/solid mixtures and not causing a delay to dewatering operations.
- .2 Piping: suitable material type, of sufficient diameter and structural thickness for purpose intended; satisfactorily tested for leaks with potable water in presence of Departmental Representative before handling wastewater.
- .3 Installation:
 - .1 Provide labour, materials, and equipment and do work required for setup and construction of water filtering plant.
 - .2 Install system components in accordance with installation procedures and as indicated.
 - .3 Following installation of system, implement initial operation test in accordance with procedures developed by Contractor and submitted to Departmental Representative for review.
 - .4 Install piping in accordance with manufacturer's instructions and test for leakage using potable water prior to commencing dewatering and filtering operations.
- .4 Initial Testing: Contractor is responsible for the performance of water filtering plant which must meet sewer discharge requirements of City of Ottawa.
- .5 Operation:
 - .1 On the basis of analytical results obtained by Contractor, make system modifications required for effluent to satisfy sewer discharge criteria and agreement.
 - .2 Contractor is responsible to operate water filtering plant by experienced, qualified personnel in accordance with manufacturer's instructions and procedures.

.6 Decommissioning/Dismantling:

- .1 Decontaminate, remove and recover salvageable components of water filtering plant including water filtering system, pumps, piping, and electrical equipment.
- .2 Dispose of non-salvageable equipment and materials at approved off-site disposal facility as directed by Departmental Representative. Decontaminate salvageable equipment within facility area as required prior to removal from site.

1.9 WASTEWATER STORAGE TANK

- .1 Provide, operate, and maintain wastewater storage tanks to store wastewaters.
- .2 Wastewater includes water collected from dewatering operations (as per requirements of sewer discharge agreement) and water collected from Equipment Decontamination Facility.
- .3 Discharges: comply with applicable discharge limitations and requirements (as per municipal sewer discharge agreement); do not discharge wastewaters to site sewer systems that do not conform to or are in violation of such limitations or requirements; and obtain Departmental Representative's approval prior to discharge of wastewater.
- .4 Provide pumps and piping to convey collected wastewaters to designated wastewater storage tanks; provide wastewater storage tanks of adequate volume, such that effluent quality can be analyzed and approved prior to discharge to municipal sewer system, as required by sewer discharge agreement.
- .5 Install wastewater storage tanks in locations as indicated by Departmental Representative.
- .6 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.
- .7 Do not operate wastewater storage tanks until inspected and approved by Departmental Representative.
- .8 Notify Departmental Representative a minimum of 72 hours in advance of when wastewater storage tank is anticipated to be full.
 - .1 Do not discharge additional liquids to filled tank following sampling by Contractor.
 - .2 Contractor will determine appropriate disposal of wastewaters based on sample analysis, for approval by Departmental Representative.
- .9 Transport and dispose of wastewaters generated by equipment decontamination pad at off-site disposal facility as identified by Contractor and approved by Departmental Representative. Discharge pumped excavation water to on-site sanitary sewer as per approved City of Ottawa sewer discharge agreement and as approved by Departmental Representative.
- .10 Transporting and disposing of decontamination pad wastewaters to off-site disposal facility will not be measured separately for payment.

1.10 VEHICULAR ACCESS AND PARKING

- .1 Maintenance and Use:
 - .1 Prevent contamination of access roads. Immediately scrape up debris or material on access roads which is suspected to be contaminated as indicated by Departmental Representative; transport and place into designated area approved by Departmental Representative. Clean access roads at least once per shift.
 - .2 Departmental Representative may collect soil samples for chemical analyses from traveling surfaces of constructed and existing access routes prior to, during, and upon completion of Work. Excavate and dispose of clean soil contaminated by Contractor's activities at no additional cost to project.
- .2 Parking will be allowed only within work area.

1.11 DUST AND PARTICULATE CONTROL

- .1 Execute Work by methods to minimize raising dust from construction operations.
- .2 Implement and maintain dust and particulate control measures immediately.
- .3 Provide positive means to prevent airborne dust from dispersing into atmosphere. Use potable water for water misting system for dust and particulate control.
- .4 Use chemical means for water misting system for dust and particulate control only with Departmental Representative's prior written approval.
- .5 As a minimum, use appropriate covers on trucks hauling fine or dusty material. Use watertight vehicles to haul wet materials.
- .6 Prevent dust from spreading to adjacent properties.
- .7 Departmental Representative will stop work at any time when Contractor's control of dust and particulates is inadequate for wind conditions present at the site, or when air quality monitoring indicates that release of fugitive dust and particulates into atmosphere equals or exceeds specified levels.
- .8 If Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. Contractor must discuss procedures, with Departmental Representative, that Contractor proposes to resolve problem. Contractor to make necessary changes to operations as agreed upon with Departmental Representative prior to resuming excavation, handling, processing, or other work that may cause release of dusts or particulates.
- .9 Department Representative will be responsible for dust monitoring.

1.12 POLLUTION CONTROL

- .1 Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious toxic substances and pollutants produced by construction operations.
- .2 Be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water. Maintain materials and equipment required for cleanup of spills or releases readily accessible on site.

- .3 Promptly report spills and releases potentially causing damage to environment to:
 - .1 Departmental Representative.
 - .2 Authority having jurisdiction or interest in spill or release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
 - .3 Owner of pollutant, if known.
 - .4 Person having control over pollutant, if known.
- .4 Contact manufacturer of pollutant if known and ascertain hazards involved, precautions required, and measures used in cleanup or mitigating action.
- .5 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.
- .6 Provide spill response materials including, containers, adsorbent, shovels, and personal protective equipment. Make spill response materials available at all times in which impacted soil and groundwater or wastes are being handled or transported. Spill response materials must be compatible with type of material being handled.

1.13 EQUIPMENT DECONTAMINATION

- .1 Commence Work involving equipment contact with potentially contaminated material only after Equipment Decontamination Pad is operational and approved by Departmental Representative.
- .2 Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.
- .3 Perform equipment decontamination on Contractor-constructed equipment decontamination pad.
- .4 At a minimum, perform following steps during equipment decontamination: mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce amount of water needed and to reduce amount of contaminated rinsate generated. Use high-pressure, low-volume, hot water or steam supplemented by detergents or solvents as appropriate and as approved by Departmental Representative. Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages. Scrub surfaces with long handled scrub brushes and a cleaning agent. Rinse off and collect cleaning agent. Air dry equipment in Clean Zone before removing from site or travelling on clean areas. Perform assessment as directed by Departmental Representative to determine effectiveness of decontamination.
- .5 Maintain inspection records on site which include: equipment descriptions with identification numbers or license plates; time and date entering decontamination facility; time and date exiting decontamination facility; and name of inspector with comment stating that decontamination was performed and completed.

- .6 Each piece of equipment may be inspected by Departmental Representative after decontamination and prior to removal from site and/or travel on clean areas. Departmental Representative will have right to require additional decontamination to be completed if deemed necessary.
- .7 Take appropriate measures necessary to minimize drift of mist and spray during decontamination, including provision of wind screens.
- .8 Collect decontamination wastewaters and sediments which accumulate on equipment decontamination pad. Transfer wastewaters to designated wastewater storage tank.
- .9 Dispose of sediments per Ontario Regulation 406/19
- .10 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.
- .11 Regarding the equipment decontamination pad dewatering, have on hand sufficient pumping equipment, of adequate pumping capacity and associated machinery and piping in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment. Maintain piping and connections in good condition and leak-free.

1.14 WATER CONTROL AND DEWATERING

- .1 Employ construction methods, dewatering methods, plant procedures, and precautions that ensure Work, including, without limitation, excavations, structures, foundations, and work areas are stable, free from disturbance, and dry.
- .2 Protect site from puddling or running water. Grade site to drain. Provide water barriers as necessary to protect site from soil erosion.
- .3 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.
- .4 Dewatering Methods: includes sheeting and shoring; groundwater control systems; surface or free water control systems employing ditches, diversions, drains, pipes and/or pumps; and other measures necessary to enable Work to be carried out in dry conditions.
- .5 Provide, operate, and maintain necessary equipment, including standby equipment, appropriately sized to keep excavations, staging pads, and other work areas free from water.
- .6 Prevent surface water runoff from leaving work areas.
- .7 Prevent precipitation from infiltrating or from directly running off stockpiled waste materials. Cover stockpiled waste materials with an impermeable liner during periods of work stoppage including at end of each working day and as directed by Departmental Representative. Contain water from stockpiled waste materials. Transfer potentially contaminated surface waters to wastewater storage tanks.

- .8 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.
- .9 Control surface drainage including ensuring that gutters are kept open, water is not directed across or over pavements or sidewalks except through approved pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to suitable outlet.
- .10 Do not discharge decontaminated water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated material, off-site or to municipal sewers (other than those so designated and approved by Departmental Representative).
- .11 Contain and collect wastewaters and transfer such collected wastewaters to Contractor - supplied wastewater storage tanks.
- .12 Contractor is responsible for testing and analyzing water generated from dewatering activities and treating it to meet required sewer discharge limits.
- .13 Dispose of water in manner not injurious to public health or safety, to property, or to any part of Work completed or under construction, and as per the City of Ottawa sewer discharge agreement.
- .14 The Contractor shall conduct all dewatering and discharge of water in accordance with MEC Requirements, the City of Ottawa Sewer Discharge Agreement and City of Ottawa Sewer Use By-Law.

1.15 EROSION AND SEDIMENT CONTROL

- .1 Plan and execute construction by methods to control surface drainage from cuts and fills, from stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation in accordance with the Erosion and Sediment Control Plan prepared by the Contractor and approved by the Departmental Representative.
- .2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise develop to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.
- .3 Provide and maintain temporary measures which may include: silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction. Place silt fences and/or hay or straw bales in ditches to prevent sediments from escaping from ditch terminations.
- .4 Plan construction procedures to avoid damage to work or equipment encroachment onto water bodies or drainage ditch banks. In the event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.

- .5 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- .6 If soil and debris from site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where in Departmental Representative's determination it is undesirable, remove accumulation and restore area to original condition.

1.16 PROGRESS CLEANING

- .1 Maintain cleanliness of Work and surrounding site to comply with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.
- .2 Co-ordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.17 FINAL DECONTAMINATION

- .1 Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.
- .2 Perform decontamination as specified to satisfaction of Departmental Representative. Departmental Representative will direct Contractor to perform additional decontamination if required.

1.18 REMOVAL AND DISPOSAL

- .1 Remove surplus materials and temporary facilities from site.
- .2 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site.
- .3 Do not burn or bury rubbish and waste materials on site.
- .4 Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
- .5 Do not discharge wastes into streams or waterways.
- .6 Dispose of following materials at appropriate off-site facility identified by Contractor and approved by Departmental Representative:
 - .1 All PHC-impacted soils to a licensed landfill.
 - .2 Debris including excess construction material.
 - .3 Non-contaminated litter and rubbish.
 - .4 Disposable PPE worn during final cleaning.
 - .5 Wastewater removed from wastewater storage tank.
 - .6 Wastewater generated from final decontamination operations including wastewater storage tank cleaning.
 - .7 Lumber from decontamination pads.
- .7 Dispose of materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management.

- .8 Wastewater sample and analysis: Contractor will perform sampling and analysis of stored wastewater for disposal purposes prior to removal from site. Results of analyses will determine appropriate methods of disposal. Upon receipt of analytical results, transfer tank contents without spills or release, as approved by Departmental Representative, to liquid waste tankers or off-site disposal facility for disposal in accordance with the Waste Water Management Plan. Following completion of tank emptying, decontaminate tank interior with steam or high-pressure water wash supplemented by detergent. Dispose of tank decontamination water with tank contents.
- .9 Minimize generation of contaminated waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
- .10 Dispose of PHC-impacted soils off of the site in accordance with Drawing EN-100 Environmental Soil and Groundwater Management Plan.

1.19 RECORD KEEPING

- .1 Maintain adequate records to support information provided to Departmental Representative.
- .2 Maintain bills of lading for minimum of 375 days from date of shipment or longer period required by applicable law or regulation.

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 1 General**1.1 REFERENCES**

- .1 CSA Group
 - .1 CSA Z462-18, Workplace Electrical Safety.
 - .2 CSA Z460:20, Control of Hazardous Energy - Lockout and Other Methods.
- .2 Province of Ontario.
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990. October 2019 edition.
- .3 National Research Council Canada
 - .1 National Building Code of Canada 2020

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit electronic copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.
- .4 The Constructor shall immediately advise the Departmental Representative of any visit to the site by Federal and Provincial authorities, or health and safety inspectors, and Submit copies of reports or directions issued by such authorities within 24 hours after the visit to the Departmental Representative.
- .5 The Constructor shall immediately advise the Departmental Representative of any incident, accident, injury, near-miss, fire, explosion or chemical spill occurring at the work site, and submit copies of incident and accident reports within 24 hours after the event to the Departmental Representative.
- .6 Submit WHMIS SDS - Material Safety Data Sheets.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 7 days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.

- .10 Submit to the Departmental Representative for review: one (1) complete Hazard Assessment Site Specific Health and Safety Plan (HASSSP) in an index format, and in a three ring binder. Once the Departmental Representative has review and accepts the HASSSP binder the Departmental Representative will return to the contractor for site use.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.6 PROJECT/SITE CONDITIONS

- .1 Work on site will involve contact with hazardous materials and products as identified in Section 01 14 25 - Designated Substances Report (DSR) and Appendix B.

1.7 CONFINED OR ENCLOSED SPACES

.1 Service Tunnel:

- .1 Perform site specific confined space hazard assessment. Follow control measures indicated in assessment, and as indicated below.
- .2 Entry into confined or enclosed spaces, where there is limited egress, shall be controlled by a permit system. Permits shall be signed by an authorized representative of the employer and shall certify that appropriate measures have been taken to prevent adverse effects on the worker's health as a result of his or her entry into such space.

- .3 Confined or enclosed spaces which have contained contaminants shall be thoroughly ventilated to assure an adequate supply of oxygen, tested for contaminants, and inspected for compliance with these requirements prior to each entry. Adequate ventilation shall be maintained while workers are in such spaces. Each individual entering such confined or enclosed space shall be furnished with appropriate personal protective equipment and clothing and be connected by a lifeline harness to a standby workers stations outside of the space. The standby worker shall also be equipped for entry with approved personal protective equipment and clothing and have contact with a third person. The standby person shall maintain communication (visual, voice, signal line, telephone, radio, or other suitable means) with the employee inside the confined or enclosed space.
- .4 Comply with all applicable provincial and federal regulations.
- .5 Workers entering confined spaces and standby workers shall be trained at a recognized confined space training program.
 - .1 Submit list of personnel and valid confined spaces training certificate to Departmental Representative in accordance with Section 01 00 10 – General Instructions prior to undertaking any confined space work.

1.8 HAZARDOUS MATERIALS

- .1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and the provision of Material Safety Data Sheets (SDS) per O. Reg 860, most current edition.
- .2 Demolition of asbestos can be hazardous to health. Should material resembling spray or trowel applied asbestos be encountered in the course of demolition, stop work, take preventative measures, and notify Departmental Representative immediately. Do not proceed until written instructions have been received

1.9 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.10 RESPONSIBILITY

- .1 Be responsible and assume the role of "Constructor" as described in the Ontario Occupational Health & Safety Act and the Regulations for Construction projects.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Appoint a supervisor who is an employee of the contractor to be present and available at all times for the duration of the project.

1.11 COMPLIANCE REQUIREMENTS

- .1 Comply with the Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and with the Ontario Regulations for Construction Projects, O. Reg. 213/91. Current edition.
- .2 Comply with NBC 2015 (Part 8, Safety Measures at Construction and Demolition Sites).

- .3 For work in occupied buildings provide the Departmental Representative a minimum of 48 hours notice for work involving designated substances, hazardous substances and before commencing any painting, caulking, installing carpet or using adhesives.
- .4 Comply with the Health and Safety requirements of CSA Z462 – Workplace Electrical safety.
- .5 Comply with the Health and Safety requirements of CSA Z460 – Control of Hazardous Energy.

1.12 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factors, hazards, or conditions occur during performance of Work, stop work and immediately notify the Departmental Representative verbally and in writing.

1.13 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province, and in consultation with Departmental Representative.

1.14 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.16 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
- .2 Assign responsibility and obligation to Health and Safety Officer to stop or start Work when, at Health and Safety Officer's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

1.17 ACCIDENT AND INCIDENT REPORTS

- .1 The Contractor shall advise the Departmental Representative of any accident, injury, near-miss incident, fire, explosion or chemical spill occurring at the Work site and any visit to the site by a governmental enforcement official. The contractor shall provide a written report within 24 hours of any accident, injury, near-miss incident, fire, explosion or chemical spill.

Part 2 Products**2.1 NOT USED****Part 3 Execution****3.1 NOT USED****END OF SECTION**

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Part 1 - General**1.1 REFERENCES**

- .1 Province of Ontario
 - .1 Occupational Health and Safety Act, R.S.O. (2004).
- .2 Canada Labour Code, Canada Occupational Safety and Health Regulations (2002).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan in accordance with Section 01 35 29.06 – Health and Safety Requirements. Site-specific Health and Safety Plan should also address following items:
 - .1 Develop checklist for items to be inspected on a daily basis. Document actions taken.
 - .2 Personnel training requirements including:
 - .1 Names of personnel and alternates responsible for site safety and health, hazards present on the site, and use of personal protective equipment.
 - .2 Work practices by which personnel can minimize risks from hazards, safe use of engineering controls and equipment on site, medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards, and elements of site-specific Health and Safety Plan.
 - .3 Personal protective equipment (PPE) program addressing:
 - .1 Donning and doffing procedures.
 - .2 PPE selection based upon site hazards.
 - .3 PPE use and limitations of equipment.
 - .4 Work mission duration, PPE maintenance and storage.
 - .5 PPE decontamination and disposal.
 - .6 PPE inspection procedures prior to, during, and after use.
 - .7 Evaluation of effectiveness of PPE program, and limitations during temperature extremes, and other appropriate medical considerations.
 - .8 Medical surveillance requirements for personnel assigned to work at site.
 - .9 Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.
 - .10 Site control measures employed at site including site map, site work zones, use of 'buddy system', site communications including site security, alerting means for emergencies, standard operating procedures or safe work practices, and identification of nearest medical assistance.

- .11 Decontamination procedures for both personnel and equipment.
 - .12 Emergency response requirements addressing: pre-emergency planning, personnel roles, lines of authority and communication, emergency recognition and prevention, safe distances and places of refuge, site security and control, evacuation routes and procedures, decontamination procedures not covered under decontamination section, emergency medical treatment and first aid, emergency alerting and response procedures, critique of response and follow-up, PPE and emergency equipment, site topography, layout, prevailing weather conditions, and procedures for reporting incidents to local, provincial, or federal agencies.
 - .13 Written respiratory protection program for project activities.
 - .14 Procedures for dealing with heat and/or cold stress.
 - .15 Confined space entry procedures.
 - .16 Spill containment program if drummed waste material is generated, excavated, stored, or managed on site.
 - .17 Procedures for dealing with impacted soils and groundwater.
- .3 Departmental Representative will review Contractor's site-specific Health and Safety Plan as indicated in Section 01 35 29.06 – Health and Safety Requirements.

1.3 REGULATORY REQUIREMENTS

- .1 Comply with specified standards and regulations to ensure safe operations at site containing impacted soils and groundwater.

1.4 SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Soils impacted by petroleum hydrocarbons (PHC) and polycyclic aromatic hydrocarbons (PAH).
 - .2 Groundwater impacted by PHC (fraction 2), PAH, benzene, sulphate, nitrate and metals.

1.5 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan prior to commencing site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Ensure Health and Safety guidelines provide for safe and minimal risk working environment for site personnel and minimize impact of activities involving contact with hazardous materials or hazardous wastes on general public and surrounding environment.
- .3 Relief from or substitution for portion or provision of minimum Health and Safety Guidelines specified or reviewed site-specific Health and Safety Plan must submitted to Departmental Representative in writing. Departmental Representative will respond in writing, either accepting or requesting improvements.

1.6 RESPONSIBILITY

- .1 Be responsible for safety of persons and property on the site and for protection of persons off of the site and environment to extent that they may be affected by the conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.7 HAZARD COMMUNICATION REQUIREMENTS

- .1 Comply with Workplace Hazardous Materials Information System (WHMIS) Regulation, R.R.O.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations, Part X - Hazardous Substances.
- .3 Provide Departmental Representative with Material Safety Data Sheets (MSDS) and documentation on any "hazardous" chemical that Contractor or Contractor Representatives plan to bring onto site.

1.8 WORK STOPPAGE

- .1 Refer to Section 01 35 29.06 – Health and Safety Requirements.

1.9 UNFORESEEN HAZARDS

- .1 Refer to Section 01 35 29.06 – Health and Safety Requirements.

1.10 HEALTH AND SAFETY OFFICER AND REGISTERED OCCUPATIONAL HYGIENIST / CERTIFIED INDUSTRIAL HYGIENIST

- .1 Refer to Section 01 35 29.06 – Health and Safety Requirements.

1.11 PERSONNEL HEALTH, SAFETY, AND HYGIENE

- .1 Medical Surveillance:
 - .1 Refer to Section 01 35 29.06 – Health and Safety Requirements.
- .2 Training: ensure personnel entering the site are trained in accordance with specified personnel training requirements. Training session must be completed by Health and Safety Officer.
- .3 Levels of Protection: based on the level of contaminants found in the soils and groundwater, the level of protection required is Level D:
 - .1 Head, Eye, Ear, Feet Protection: hard hat, safety glasses or goggles, ear muffs or plugs, safety boots.
 - .2 Hand protection: appropriate gloves (work gloves, disposable nitrile gloves, etc.) to be worn when work involves direct contact with impacted soil or groundwater or with potentially contaminated equipment/tools/materials.
 - .3 Clothing: standard work uniform or coveralls.

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- .4 Personal Protective Equipment:
 - .1 For work involving impacted soils and groundwater, furnish site personnel with appropriate PPE as specified above. Ensure that safety equipment and protective clothing are kept clean and maintained.
 - .5 Develop protective equipment usage procedures and ensure that procedures are strictly followed by site personnel; include following procedures as minimum:
 - .1 Ensure that prescription eyeglasses worn are safety glasses and do not permit contact lenses on the site within work zones.
 - .2 Ensure that footwear is steel-toed safety shoes or boots and is covered by rubber overshoes when entering or working in potentially contaminated work areas.
 - .3 Dispose of or decontaminate PPE worn on the site the at end of each workday.
 - .4 Decontaminate reusable PPE before reissuing.
 - .5 Ensure that site personnel have passed respirator fit test prior to entering potentially contaminated work areas.
 - .6 Ensure that facial hair does not interfere with proper respirator fit.
 - .6 Respiratory Protection:
 - .1 No special respiratory protection is anticipated for impacted soil and groundwater management.
 - .2 Immediately notify Departmental Representative when the level of respiratory protection required increases.
 - .3 Ensure that there is appropriate respiratory protection during work activities. As a minimum requirement, ensure that persons entering potentially contaminated work areas are supplied with and use appropriate respiratory protection.
 - .4 Assess ability for site personnel to wear respiratory protection.
 - .5 Ensure that site personnel are able to pass respirator fit test prior to entering potentially contaminated work areas.
 - .7 Heat Stress/Cold Stress: implement heat stress/cold stress monitoring program as applicable and include in site-specific Health and Safety Plan.
 - .8 Personnel Hygiene and Personnel Decontamination Procedures. Provide minimum as follows:
 - .1 Suitable containers for storage and disposal of used disposable PPE.
 - .2 Potable water and suitable sanitation facility.
 - .9 Emergency and First-Aid Equipment:
 - .1 Locate and maintain emergency and first-aid equipment in appropriate location on the site including first-aid kit to accommodate number of site personnel; portable emergency eye wash; two 9 kg ABC type dry chemical fire extinguishers.
 - .2 2 self-contained breathing apparatus units; blankets and towels; stretcher; and 1 hand-held emergency siren.

- .3 As minimum, provide 1 certified first-aid technician on the site at all times when work activities are in progress.

.10 Site Communications:

- .1 Post emergency numbers near site telephones.
 - .2 Ensure that personnel use "buddy" system and develop hand signal system appropriate for site activities.
 - .3 Provide employee alarm system to notify employees of site emergency situations or to stop Work activities if necessary.
 - .4 Furnish selected personnel with 2-way radios.
 - .5 Safety Meetings: conduct mandatory daily safety meetings for personnel, and additionally as required by special or work-related conditions; include refresher training for existing equipment and protocols, review on-going safety issues and protocols, and examine new site conditions as encountered. Hold additional safety meetings on an as-needed basis.
- .11 Custodian: employ and assign to Work Custodian to report directly to Health and Safety Officer and who is responsible for keeping safety equipment and facilities clean, properly equipped, and maintained. Custodian may perform other duties for Contractor but Custodian's first priority is maintenance of protective equipment and personnel decontamination area.

1.12 DUST MONITORING

- .1 Dust monitoring will be performed by the Departmental Representative.
- .2 During progress of work activities, dust monitoring will be conducted in and around work zones. Monitoring will be conducted on a regular periodic basis, and additionally as required by special or work-related conditions.

1.13 CONTINGENCY AND EMERGENCY RESPONSE

- .1 Not used.

1.14 SITE CONTROL

- .1 Not used.

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 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 humans; or degrade the environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

.2 Reference Standards:

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water.
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
- .2 Transportation and Dangerous Goods Act (1999).
- .3 Canadian Council of Ministers of the Environment (CCME) Documentation. Ontario
- .4 Provincial Standard Specifications and Drawings (OPSS 805), Light-Duty Silt Fence Barrier, OPSD-219.110.
- .5 City of Ottawa Sewer Use By-Law 2003-514.
- .6 Ontario Ministry of the Environment, Conservation and Parks (MECP)
 - .1 Ontario Regulation 387, as amended – Water Taking.
 - .2 Ontario Regulation 903, as amended – Wells.
 - .3 Ontario Regulation 153, as amended – Record of Site Condition – Part XV.1 of the Act, and Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act.
 - .4 Ontario Regulation 406/19 - Onsite and Excess Soil Management
 - .5 Environmental Activity and Sector Registry (EASR).

1.2 MEASUREMENT PROCEDURES

- .1 Quantities of pumped excavation water temporarily stored on the site will be measured using a flow meter and paid based on the unit prices stated in the Bid and Acceptance Form.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 – Health and Safety Requirements.

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- .3 Before commencing demolition activities or delivery of materials to site, submit Environmental Protection Plan for review by Departmental Representative.
 - .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during demolition work.
 - .5 Address topics at level of detail commensurate with environmental issue and required demolition tasks.
 - .6 Include in Environmental Protection Plan:
 - .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Name(s) and qualifications of person(s) responsible for manifesting hazardous materials as well as impacted soil and groundwater to be removed from site.
 - .3 Name(s) and qualifications of person(s) responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training programs.
 - .5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations and EPA 832/R-92-005, Chapter 3.
 - .6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, ingress and egress roads, material storage areas, waste waters storage tanks, structures, sanitary facilities, and stockpiles of demolition materials including methods to control runoff and to contain materials on the site.
 - .7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans to include:
 - .1 Measures to minimize amount of material transported onto paved public roads by vehicles or runoff (i.e., decontamination pad).
 - .2 Location and configuration of site entrances.
 - .3 Truck queuing and parking.
 - .4 Dust control and mud-tracking prevention/truck cleaning.
 - .5 Haul routes between source and receiving sites (including any temporary storage or transfer sites).
 - .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within the authorized work areas.
 - .9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .10 Non-Hazardous solid waste disposal plan to identify methods and locations for solid waste disposal including clearing debris.
 - .11 Air pollution control plan to detail provisions to assure that dust, debris, materials, and trash, are contained on project site.

- .12 Contaminant Prevention Plan to identify 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.
- .13 Waste Water Management Plan identifying methods and procedures for management and/or discharge of waste waters which are directly derived from excavation dewatering activities, decontamination pad use, construction activities, such as concrete curing water, clean-up water, dewatering of groundwater, disinfection water, hydrostatic test water, and water used in flushing lines.
 - .1 Including a Contingency Plan which will be triggered in the event of the following: the effluent becomes non-compliant; the daily volume limit is approached or exceeded; the flow rate exceeds the maximum discharge flow rate; or, the discharge pump fails.
 - .2 The system must be easily reconfigured so that the water is treated properly so that there are no exceedances of the sewer use limits.
 - .3 The treatment system must be monitored closely at the start of pumping to determine what the expected daily volumes and maximum flow rates will be. It is expected that the flow rates will be the highest during the first few days with the flow rate stabilizing in the longer term.
 - .4 If wet weather conditions (i.e., rain) don't allow for discharge to the sanitary sewer, excavation water should be pumped into temporary holding tanks. Also, a licensed waste carrier could be used to remove the water from the site, however this work will not be measured separately for payment.
- .14 Historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

1.4 FIRES

- .1 Fires and burning of rubbish are not permitted on the site.
- .2 Provide supervision, attendance and fire protection measures as directed.

1.5 DRAINAGE

- .1 Develop and submit an Erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3.
- .2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.
- .3 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

- .4 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .5 Provide temporary drainage and pumping as necessary to keep excavations and site free from water. Refer to section 31 23 33.01 – Excavating, Trenching and Backfilling for dewatering requirements.
- .6 Provide temporary drainage, pumping and storage required to keep excavations and site free from water.
- .7 Accumulated and pumped water and waste waters to be managed as per Section 01 35 13.43 – Special Project Procedures for Contaminated Sites.
- .8 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials, following approval from Departmental Representative and authorities having jurisdiction.
- .9 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 SITE CLEARING AND PLANT PROTECTION

- .1 Refer to Section 32 01 90.33 – Tree and Shrub Preservation.
- .2 Protect trees and plants on the site and adjacent properties as indicated.
- .3 Protect trees and shrubs adjacent to demolition work, storage areas and trucking lanes, as indicated.
- .4 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
 - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .5 Minimize stripping of topsoil and vegetation.
- .6 Restrict tree removal as indicated and approved by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

- .1 Not Used.

1.8 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where indicated by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 FUEL AND OIL MANAGEMENT

- .1 Exercise care in handling of fuels to minimize the potential for fuel spills. Report immediately any fuel spills to Departmental Representative. Contractor is responsible for any clean up or repair resulting from any spills.
- .2 Prepare a spill contingency plan to address potential spill material, response actions and a spill response contact list.
- .3 Provide spill kits and containment for any stationary equipment (e.g., drip pans).

1.10 HISTORICAL/ARCHAEOLOGICAL CONTROL

- .1 Not Used.

1.11 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed non-compliance 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.
 - .1 Take action only after receipt of written 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 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Do not bury rubbish and/or any waste materials on the site.
- .3 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

- .5 Petroleum hydrocarbon (PHC) impacted soil: dispose of all excavated PHC-impacted topsoil and subsoil at appropriate MECP-licensed facility, as approved by Departmental Representative.
- .6 Waste waters: dispose of all accumulated/stored waste waters at appropriate licensed facility or discharge into municipal sewer, as per sewer discharge agreement, as approved by Departmental Representative.
- .7 Waste Management: manage in accordance with Section 01 74 21 – Construction/Demolition Waste Management.
 - .1 Remove recycling containers and bins from the site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General**1.1 INSPECTION**

- .1 Allow Departmental Representative or designated 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 or law of Province 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 any 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 an orderly sequence so as not to cause delay 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, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall 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, manufacturer or fabricator of material being inspected or tested.

1.7 TESTS AND MIX DESIGNS

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

1.8 MILL TESTS

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

1.9 EQUIPMENT AND SYSTEMS

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

Part 2 Products**2.1 NOT USED****Part 3 Execution****3.1 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. Conform to referenced standards, in whole or in part as specifically requested in specifications. Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.
- .2 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .3 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 any dispute 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 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, lumber and moisture sensitive materials 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. Do not paint over name plates.

1.4 TRANSPORTATION

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

1.5 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 may 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.

1.6 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.
- .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.

1.7 CO-ORDINATION

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

1.8 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.

1.9 REMEDIAL WORK

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

1.10 LOCATION OF FIXTURES

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

1.11 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 organic material 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.

1.12 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.

1.13 PROTECTION OF WORK IN PROGRESS

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

1.14 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 building occupants. Protect 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 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide 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 any element of Project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Departmental Representative 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 Date and time work will be executed.

1.2 PREPARATION

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

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction / Demolition Waste Management.

Part 2 Products**2.1 MATERIALS**

- .1 Provide materials as required for original installation. Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

Part 3 Execution**3.1 EXECUTION REQUIREMENTS**

- .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. Remove samples of installed Work for testing.
- .5 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .6 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .7 Cut rigid materials using masonry saw or core drill.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

END OF SECTION

Part 1 General**1.1 PROJECT CLEANLINESS**

- .1 Remove waste materials and debris from site at regularly scheduled times and deposit in waste containers at end of each working day or as often as required to prevent a hazardous condition from arising. Remove waste materials more frequently as directed by Departmental Representative to ensure a clean and orderly work site.
- .2 Do not burn waste materials on site.
- .3 Be responsible for snow removal within construction zone and maintain adequate access and egress to the building in accordance with applicable legislation.
- .4 Provide on-site containers for collection of waste materials and debris. Provide appropriate sized disposal bins and locate bins on site where directed by Departmental Representative. Empty waste disposal bins daily or more frequently at times as directed by Departmental Representative.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. Dispose of waste materials and debris at designated dumping areas off site.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed and prior to final review, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work. Remove waste products and debris other than that caused by others, and leave Work clean and suitable.
- .2 Remove stains, spots, marks and dirt from decorative work, and existing to remain elements.
- .3 Clean existing and new light standards.
- .4 Broom clean and wash exterior walks, steps and surfaces. Rake clean other surfaces of grounds. Sweep and wash clean paved areas. Remove dirt and other disfiguration from exterior surfaces. Remove snow and ice.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction / Demolition Waste Management.
- .2 Provide and use clearly marked separate bins for recycling.

Part 2 Products**2.1 NOT USED****Part 3 Execution****3.1 NOT USED****END OF SECTION**

Part 1 General**1.1 RELATED REQUIREMENTS**

- .1 Section 02 41 00.08 – Demolition for Minor Works.
- .2 Section 02 41 16 – Structure Demolition.

1.2 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss Departmental Representatives Waste Management Plan and Goals.
- .2 Waste Management Goal: 75 percent of total Project Waste to be diverted from landfill sites. Provide Departmental Representative with documentation certifying that waste management, recycling, use of recyclable materials have been extensively practiced.
- .3 Accomplish maximum control of solid construction waste.
- .4 Preserve environment and prevent pollution and environment damage.

1.3 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Cost / Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.
- .3 Demolition Waste Audit (DWA): relates to actual waste generated from project.
- .4 Inert Fill: inert waste. Exclusively asphalt and concrete.
- .5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate recyclable waste material into material categories from other types of waste at point of generation.
- .6 Recyclable: ability of product or material to be recovered and re-manufactured into new product for reuse.
- .7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .8 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.
- .9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes: Returning reusable items including pallets or unused products to vendors.
- .10 Separate Condition: refers to waste sorted into individual types.
- .11 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.
- .12 Demolition Waste Audit (DWA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

- .13 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .14 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from DWA (Schedule A).

1.4 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Demolition Waste Audit (DWA)-Schedule A.
 - .2 Waste Reduction Workplan (WRW)-Schedule B.
 - .3 Material Source Separation Plan.
 - .4 Schedules A and B, completed for project.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up.
 - .1 Submit 2 copies of completed Demolition Waste Audit: Schedule A.
 - .2 Submit 2 copies of completed Waste Reduction Workplan: Schedule B.
 - .3 Submit 2 copies of Cost/Revenue Analysis Workplan: Schedule D.
 - .4 Submit 2 copies of Materials Source Separation Program plan.
- .3 Submit before final payment a complete summary of waste materials salvaged for reuse, recycling or disposal by project.
 - .1 Failure to submit could result in hold back of final payment.
 - .2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.
 - .3 For each material reused, sold or recycled from project, include amount in tonnes quantities by number, type and size of items and the destination.
 - .4 For each material land filled or incinerated from project, include amount in tonnes of material and identity of landfill, incinerator or transfer station.

1.6 DEMOLITION WASTE AUDIT (DWA)

- .1 Conduct DWA prior to project start-up.
- .2 Prepare DWA: Schedule A.
- .3 Record, on DWA - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

1.7 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare WRW prior to project start-up.
- .2 WRW should include but not limited to:
 - .1 Destination of materials listed.
 - .2 Location.

- .3 Security.
- .4 Protection.
- .5 Clear labelling of storage areas.
- .6 Details on materials handling and removal procedures.
- .7 Quantities for materials to be reused or recycled and materials sent to landfill.
- .3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.
- .4 Describe management of waste.
- .5 Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.
- .6 Post WRW or summary where workers at site are able to review content.
- .7 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.
- .8 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.8 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

- .1 Prepare CRAW: Schedule D.

1.9 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 as directed by Departmental Representative, 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 separate condition. Transport to approved and authorized recycling facility.
- .8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.
 - .1 Ship materials to site operating under Certificate of Approval.
 - .2 Materials must be immediately separated into required categories for reuse or recycling.

1.10 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused and salvaged in locations as directed by Departmental Representative.
- .2 Protect surface drainage, mechanical and electrical from damage and blockage.

- .3 Prevent contamination of materials to be 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.

1.11 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 Keep records of construction waste including:
 - .1 Number and size of bins. Waste type of each bin.
 - .2 Total tonnage generated. Tonnage reused or recycled.
 - .3 Reused or recycled waste destination.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.12 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. Provide temporary security measures approved by Departmental Representative.

1.13 SCHEDULING

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 APPLICATION

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

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Departmental Representative, and consistent with applicable fire regulations.
- .1 Mark containers or stockpile areas.
- .2 Provide instruction on disposal practices.
- .2 On-site sale of reusable or recyclable materials is not permitted.
- .3 Construction Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	[]
Plastic Packaging	100	[]
Rubble	100	[]
Steel	100	[]
Wood (uncontaminated)	100	[]
Other		[]

3.4 DEMOLITION WASTE AUDIT

- .1 Schedule A - Demolition Waste Audit (DWA):

(1) Material Description	(2) Quantity	(3) Unit	(4) Total	(5) Volume (cum)	(6) Weight (cum)	(7) Remarks and Assumptions
Wood						
Wood Stud						
Plywood						
Baseboard-Wood						
Door Trim - Wood						
Cabinet						
Doors and Windows						
Panel Regular						
Slab Regular						
Wood Laminate						
Byfold - Closet						
Glazing						

3.5 WASTE REDUCTION WORKPLAN (WRW)**.1 Schedule B**

(1) Material Category	(2) Person Responsible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material Destination
Wood and Plastics							
Chutes							
Warped Pallet Forms							
Plastic Packaging							
Card-board Packaging							
Other							
Doors and Windows							
Painted Frames							
Glass							
Wood							
Metal							
Other							

3.6 COST/REVENUE ANALYSIS WORKPLAN (CRAW)**.1 Schedule D - Cost/Revenue Analysis Workplan (CRAW)**

(1) Material Description	(2) Total Quantity (unit)	(3) Volume (cum)	(4) Weight (cum)	(5) Disposal Cost/Credit \$(+/-)	(6) Category Sub-Total \$(+/-)
Wood					
Wood Stud					
Plywood					
Baseboard - Wood					
Door Trim - Wood					
Cabinet					
Doors and Windows					
Panel Regular					
Slab Regular					
Wood Laminate					
Bi fold - Closet					
Glazing					
		(7) Cost (-) / Revenue (+)			

END OF SECTION

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Part 1 General**1.1 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned after final inspection, with Departmental Representative's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, two draft copies of operating and maintenance manuals in English.
- .6 Make revisions to operating and maintenance manuals as per comments provided by Departmental Representative. Submit 4 final copies and 2 digital copies of operating and maintenance manuals in both English and French.
- .7 If requested, furnish evidence as to type, source and quality of products provided.
- .8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .9 Pay costs of transportation.

1.2 FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: 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. 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. Bind in with text; fold larger drawings to size of text pages.

1.3 CONTENTS - EACH VOLUME

- .1 Table of Contents:
 - .1 Provide title of project.
 - .2 Date of submission.
 - .3 Names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .4 Schedule of products and systems, indexed to content of volume.

- .2 For each product or system: 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 clearly 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. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.4 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the 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. 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. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.5 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings provided by Departmental Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

- .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
- .4 Field changes of dimension and detail.
- .5 Changes made by change orders.
- .6 Details not on original Contract Drawings.
- .7 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents. Maintain manufacturer's certifications, inspection certifications, field test records, and other documentation as required by individual specifications sections.
- .7 Provide 2 hard copies of CCTV scan of west storm sewer to Departmental Representative both before and after work.

1.6 MATERIALS AND FINISHES

- .1 Building Products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Include 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 specification sections.

1.7 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's 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 and submit upon acceptance of work. 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 Departmental Representative'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, and landscaping.
 - .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
 - .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.
- .10 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification will follow oral instructions. Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.8 PRE-WARRANTY CONFERENCE

- .1 Meet with Departmental Representative, to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Departmental Representative.
- .2 Departmental Representative will establish communication procedures for:

- .1 Notification of construction warranty defects.
- .2 Determine priorities for type of defect.
- .3 Determine reasonable time for response.
- .3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue 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.

Part 2 Products**2.1 NOT USED****Part 3 Execution****3.1 NOT USED**

END OF SECTION

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