

1.1 TAXES

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

1.2 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.

1.3 CONSTRUCTION PHASING REQUIREMENTS

- .1 Work must be performed in phases as shown in details 1 and 2 on A02.
- .2 PHASE 1 complete this area first to prepare for future fit up by others.
- .3 PHASE 2: This work may be performed either concurrent with PHASE 1 or after PHASE 1.

1.4 CONSTRUCTION PROGRESS SCHEDULE

- .1 Schedule and execute work with least possible interference or disturbance to the normal use of premises:
- .2 On award of contract submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When the Departmental Representative has reviewed schedule, incorporate corrections, issue revised baseline schedule for approval or further correction, and take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative. General contractor is to submit a bar chart construction schedule for work within 5 day of award of contract.
- .3 Return to Site as directed by Departmental Representative after construction completion, off-hours, to rectify deficiencies.
- .4 Ensure that Project Schedule includes, at minimum, milestone and activity types as follows for each phase:
 - .1 Award
 - .2 submittals
 - .3 permits
 - .4 mobilization
 - .5 lighting and powered equipment, fittings disconnects and removals
 - .6 Remove existing millwork, equipment, and other specialty items.
 - .7 Architectural Demolition
 - .8 Mechanical and Electrical Demolition
 - .9 patching, painting, minor repair works.
 - .10 M&E minor minor works.
 - .11 Substantial Performance
 - .12 Deficiencies

- .13 Total Completion
- .5 Work can be performed at all times.
- .6 Carry out noise generating work, and odor generating work, as defined by the Departmental Representative, during “off hours” from 18:00 to 06:00.
- .7 Update schedule on a weekly basis reflecting activity changes and completion, as well as activity in progress

1.5 REGULATORY REQUIREMENTS

- .1 References and Codes:
 - .1 Materials shall be new and work shall conform to the minimum applicable standards of the “References” indicated in the specification sections, the National Building Code of Canada 2010 (NBC) and all applicable Provincial and Municipal codes.
- .2 Building Smoking Environment:
 - .1 Smoking is not permitted in the Building. Obey smoking restrictions on building property.
- .3 Hazardous Material Discovery:
 - .1 Stop work immediately when material resembling spray or trowel-applied asbestos, Polychlorinated Biphenyl (PCB), mould or other designated substance hazardous substance is encountered during demolition work.
 - .1 Take preventative measure and promptly notify Departmental Representative.
 - .2 Do not proceed until written instructions have been received from Departmental Representative.
- .4 The successful bidder and all his staff and trades that will work on site will be required to attend a site orientation meeting from BrookfieldGIS for common space usage.

1.6 FIRE SAFETY REQUIREMENTS

- .1 Comply with both the National Building Code of Canada 2010 and the National Fire Code of Canada 2010 for safety of persons in buildings in the event of a fire and the protection of buildings from the effects of fire, as follows;
 - .1 The National Building Code (NBC): for fire safety and fire protection features that are required to be incorporated in a building during construction.
 - .2 The National Fire Code (NFC):
 - .1 The on-going maintenance and use of the fire safety and fire protection features incorporated in buildings.
 - .2 The conduct of activities that might cause fire hazards in and around buildings.
 - .3 Limitations on hazardous contents in and around buildings.
 - .4 The establishment of fire safety plans.
 - .5 Fire safety at construction and demolition sites.

- .2 Welding and cutting:
 - .1 At least 48 hours 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 by Departmental Representative.
 - .3 Return welding permit to Departmental Representative immediately upon completion of procedures for which permit was issued.
 - .2 Before welding, soldering, grinding and/or cutting work, obtain a permit from the Real property Service Provider as directed by the Departmental Representative. No hot work shall be undertaken unless authorized by the Real property Service Provider.
- .3 Where work requires interruption or cause activation of fire alarms or fire suppression, extinguishing or protection systems:
 - .1 Provide "Watchman Service" as required by Departmental Representative; 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 that might activate fire protection systems.
 - .3 Immediately upon completion of work, restore fire protection systems to normal operation and verify that all devices are fully operational.
 - .4 Inform fire alarm system monitoring agency and local Fire Department immediately prior to isolation and immediately upon restoration of normal operation.

1.7 HAZARDOUS MATERIALS

- .1 Hazardous Materials: product, substance, or organism that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .2 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of Material Safety Data Sheets (MSDS).
- .3 For work in occupied buildings, give the Department Representative 48 hours notice for work involving designated substances (Ontario Bill 208), hazardous substances (Canada Labour Code Part II Section 10), and before painting, caulking, installing carpet or using adhesives and other materials, that cause off gassing.

1.8 TEMPORARY UTILITIES

- .1 Existing services required for work, excluding power required for space temporary 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 110 V, 15 A is available and will be provided at no cost. Connect to existing power supply in accordance with Canadian Electrical Code and provide meters and switching.
- .3 Notify the Departmental Representative and utility companies of intended interruption of services and obtain requisite permission:
 - .1 Minimum 5 days in advance
- .4 Give the Departmental Representative 14 days notice related to each necessary interruption of any mechanical or electrical service throughout the course of the work. Keep duration of these interruptions to a minimum. Carry out all interruptions after normal working hours of the occupants, preferably on weekends.

1.9 CONSTRUCTION FACILITIES

- .1 Access Scaffold:
 - .1 Scaffolding: install scaffolding in accordance with applicable construction regulations.
 - .2 Provide design drawings, signed and sealed by qualified Professional Engineer licensed in the province of Ontario, where prescribed.
 - .3 Additions or modifications to scaffolding must be approved by Professional Engineer in writing.
- .2 Designated elevators: to be used by construction personnel and transporting of materials.
 - .1 Co-ordinate with Departmental Representative.
 - .2 Protect from damage, safety hazards and overloading of existing equipment.
 - .3 Freight elevator must be booked 48 hours in advance.
 - .1 Elevator reservations for large material movements can be made on weekdays from 8 a.m. until 6 a.m. (the following day) and on weekends. Large weekday material movement activities are restricted to a maximum 2 hour time period between 8 am and 5 p.m.
 - .2 No large material moves will be approved on weekdays between 6 a.m. and 8 a.m. Elevators cannot be put on independent service between Noon and 1 p.m. on weekdays.
 - .4 Low Rise Freight Elevator: (commercial levels) Height 2743mm (9'), Width, 1422mm (4'-8"), length & 2337mm (7'-8")
- .3 Tandem elevators, parking elevators, and escalators shall not be used by contractors without prior written consent of the Departmental Representative.
- .4 Site Storage:
 - .1 Storage will be allowed within the area of Work only, no other storage will be available
 - .2 Do not unreasonably encumber site with materials or equipment.

- .3 Move stored products or equipment that interfere with operations of Departmental Representative or other contractors.
- .4 Obtain and pay for use of additional storage or work areas needed for operations.
- .5 Do not load or permit to load any part of work with weight or force that will endanger work.
- .5 Where security is reduced by work provide temporary means to maintain security.
- .6 Sanitary facilities: the sanitary facilities on the floor of the Work may be used. Keep facilities clean.
- .7 Signage:
 - .1 Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, etcetera, in both official languages or by the use of commonly understood graphic symbols and to approval of the Departmental Representative.
 - .2 No advertising will be permitted on this project.
 - .3 Maintain approved signs and notices in good condition for duration of project and dispose of off site, on completion of project or earlier, as directed by Departmental Representative.
- .8 Parking:
 - .1 Contractors are responsible for their own parking and payment of any parking infractions. Contractors can park on P-2.
 - .2 The CD Howe facility underground parking has a maximum vehicle height allowance of 6 feet 2 inches.

1.10 MATERIAL MOVEMENT

- .1 Definitions:
 - .1 Small material movements – involve a delivery of a material that requires a single one way or return trip through the freight elevator
 - .2 Large material movement – involves a delivery of materials that requires multiple return trips of a freight elevator
- .2 Right of Way: When a Large Material Movement encounters either a Small Material Movement or pedestrian to cross or parallel its path, the Large Material Movement must immediately stop and give full right of way to the other party. The large material movement may commence only after no other conflict is evident.
- .3 Small material movements – Shall be allowed to continue in a safe and appropriate manner without application or schedule.
 - .1 Where a small material movement parallels or crosses the path of a large material movement, it will have right of way to continue only upon the large material movement halting their operation to allow for safe crossing.
 - .2 Where the person moving the material cannot maintain sight lines, and/or where the load may be contacted by another person due to inadequate sight lines, there must be adequate personnel acting as spotter(s) so as to prevent inadvertent pedestrian conflicts.

- .3 Small material movements shall give right of way to a parallel or crossing pedestrian.

1.11 TEMPORARY BARRIERS AND ENCLOSURES

- .1 Protection:
 - .1 Protect existing construction, infrastructure, and adjacent areas from damage.
 - .2 Protect work against damage until take-over.
 - .3 Protect adjacent areas and floors against the spread of dust and dirt beyond the work areas.
 - .4 Protect operatives and other users of site from all hazards.
 - .5 Be responsible for damage incurred due to lack of or improper protection.
- .2 The contractor shall agree to install proper site separation and identification in order to maintain "Time and Space" at all times throughout the life of the project. When Building Operations staff requires access to equipment in order to operate the building, proper coordination and communication must exist between all parties involved.

1.12 EXAMINATION and PREPARATION

- .1 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.
- .2 Before commencing work, establish location and extent of services lines in area of work and notify Departmental Representative of findings.

1.13 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.

1.14 CLEANING

- .1 Clean up as work progresses. At the end of each work period, and more often if ordered by the Departmental Representative, remove debris from site, neatly stack material for use, and clean up generally.
- .2 Upon completion remove scaffolding, temporary protection and surplus materials. Make good defects noted at this stage.
- .3 Clean and polish glass, mirrors, ceramic tile, aluminum, chrome, stainless steel, baked or porcelain enamel, plastic laminate and other plastic surfaces, floors, hardware, perimeter heating units and washroom fixtures. Clean manufactured articles in accordance with manufacturer's written instructions.

- .4 Clean areas under contract to a condition equal to what previously existed and to approval of Departmental Representative.

1.15 SECURITY CHECK

- .1 Personnel will be checked-in daily at start of work shift and given a pass in exchange for acceptable personal identification, which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

1.16 SECURITY ESCORT

- .1 All personnel employed on this project shall be escorted when working on site outside of regular hours.
- .2 Submit an escort request to Departmental Representative at least 72 hours before the service is needed. For requests submitted within the time mentioned above, the Departmental Representative will pay for the costs of the security escort. The cost incurred by a late request will be charged to the Contractor.
- .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least 24 hours before the scheduled time of the escort. The cost incurred by a late cancellation will be charged to the Contractor.
- .4 The calculation of costs will be based on the average hourly rate of a security officer for a minimum of 8 hours per day for a late service request and 4 hours for late cancellations.

1.17 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. Make revisions as required by Departmental Representative. After approval by Departmental Representative cost breakdown will be used as the basis of progress payments.

1.18 PRECEDENCE

- .1 Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual

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. 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-Z94.4-11 - 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 (TWAEEL): 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

Refer to Designated Substances Summary Report "Project Specific Designated Substances Survey, Holt Renfrew Demolition Project, C.D. Howe Building, 235 Queen Street, Ottawa, Ontario, dated July 9, 2015 for the description of the methodology used to assess the designated substances within the project areas.

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

Additional designated substances and hazardous materials may exist outside the accessible survey area but are beyond the scope of this project.

Should any additional material, suspected to be a designated substance, be encountered within the project area, 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**

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

- Non-friable mastic pucks, used to adhere fiberglass insulation panels inside perimeter floor vent/units contain 0.8-0.81% Chrysotile asbestos (Sample 21191-01A and 21191-21);
- Non-friable black tar/firestop, observed inside floor vents around piping and/or other penetrations, contains 23% Chrysotile asbestos (Sample 21191-02A);
- Non-friable black caulking/firestop observed around pipe, duct, and/or other wall/ceiling penetrations, was determined to contain 2.05% Chrysotile (Sample 21191-05A);
- Non-friable black mastic pucks, observed applied to a column beneath drywall in the C-3 level, contains 19.76% Chrysotile (Sample 21191-10A). This material may be present and concealed beneath additional drywall clad columns in the project area;
- Non-friable (when intact and in good condition) plaster materials, associated with corner cylindrical columns, contains 1% Tremolite asbestos (Sample 21191-13A);
- Non-friable black tar, applied in sporadic locations to the concrete deck above ceiling tiles throughout contains 0.81% Chrysotile (Sample 21191-14A);
- Friable paring layer under canvas associated with pipe and pipe fitting insulation in the Former Holt Renfrew Storage Room (S-1 level) contains 60% Chrysotile asbestos (Sample 21191-17A);

- Based on historic knowledge of the C.D. Howe building, packings around pipe and/or other penetrations (parging) throughout the Holt Renfrew Space (C-2, C-3 levels) and former storage room (S-1 level) should be assumed to contain regulated concentrations of friable asbestos. Friable asbestos containing packings were observed in select instances covered by new firestop applications. Asbestos-containing packings should also be assumed present beneath these new applications.
 - Pipe fitting insulation assumed to contain friable asbestos were observed on the C-3 level, in a storage room adjacent to the former store entrance;
 - Based on historic bulk sampling of drywall joint compound in the Holt Renfrew Space, drywall joint compound contains 1% Chrysotile asbestos. Drywall materials previously sampled appear homogenous to drywall materials present throughout the Holt Renfrew Space (C-3 and C-2 levels). As such, all drywall joint compound associated with drywall materials (including elevator shafts) should be assumed to contain asbestos, unless extensive delineation sampling and laboratory analysis confirms otherwise.
 - Based on historic bulk samples collected, 12"x12" vinyl floor tiles, brown with streaks, present in the C-3 level to 1W level stairwell, contains 0.78% Chrysotile asbestos.
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) sample, no detectable concentrations of lead were confirmed in white paint applied to drywall materials (Sample 21191-LP01).
 - Red primer paint collected from a structural ceiling beam in the C3 Elevator Lobby contained **1,270 parts per million** lead.
 - No other lead paint samples were collected for lead content analysis, as other paints and surface coatings encountered in the project areas 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, in the project areas 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;

- Ceramic tile glazing; and
- Emergency light batteries.

9. MERCURY: Identified

Mercury is suspected to be present in the following:

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

10. SILICA: Identified

Free crystalline silica is expected to be present in concrete, cement materials, drywall and associated materials, spray texture coat materials, vinyl floor tiles, ceramic tiles, mortar, grout, mastics, floor leveling compounds, plaster, ceiling tiles.

11. VINYL CHLORIDE MONOMER: Not Identified

12. POLYCHLORINATED BIPHENYLS (PCBs): Suspected

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 project areas 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.

13. MOULD: Suspected

Minor amounts of mould (less than one square metre) and condensation were noted in mechanical rooms (fan rooms with air handling units) in the C-3 and C-2 Levels.

14. HALOCARBONS: Suspected

The refrigerator on the C-2 level and former refrigeration/cooling equipment/units in the S-1 level former storage room are suspected to contain halocarbons. A drinking fountain in the elevator lobby of C-3 is also suspected to contain refrigerants with halocarbons.

15. OTHER HAZARDOUS MATERIALS: Identified

The following additional hazardous materials were identified:

- 20 litre pail of solvent on a shelf in the S-1 level former storage room.

1.5 RECOMMENDATIONS

1. ASBESTOS

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

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.
2. Identified friable ACMs (pipe insulation, pipe fitting insulation, garging/packings around penetrations, plaster materials which become friable when removed or disturbed) 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.
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.
4. Type 1 work procedures can be used for the removal of assumed non-friable ACMs (e.g. mastics, tars, caulking), 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.

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.

2. LEAD

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.

3. MERCURY

1. All work involving disturbance of mercury-containing equipment must be done in accordance with O.Reg 490/09.
2. 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.
3. 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.
4. 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.

4. SILICA

1. 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.
2. 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.
3. 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.

5. PCBs

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.
2. 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.

6. MOULD

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.

7. HALOCARBONS

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;
 - O.Reg 238/01, Refrigerants; and
 - Federal Halocarbon Regulations, 2003 (FHR).
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.

8. OTHER HAZARDOUS MATERIALS

1. The handling and use of these materials should be undertaken by those with proper training (e.g. Workplace Hazardous Materials Information System, etc.).

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

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 01 74 21 Construction / Demolition Waste Management and Disposal

1.2 ADMINISTRATIVE

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

-
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
 - .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
 - .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .9 After Departmental Representative's review, distribute copies.
 - .10 Submit one PDF electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
 - .11 Submit PDF electronic copy 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 PDF 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.
 - .2 Testing must have been within 3 years of date of contract award for project.
 - .13 Submit PDF electronic copy 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 PDF electronic copy of manufacturer's 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 PDF electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
 - .17 Submit PDF electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
 - .18 Delete information not applicable to project.
 - .19 Supplement standard information to provide details applicable to project.
 - .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, reviewed marked-up PDF files will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
 - .21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

- .22 Provide paper copies of submittals as requested by Departmental Representative.

1.4 SAMPLES

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

1.5 CERTIFICATES AND TRANSCRIPTS

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

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 Occupational Health and Safety Act R.S.O. 1990, c. 0.1, and Regulations for Construction Projects O. Reg. 213/91, current edition.
- .2 CAN/CSA, Z462-15 Workplace Electrical Safety Standard)
- .3 CAN/CSA-Z460-05 (R2010) - Control of Hazardous Energy.
- .4 A copy of the Building “Facility Protocol Orientation for Construction and Emergency Service Contractors” will be provided to the successful bidder upon contract award.

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within seven (7) working 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 Written safe work procedures to address the known hazards.
- .3 Submit three (3) copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.
- .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .5 Submit copies of incident and accident reports within 24 hours after the event.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets to Departmental Representative.
- .7 Departmental Representatives will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within seven (7) working days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within seven (7) working 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 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

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 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.

1.7 RESPONSIBILITY

- .1 Be responsible and assume the role of "Constructor" as described in the Ontario Occupational Health & Safety Act and Regulations for Construction Projects for only the scope and areas of work as defined in this Project Specification.
- .2 Assume responsibility for health and safety of all other contractors present on site under the prescriptions of the present section.
- .3 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.

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with the Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1.
- .2 Comply with the Ontario Regulations for Construction Projects, O. Reg. 213/91.
- .3 Comply with CAN/CSA, Z462-12 (Workplace Electrical Safety Standard)
- .4 Comply with CAN/CSA-Z460-05 (R2010) - Control of Hazardous Energy.

1.9 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.10 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience specific to activities associated with specified Work. Submit relevant experience to Departmental Representative.
 - .2 Have working knowledge of occupational safety and health regulations.

- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .5 Be on site during execution of Work.

1.11 LOADING DOCK SAFETY

- .1 Respect the following material movement and equipment placement safety procedures.
 - 1. The loading dock is for unloading and loading materials & equipment only. It is not permitted to use the area for parking, smoking, staging, material storage or workspace.
 - 2. Stairs must be used. (Jumping from loading dock platform is not allowed)
 - 3. Allocated access and egress routes must be obeyed at all times.
 - 4. Safe work practices are to be followed in the loading and unloading of material.
 - 5. Delivery personnel shall not use or borrow equipment which they did not bring to the site to load or unload materials (ex. lift trucks, pallet movers).
 - 6. Contractors must provide the necessary equipment and competent personnel to assist the delivery of materials in a safe and responsible manner.
 - 7. Construction Project contractors must wear protective headwear and footwear as a minimum while occupying the loading dock area.
 - 8. High visibility apparel must be worn by construction project contractors.

1.12 VEHICLE SAFETY IN LOADING DOCK AREA.

- 1. Do not leave vehicles idling at the loading dock.
- 2. Parking will not be allowed in the loading dock areas unless the contractor has been identified as an "Emergency Contractor" by the Departmental Representative
 - 1. Maximum Vehicle load and dimensions.
 - 1. Maximum Load (250psf) 12 kPa
 - 2. Maximum Height 12'-6"
 - 3. Maximum Length is 38 ft.
 - 4. Maximum load capacity of Loading dock deck: (125psf) 6 kPa
 - 2. Vehicles Backing Up
 - 1. While working in or around the loading dock areas, workers are required to wear appropriate high visibility apparel.
 - 2. Workers shall not walk behind a reversing vehicle.
 - 3. Operators of vehicles shall be assisted by competent signalers if either of the following applies:
 - 1. The operator's view of the intended path of travel is obstructed, or
 - 2. A person could be endangered by the vehicle, or by its load.

1.12 DELIVERIES OUTSIDE THE LOADING DOCK AREA

1. Deliveries or placement of materials or equipment outside of the loading dock areas will only be allowed if the General Contractor has provided a minimum of 48 hours advance notification to the Departmental Representative. The Departmental Representative must notify the Health & Safety Coordinator in advance of any material movements required outside of the loading dock areas as this will involve use and/or encroachment of “common space”

1. This includes, and may not necessarily be limited to;

1. Any delivery which requires a vehicle to be placed on a public way.
2. Any materials tools and devices delivered by way of the underground parking lot.

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 having jurisdiction, and in consultation with Departmental Representative.

1.12 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.

1.13 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.14 POWDER ACTUATED DEVICES

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

1.15 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.

END OF SECTION

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

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of 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 Effect on Work of Departmental Representative or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.
 - .9 Results of scan or x-ray of concrete slab for core drilling

1.2 MATERIALS

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

1.3 PREPARATION

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

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.

- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and base building components to remain, which will provide proper surfaces to receive patching and finishing.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with ULC listed firestop assemblies applicable for the existing construction. Provide submittals for proposed firestop assemblies prior to installation for approval by Departmental Representative. Provide 2 hour firestop systems for all existing penetrations affected by the Work, through the existing floor and ceiling slabs and existing walls in the building core.
- .12 Patch and make good existing construction that is cut, damaged or disturbed in the course of the Work, to Departmental Representative's approval. Match existing material and finish texture, appearance and colour.
- .13 Remove all traces of existing construction removed in the course of the Work.
- .14 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General**1.1 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's waste management goal and Contractor's proposed Waste Reduction Workplan for Demolition waste to be project generated.
- .2 PWGSC's waste management goal: to divert a minimum 75 percent of total Project Waste from landfill sites. Prior to project completion provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.
- .3 Minimize amount of non-hazardous solid waste generated by project and accomplish maximum source reduction, reuse and recycling of solid waste produced by demolition activities.
- .4 Protect environment and prevent environmental pollution damage.

1.2 REFERENCES

- .1 Definitions:
 - .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative.
 - .2 Class III: non-hazardous waste - construction renovation and demolition waste.
 - .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities.
 - .4 Cost/Revenue Analysis Workplan (CRAW): based on information from Waste Reduction Workplan, and intended as financial tracking tool for determining economic status of waste management practices (Schedule E).
 - .5 Inert Fill: inert waste - exclusively asphalt and concrete.
 - .6 Waste Source Separation Program (WSSP): implementation and co-ordination of ongoing activities to ensure designated waste materials will be sorted into pre-defined categories and sent for recycling and reuse, maximizing diversion and potential to reduce disposal costs.
 - .7 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
 - .8 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
 - .9 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.
 - .10 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
-

- .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .1 Separate and store salvaged carpet tile identified on the demolition drawings for reuse as directed by the Departmental Representative .
 - .2 Returning reusable items including pallets or unused products to vendors.
 - .11 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
 - .12 Separate Condition: refers to waste sorted into individual types.
 - .13 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.
 - .14 Waste Audit (WA): detailed inventory of estimated quantities of waste materials that will be generated during demolition, deconstruction and/or renovation. Involves quantifying by volume/weight amounts of materials and wastes that will be reused, recycled or landfilled. Refer to Schedule A.
 - .15 Waste Diversion Report: detailed report of final results, quantifying cumulative weights and percentages of waste materials reused, recycled and landfilled over course of project. Measures success against Waste Reduction Workplan (WRW) goals and identifies lessons learned.
 - .16 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as co-ordinating required submittal and reporting requirements.
 - .17 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials generated by project. Specifies diversion goals, implementation and reporting procedures, anticipated results and responsibilities. Waste Reduction Workplan (Schedule B) information acquired from Waste Audit.
 - .2 Reference Standards:
 - .1 Ontario Ministry of Environment
 - .1 Ontario 3 R's Regulations (regulation 102/94) for waste management programs applicable to construction and demolition projects greater than 2,000 m².
 - .2 Ontario Environmental Protection Act (EPA)
 - .1 Regulation 102/94, Waste Audits and Waste Reduction Workplans.
 - .2 Regulation 103/94, Source Separation Programs.
 - .3 Canadian Construction Association (CCA)
 - .1 CCA 81-2001: A Best Practices Guide to Solid Waste Reduction.
 - .4 Public Works and Government Services Canada (PWGSC)
 - .1 2002 National Construction, Renovation and Demolition Non-Hazardous Solid Waste Management Protocol.
 - .2 CRD Waste Management Market Research Report (available from PWGSC's Environmental Services).
-

- .3 Sustainable Development Strategy 2007-2009: Target 2.1 Environmentally Sustainable Use of Natural Resources.
 - .1 Real Property projects over \$1 million and in communities where industrial recycling is supported, implementation of CRD waste management practices will be completed, with waste materials being reused or recycled.
 - .2 Contractually ensure resources used in construction or maintenance are consumed and recovered in a sustainable manner.

1.3 DOCUMENTS

- .1 Post and maintain in visible and accessible area at job site, one copy of following documents:
 - .1 Waste Audit (Schedule A).
 - .2 Waste Reduction Workplan (Schedule B).
 - .3 Waste Source Separation Program.
 - .4 Schedules A and B completed for project.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 1 copy and 1 electronic copy of completed Waste Audit (WA): Schedule A.
 - .2 1 copy and 1 electronic copy of completed Waste Reduction Workplan (WRW): Schedule B.
 - .3 1 copy and 1 electronic copy of Cost/Revenue Analysis Workplan (CRAW): Schedule E.
 - .4 1 copy and 1 electronic copy of Waste Source Separation Program (WSSP).
 - .5 1 copy of a list of all mechanical and electrical equipment currently in the CMMS Computerized Maintenance Management Systems to be removed and decommissioned.
 - .1 Obtain the existing CMMS forms from the Departmental Representative.
- .3 Prepare and submit on monthly basis, throughout project or at intervals agreed to by Departmental Representative the following:
 - .1 Receipts, scale tickets, waybills, and/or waste disposal receipts that show quantities and types of materials reused, recycled, or disposed of.
 - .2 Updated Waste Materials Tracking form (Schedule D).
 - .3 Written monthly summary report detailing cumulative amounts of waste materials reused, recycled and landfilled, and brief status of ongoing waste management activities.
- .4 Submit prior to final payment the following:

- .1 Waste Diversion Report, indicating final quantities in tones by material types salvaged for reuse, recycling or disposal in landfill and recycling centres, re-use depots, landfills and other waste processors that received waste materials (See Schedule C).
- .2 Provide receipts, scale tickets, waybills, waste disposal receipts that confirm quantities and types of materials reused, recycled or disposed of and destination.

1.5 WASTE AUDIT (WA)

- .1 The General Contractor will prepare WA prior to project start-up based on the tender documents provided. (see Schedule A).
- .2 WA provides detailed inventory, estimated quantities and types of waste materials that will be generated as well as their potential to be reused and/or recycled and project's waste diversion goals and objectives.
- .3 After award of contract, contractor to prepare and review WA and confirm that anticipated quantities of waste generated are accurate and goals achievable.
- .4 If after review, contractor determines that indicated quantities or opportunities in WA are not accurate or achievable, contractor to provide written details of discrepancies and revised quantities for areas of concern. Contractor to meet with Departmental Representative to review and justify revisions.
- .5 Post on-site WA where contractor and sub-contractors are able to review content.

1.6 WASTE REDUCTION WORKPLAN (WRW)

- .1 Prepare and submit WRW (Schedule B) at least 5 days prior to project start-up.
- .2 WRW identifies strategies to optimize diversion through reduction, reuse, and recycling of materials and comply with applicable regulations, based on information acquired from WA.
- .3 WRW should include but not limited to:
 - .1 Applicable regulations.
 - .2 Specific goals for waste reduction, identify existing barriers and develop strategies to overcome them.
 - .3 Destination of materials identified.
 - .4 Deconstruction/disassembly techniques and schedules.
 - .5 Methods to collect, separate, and reduce generated wastes.
 - .6 Location of waste bins on-site.
 - .7 Security of on-site stock piles and waste bins.
 - .8 Protection of personnel, sub-contractors.
 - .9 Clear labelling of storage areas.
 - .10 Training plan for contractor and sub-contractors.
 - .11 Methods to track and report results reliably (Schedule D).
 - .12 Details on materials handling and removal procedures.
 - .13 Recycler and reclaimer requirements.
 - .14 Quantities of materials to be salvaged for reuse or recycled and materials sent to landfill.

.15 Requirements for monitoring on-site wastes management activities.

.4 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.5 Post WRW or summary where workers at site are able to review content.

.6 Monitor and report on waste reduction by documenting total volume (in tonnes) and cost of actual waste removed from project (Schedule D).

1.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Prepare CRAW (see Schedule E) and include the following:

.1 Cost of current waste management practices.

.2 Implementation cost of waste diversion program.

.3 Savings and benefits resulting from waste diversion program.

1.8 WASTE SOURCE SEPARATION PROGRAM (WSSP)

.1 As part of Waste Reduction Workplan, prepare WSSP prior to project start-up.

.2 WSSP will detail methodology and planned on-site activities for separation of reusable and recyclable materials from waste intended for landfill.

.3 Provide list and drawings of locations that will be made available for sorting, collection, handling and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide sufficient on-site facilities and containers for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.5 Locate containers to facilitate deposit of materials without hindering daily operations.

.6 Provide training for workers in handling and separation of materials for reuse and/or recycling.

.7 Locate separated materials in areas which minimizes material damage.

.8 Clearly and securely label containers to identify types/conditions of materials accepted and assist workers in separating materials accordingly.

.9 Monitor on-site waste management activities by conducting periodic site inspections to verify: state of signage, contamination levels, bin locations and condition, personnel participation, use of waste tracking forms and collection of waybills, receipts and invoices.

.10 On-site sale of salvaged materials is not permitted unless authorized in writing by Departmental Representative and provided that site safety regulations and security requirements are adhered to.

1.9 USE OF SITE AND FACILITIES

.1 Execute Work with minimal interference and disturbance to normal use of premises.

.2 Maintain security measures established by facility and provide temporary security measures approved by Departmental Representative.

1.10 WASTE PROCESSING SITES

- .1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.

1.11 QUALITY ASSURANCE

- .1 After award of Contract, a mandatory site examination will be held for this Project for Contractor and sub-contractors responsible for construction, renovation demolition/deconstruction waste management.

- .1 Date, time and location will be arranged by Departmental Representative

- .2 Waste Management Meeting: Waste Management Co-ordinator is to provide an update on status of waste diversion and management activities at each meeting. Written monthly Waste Diversion Report summary to be provided by Waste Management Coordinator (refer to the Waste Diversion Report form in Schedule C and Waste Materials Tracking form in Schedule D).

1.12 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed and salvaged materials from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.
- .9 Separate and store materials produced during project in designated areas.
- .10 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated processing facilities.
 - .1 On-site source separation is recommended.
 - .2 Remove co-mingled materials to off site processing facility for separation.
 - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
 - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.13 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.

- .2 Do not dispose of waste volatile materials mineral spirits oil paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.
 - .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Remove materials on-site as Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in the waste audit.

1.14 SCHEDULING

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

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

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions.
- .3 Waste Management: separate waste materials for reuse recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
 - .2 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 salvaged recovered, reusable, recyclable, materials is not permitted.

3.4 WASTE DIVERSION REPORT

- .1 At completion of Project, prepare written Waste Diversion Report indicating quantities of materials reused, recycled or disposed of as well as the following:
 - .1 Identify final diversion results and measure success against goals from Waste Reduction Workplan.
 - .2 Compare final quantities/percentages diverted with initial projections in Waste Audit and Waste Reduction Workplan and explain variances.
 - .1 Supporting documentation.
 - .2 Waybills and tracking forms.
 - .3 Description of issues, resolutions and lessons learned.

3.5 WASTE AUDIT (WA)

- .1 Schedule A - Waste Audit (WA)

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) % Recycled	(7) % Reused
Wood and Plastics Material Description						
Off-cuts						
Warped Pallet Forms						
Plastic Packaging						
Cardboard Packaging						
Other						
Doors and Windows Material Description						
Painted Frames						
Glass						
Wood						

Metal						
Other						

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

(1) Material Category	(2) Person(s) Respon- sible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s) Destina- tion
Wood and Plastics Material Description							
Chutes							
Warped Pallet Forms							
Plastic Packag ing							
Card- board Packag ing							
Other							
Doors and Windows Material Description							
Painted Frames							
Glass							
Wood							
Metal							
Other							

3.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)**.1 Schedule E - 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					
Byfold - Closet					
Glazing					
Metal Studs and Framing					
		(7) Cost (-) / Revenue (+)			

3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

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

Province	Address	General Inquires	Fax
Ontario	Ministry of Environment and Energy, 135 St. Clair Avenue West Toronto ON M4V 1P5	416-323-4321 800-565-4923	416-323-4682
	Environment Canada Toronto ON	416-734-4494	

3.9 SCHEDULES

.1 Following Schedules are included in this Specification:

- .1 Waste Audit - Schedule A.
- .2 Waste Reduction Workplan Form - Schedule B.
- .3 Cost/Revenue Analysis Workplan - Schedule E.
- .4 Government Chief Responsibility for the Environment – Schedule G

END OF SECTION

Part 1 General**1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
- .2 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
- .3 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;

- .1 Date of submission; names.
- .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
- .3 Schedule of products and systems, indexed to content of volume.
- .2 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .3 Typewritten Text: as required to supplement product data.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .4 Include the Sustainable Requirements -Contractor's Verification report

1.5 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Site Instructions
 - .5 Change Orders and other modifications to Contract.
 - .6 Waste Management Reports
 - .7 Inspection certificates.
 - .8 Site Instructions
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.

- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .2 Field changes of dimension and detail.
 - .3 Changes made by change orders.
 - .4 Details not on original Contract Drawings.
 - .5 References to related shop drawings and modifications.
- .5 Specifications: 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, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.
- .8 Submit completed as-built drawings and documents with manuals.

1.7 MATERIALS AND FINISHES

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

1.8 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with 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 HVAC balancing, pumps, motors, transformers, commissioned systems fire protection, alarm systems, sprinkler systems, lightning protection systems,.
 - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
- .4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

- .5 Procedure and status of tagging of equipment covered by extended warranties.
- .6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.
- .1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.9 WARRANTY TAGS

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION