

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

- .1 Work covered by this section includes the provision of expertise, materials, labour, equipment and all that is required for the safe, partial or complete demolition of parts of the structure identified in the structural drawings, including temporary shoring.
- .2 The work includes removing all debris, and transporting and disposing of it off site.
- .3 Unless otherwise specified by the Departmental representative, the demolition materials become the Contractor's property upon authorization to start work. In this document, the word "remove" means to take the demolition materials away from the site in compliance with the relevant laws, at the Contractor's expense.

### **1.2 RELATED SECTIONS**

- .1 The specialized Contractor is responsible for obtaining a copy of all the sections of these specifications even if they do not appear to pertain to his speciality. If he does not, it shall be understood that he agrees to the clauses and requirements of all sections in these specifications. The specialized Contractor must consult the table of contents of these specifications to have knowledge of the complete list of the specifications sections.

### **1.3 REFERENCES**

- .1 Canadian Standards Association (CSA)/CSA International
  - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

### **1.4 DOCUMENTS TO BE SUBMITTED**

- .1 Submit for information purposes, drawings and schematics that provide clear, detailed indications regarding the order in which the structures are to be dismantled, or that indicate the support structures and the underpinning work. All documents shall be submitted in triplicate. A single (1) annotated copy shall be returned to the Contractor. The Contractor shall be responsible for making additional copies and distributing them.
  - .2 Drawings of support structures or temporary shoring must bear the signature and seal of a qualified Engineer who is a member of the Ordre des Ingénieurs du Québec.
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## **1.5 SAFEGUARDS**

- .1 Take all the necessary measures to prevent any movement or collapse of the various parts of the buildings and other structures to be retained, and to prevent them from sustaining any damage. Provide and install the parts required for reinforcement and support, perform the underpinning work as needed. Repair damaged structures and assume responsibility for injuries that could arise from the demolition work.
  - .2 If any danger arises during the demolition work involving the parts of the structure to be demolished or the adjacent structures and services, stop the work and notify the Departmental representative. Firmly support the structures, secure the place.
  - .3 If the Departmental representative deems it necessary, install reinforcement and support materials, and perform the underpinning work required to prevent any movement or breakdown of the structures.
  - .4 All parts of the structure under demolition or adjacent part of the demolition must be solidly braced or supported to prevent any danger of collapse.
  - .5 The consumer supply mains for water, gas and electricity and the other services shall be cut off at the place and in the way specified by the appropriate authorities. These service mains shall be relocated to avoid any damage and shall not constitute a hazard for workers and the public.
  - .6 No worker shall stand on any wall, pier or any or any structural part unless scaffolding is provided on every side at a distance not exceeding 10 feet (3.05 m) below the level at which he is working.
  - .7 It is forbidden to leave without protection any wall or other structural part which might collapse under the effect of internal pressure differentials or vibrations.
  - .8 The Contractor shall direct the operations while obstructing the streets, alleys and passages as little as possible and never obstructing the accesses. The Contractor shall comply with directives received in this connection from the Departmental representative and the City.
  - .9 Install, in compliance with laws, codes and by-laws, and the directives issued by the Departmental representative, fences, safety shelters, guard rails, railings, lighting, adequate warning signs, etc., during performance of the work to completely protect the public and the Departmental representative against material losses or damage, loss of life or injuries attributable to the Contractor's negligence, carelessness or incompetence or that of his employees.
  - .10 The Contractor shall take strict measures to ensure that no materials, products, debris or other objects cause any damage to the environment or to persons and shall keep and hold the City harmless in this regard from all legal proceedings, claims, losses or damage incidental to and resulting from his failure.
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- .11 Ensure that the demolition work does not have any negative impact on wildlife, the water table and adjacent watercourses, and that it does not generate excessive levels of atmospheric or noise pollution.
- .12 Do not pour volatile waste or materials such as mineral spirits, oils, petroleum-based lubricants or toxic cleaning solutions, in watercourses, storm drains or sanitary sewers.
  - .1 Ensure that appropriate methods are used to dispose of this type of waste for the duration of the project.
- .13 Do not pour, pump or otherwise dispose of any water containing suspended materials in watercourses, storm drains or sanitary sewers or on adjacent lots.
- .14 Evacuate water and confine surface runoff containing suspended materials or other harmful substances, in compliance with the requirements of the appropriate authorities.
- .15 Protect vegetation (trees, plants, shrubs and their foliage) located on the site and adjacent sites, according to indications.
- .16 During performance of the demolition work, erect temporary protective enclosures to prevent foreign substance or materials from contaminating the air outside the worksite.
- .17 Cover dry materials and waste or dampen as a dust and debris abatement measure. Apply sweeping compound on all temporary access lanes.
- .18 The Contractor is responsible for ensuring worksite safety at all times, including outside working hours.
- .19 Demolition work shall be performed while taking the necessary precautions to prevent any damage to the parts of the structure to be retained.
- .20 Where required, the Contractor shall erect protective panels to preserve the existing facilities or equipment from flying debris.
- .21 If, due to lack of precaution, the frame to be retained is damaged and cannot be reused, the Contractor shall replace or repair it adequately at his expense.

## **1.6 CONDITION OF THE STRUCTURES TO BE DEMOLISHED**

- .1 Perform the demolition of the structures in the condition in which they will be on the day the contract is awarded, regardless of the condition in which they were when the site was inspected prior to submission of the tender.
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## **PART 2 - PRODUCTS**

**DOES NOT APPLY**

## **PART 3 - PERFORMANCE**

### **3.1 DEMOLITION METHODS**

- .1 The Contractor is solely in charge of the means and methods of demolition and assumes sole responsibility for them. However, the Contractor shall provide the Departmental representative and the proper authorities with demolition plans describing the methods the Contractor intends to use. These means and methods must be prepared by an Engineer who is a member in good standing of the Ordre des Ingénieurs du Québec and bear the Engineer's seal.
  - .2 If, in the Departmental representative's opinion or that of the representatives of the safety organizations, the demolition methods recommended by the Contractor might cause damage or inconveniences to persons, property or the environment, the Departmental representative or the representatives of the safety organizations may require that these methods be modified or adapted at the Contractor's sole expense.
  - .3 The Departmental representative's involvement shall not release the Contractor from his responsibilities; conversely, the Departmental representative's lack of involvement does not necessarily constitute approval of these means or methods.
  - .4 The demolition methods used by the Contractor must be controllable. Reinforced concrete members shall be demolished progressively. The Contractor shall maintain complete control of all phases of demolition and be able to foresee the effect of his actions on the element under demolition and on the remaining parts. In particular, the Contractor shall avoid overloading parts of the structure with debris in order to prevent them from being damaged.
  - .5 Carefully remove and place on the ground frame structures and other heavy or sizable objects.
  - .6 Selling or burning demolition materials on the site is prohibited.
  - .7 Gather all contaminated or hazardous materials and clear the site while taking all necessary safety measures and complying with the requirements of the authorities involved.
  - .8 Delineate the zone to be demolished using saw cuts in the concrete sections. Saw cuts shall not exceed the layer of concrete covering the rebar where the rebar needs to be retained.
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- .9 In concrete areas to be demolished, if a saw cut crosses more than a third of the entire concrete section and if patching concrete or mortar needs to be poured against this section, the surface shall be bushhammered or coarse-grit sandblasted before applying a binding agent or pouring.
- .10 Ensure that the demolition does not obstruct the runoff water evacuation system, elevators or electrical and mechanical systems that must remain operational.
- .11 Do not cut power to utility lines in service or under tension if they do not have to be relocated.

### **3.2 SEQUENCE OF DEMOLITION WORK**

- .1 In choosing the order in which the various parts of the structure are to be demolished, the Contractor shall ensure that the sequence he has selected is such that the removal of a member does not affect the stability of a part still standing, in order to avoid a cascading collapse in this work area.
- .2 The demolition and clearing of part of the work shall be terminated before the supports are removed.
- .3 No beam, column or other member of the frame shall be cut or detached from the others without having been detached beforehand from all its supports.

### **3.3 ALLOWABLE ROOF LOADS**

- .1 Do not exceed the roof live load of 2.4 kPa.
- .2 Place solid supports at locations where shear legs, derricks and other lifting equipment, which are needed to perform demolition work, are installed.

### **3.4 DEMOLITION**

- .1 Completely and partially demolish structures according to the indications and specifications contained in the structural drawings.
  - .2 Before the start of demolition works, perform an exploratory drill 150mm deep to confirm the topping and the slab thickness.
  - .3 Delimit the topping and slab demolition zone by saw cuts the same thickness as the topping. Before starting saw cuts, the Contractor needs to perform several delimitation drills in the corners of the demolition zone in order to avoid that the saw cuts exceed the limits of this zone, the same depth as the topping and the slab. No over-cut is allowed.
  - .4 Use a light pneumatic drill to perform demolition.
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- .5 At the end of each work day, make sure that no structure can break down or collapse. Close off the parts of the structure not scheduled for demolition to protect them against any damage.
- .6 Perform the demolition so as to generate as little dust as possible and dampen dusty materials.
- .7 Remove any equipment, supply lines and other elements that hinder the restoration or repair of existing surfaces, and reinstall them as work progresses.

### **3.5 BRACING**

- .1 If required, install shoring during concrete demolition work. The Contractor is solely responsible for the building's structural integrity and the stability of masonry or concrete walls during the work.
- .2 If demolition of part of the structure results in the need to install temporary shoring or bracing in an adjacent part of the building scheduled for later demolition, the Contractor shall install this shoring or bracing at his expense.
- .3 Provide the bracing, scaffolding, ladders, chutes and means of transportation required for the work.
- .4 Construct and maintain these structures in compliance with the laws, codes, by-laws and directives of the appropriate authorities.

### **3.6 DRILLING HOLES IN STRUCTURAL MEMBERS**

- .1 When sawing to delineate the opening to be drilled, the Contractor shall take every precaution required to avoid sawing the reinforcement outside the perimeter of the opening.
- .2 Overcuts are not allowed. As a result, delineation drill holes must not be used in the corners of the opening to be drilled in order to ensure saw cuts do not extend beyond the edges of the opening.

### **3.7 SITE CLEAN UP**

- .1 The Contractor shall dispose of all demolition waste in a safe, orderly manner while complying with the requirements of the authorities involved. Clean the site as the work progresses.
  - .2 The Contractor shall remove from the site all temporary material and structures no longer required for performance of the contract, as soon as they are no longer needed.
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- .3 Clean the adjacent areas to restore them to the condition that existed before the work began, to the Departmental representative's satisfaction.
- .4 All temporary obstructions installed for the duration of the work shall be removed from sidewalks, streets or public thoroughfares and the latter shall be restored to their original condition.
- .5 The demolished construction site shall be cleaned and cleared of anything that may cause accidents, fires or harm public health.

**END OF SECTION**