

PART 1 : GENERAL

1.1 REFERENCES

- 1.1.1 Security code for construction works.
- 1.1.2 Health and Safety at Work Act.
- 1.1.3 CSA 5350 – « Code of practice for safety in demolition of structure ».
- 1.1.4 These reference materials are an integral part of this document and the Contractor must necessarily possess or obtain them for bid preparation.
- 1.1.5 Specification and general specifications (CCDG) of the Ministry of Transportation of Quebec – Road Infrastructure – Construction and Repairs –2016 Edition.
- 1.1.6 Standard Specifications of the Bureau de Normalisation du Québec - BNQ - 1809-300 « Watermain and sewer pipes » - 2007 Edition.

1.2 GENERAL REQUIREMENTS

- 1.2.1 Laws, regulations, decrees and security codes on the work covered by this section must be acknowledged and complied with it.

1.3 SCOPE OF WORK

- 1.3.1 The work involved in this section includes, but are not limited to, the supply of all materials, equipment, supplies and services, labor and transportation necessary for the complete execution of demolition, displacement equipment, application and acquisition of required permits, including without limitation, removal or abandonment of :
 - .1 Grass;
 - .2 Existing pipes;
 - .3 Existing sumps.

1.4 QUALITY ASSURANCE

- 1.4.1 Regulators Requirements: ensure that all work is performed according to the requirements of the MDDELCC, to Environment Canada requirements and any provincial regulations / relevant territorial.

1.5 DELIVERY, STORAGE AND HANDLING

- 1.5.1 Storage and protection.

- .1 Protect existing structures in accordance with section 31 23 00 – Excavation and Fill in the structural works' specifications.
- .2 Protect existing structures which must remain in place and those to be recovered or relocated. If they are damaged, replace or repair them immediately to the satisfaction of the Ministry's Representative, at no cost to the latter.

- 1.5.2 Management and Waste Disposal.

- .1 Excess materials must be sent to a site approved by the MDDELCC.

1.6 SCHEDULING

- 1.6.1 Take the necessary steps to ensure that the project is on schedule.

- .1 Inform the Ministry's Representative of potential delays.

PART 2 : EXECUTION

2.1 PREPARATION

- 2.1.1 Inspect the site and validate with the Ministry's Representative the location and extent of the works to be removed, disposed of, recovered, recycled, relocated and those who must remain in place.
- 2.1.2 Identify and protect the utilities pipes. Protect the pipes remained in service crossing the site in order to keep them in a continuous working state.
- 2.1.3 Prior to the demolition, notify the public utility companies in order to locate the underground services.
- 2.1.4 Install fences and safety equipment around the construction zones.
- 2.1.5 Disconnect and seal the pipes designated on the plans.
- 2.1.6 Protect the trees that may be damaged during construction.

2.1.7 The Contractor must take the necessary measures on site, at his own expense, to ensure all communication needs, electricity, water, heating, etc.

2.1.8 Install all landmarks required for the work layout and ensure that all of them are installed and properly protected.

2.2 REMOVAL

2.2.1 Remove and dispose of the specified works, as indicated on plans.

2.2.2 The Contractor shall consider the possibility of concrete reinforcement in all elements to remove. Consequently, sawing and removal thereof are included in the price provided for the demolition of concrete structures.

2.2.3 It is forbidden to disturb works designated to remain in place.

2.2.4 For the demolition and disposal of the shed, the Contractor shall remove the existing concrete bases and repair the surfaces as the existing surfaces.

2.2.5 When it comes to decommission, remove or abandon pipes buried below the surface of an existing coating or an upcoming one, dig to a depth of at least 300 mm below the pipes' invert.

.1 All pipes to decommission are either removed or filled with lean concrete and all their ends are tightly closed.

.2 When the pipe is to be abandoned, it is left in place and filled with concrete for pipes of diameter greater than 65 mm or left empty for pipes of diameter less than 65 mm.

.3 The filling of pipes must be done in the presence of the Ministry's Representative and the method used must allow to measure the injected volume of concrete. The volume should be sufficient to completely fill the pipe.

.4 When the pipe or pipe section is removed or abandoned, a sealing cap must be installed on the pipe left in place.

.5 When a cap is installed on a service pipe, it must be waterproof and resistant to loads and system pressure.

.6 Following decommissioning or abandonment of a pipeline, rehabilitation of areas affected by the works must be done as their existing state. The cost of such work must be included in the price subject to removal or abandonment of a pipeline. Repairing surfaces must comply with the requirements of section "Repair of the surfaces" in Section 32 92 23 "Sodding".

2.2.6 Remove grass and stock the topsoil, for the upcoming works of final grading and landscaping.

.1 If this land is not used immediately, provide anti-erosion measures and seeding works.

2.2.7 Elimination

.1 Evacuate non-designated materials and equipment as to be recovered or recycled / reused on site, to facilities authorized and approved by the MDDELCC.

.2 If the removal of demolition takes place on the same site, rehabilitation of areas used for this purpose must be done, to the satisfaction of the Ministry's Representative.

2.2.8 Backfilling

.1 Perform backfilling where indicated and in accordance with Section 31 23 00 - Excavation and Fill in the structural works' specifications.

2.3 EVACUATION OF SITE MATERIEL

2.3.1 Eliminate products and materials that are not intended for an environmentally sound disposal in accordance with relevant regulations.

2.4 REPAIR

2.4.1 Replace surfaces and structures located outside the demolition zones in the state they were in before the beginning of works. Repair areas used for the circulation of vehicles outside of the contract area.

2.4.2 During the work, the Contractor shall perform maintenance and cleaning of paved surfaces and buildings he soiled or damaged. In addition, all necessary measures to control dust from construction and traffic on the entire site must be taken. The Contractor must, at his own expense and when required, provide and install all the dust suppressant required to minimize the impacts on the surrounding environment.

2.5 CLEANING

2.5.1 Once the work is completed, remove debris, sweep surfaces and leave the site clean.

2.5.2 Use solutions and cleaning methods that are not harmful to health or harmful to vegetation, and do not endanger wildlife, waterways and adjacent groundwater.

END OF SECTION

1. General

1.1 PRICING AND PAYMENT PROCEDURE

- .1 No measurement will be made under this Section. Present a lump sum price for structure demolition.

1.2 REFERENCES

- .1 Canadian Standard Association (CSA)/CSA International.
 - .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures.
- .2 Department of Justice of Canada (Jus).
 - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
 - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.
 - .2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
 - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.3 DEFINITIONS

- .1 Hazardous Materials: dangerous substances and goods, hazardous commodities and products, include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or materials that endanger human health or environment if handled improperly.
- .2 Waste Management Co-ordinator (WMC): Contractor Representative responsible for supervising waste management activities as well as co-ordinating related, required submittal and reporting requirements.
- .3 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill.
- .4 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

1.4 ACTIONS AND INFORMATIONAL SUBMITTALS

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

- .2 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
 - .1 Descriptions of and anticipated quantities of materials to be salvaged, reused, recycled and landfilled.
 - .2 Schedule of selective demolition.
 - .3 Number and location of dumpsters.
 - .4 Anticipated frequency of tipping.
 - .5 Name and address of haulers, waste facilities and waste receiving organizations.
- .3 Submit copies of certified weigh bills, bills of lading and receipts from authorized disposal sites and reuse and recycling facilities for material removed from site upon request of the Representative of the Ministry.
 - .1 Written authorization from the Representative is required to deviate from haulers or facilities and receiving organizations listed in Waste Reduction Workplan.
- .4 Submit for review and approval demolition drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning. Drawings shall be stamped and signed by professional engineer registered and licensed by the Ordre des Ingénieurs du Québec (OIQ).

1.5 QUALITY CONTROL

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial/Territorial and Municipal regulations.
- .2 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting prior to beginning work of this Section, with the Representative of the Ministry to verify existing site conditions adjacent to demolition work.
 - .2 Hold project meetings at intervals defined by the general specifications.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse/recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Divert unused material from landfill to a material collection site as approved by the Representative of the Ministry.

1.7 ENVIRONMENTAL PROTECTION

- .1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.

- .2 Ensure Work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Fires and burning of waste or materials is not permitted on site.
- .4 Do not bury rubbish waste materials.
- .5 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .1 Ensure proper disposal procedures are maintained throughout project.
- .6 Do not dump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction and as directed by the Representative of the Ministry.
- .8 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

1.8 EXISTING CONDITIONS

- .1 If material resembling spray or trowel applied asbestos or other substance listed as hazardous is encountered in course of demolition, stop work, take preventative measures, and notify the Representative of the Ministry immediately. Proceed only after receiving written instructions.
- .2 Electrical ducts may be present into concrete toppings to be demolished. If such ducts are discovered, comply with the following procedure :
 - .1 Stop work in the area adjacent to the duct;
 - .2 Advise the Representative of the Ministry;
 - .3 Pursue work in another area;
 - .4 The Representative of the Ministry shall advise the Ministry. The Ministry shall take measure to allow resuming work. Discovery of ducts within concrete toppings shall not be considered a good reason to motivate delay in works or change in pricing;
 - .5 The Representative of the Ministry will provide directions to the Contractor on how and when to proceed with resuming work in the area where the duct was discovered.
- .3 Structures to be demolished are based on their condition on date that tender is accepted.
- .4 Remove, protect and store recovery items as directed by the Representative of the Ministry. Recovery items as identified on drawings and specifications. Deliver to the Ministry as directed.

2. Products

2.1 MATERIALS

- .1 Equipment and heavy machinery:
 - .1 On-road vehicles to CEPA-SOR/2003-2, On-Road Vehicle and Engine Emission Regulations and CEPA-SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.
 - .2 Off-road vehicles to: EPA CFR 86.098-10 and EPA CFR 86.098-11.
- .2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.
- .3 Access to equipment and heavy machinery.
 - .1 The Contractor remains solely responsible for determining accessibility of equipment and heavy machinery when planning work.

2.2 AUTHORIZED DEMOLITION EQUIPMENT

- .1 Choice of materials used for demolition is subject to approval of the Representative of the Ministry.
- .2 The Representative of the Ministry may reject the use of hydrodemolition equipment. If the Contractor wishes to use hydrodemolition, he shall demonstrate to the Representative of the Ministry satisfaction that no ill effects shall occur to mechanical, electrical or any buried utilities. The Contractor shall be liable for any damage, even accidental, resulting from demolition itself or ensuing water infiltration.
- .3 Follow these guidelines for the use of hand-held pneumatic hammers:
 - .1 30 kg hammer: use a 30 kg or less caliber hammer for complete demolition of concrete except where an hammer of inferior caliber is required. Use this hammer for selective demolition as well on horizontal members before attaining the first layer of reinforcement steel.
 - .2 15 kg hammer: use a 15 kg or less caliber hammer for demolition of concrete over a 100 mm thickness adjacent to existing concrete member to be protected. Use this hammer for selective demolition over the face of vertical members up to the first layer of reinforcement steel.
 - .3 7 kg hammer: use a 7 kg or less caliber hammer for selective demolition of vertical members after attaining the first layer of reinforcement steel, to clear concrete around reinforcement. Use this hammer to demolish concrete over the top of steel beams after attaining the bottom layer of reinforcement.
 - .4 For hollow slab, use a 15 kg hammer for selective demolition up to the first layer of reinforcement steel and a 7 kg hammer to clear concrete around reinforcement steel.

- .5 As an example, for complete demolition of slab over beams when beams shall be protected, use a 30 kg hammer for demolition except for the last 100 mm over the top of the beams where a 15 kg hammer shall be used. For selective demolition of the top of a slab, demolish concrete up to the top layer of reinforcement with a 30 kg hammer than use a 15 kg hammer to clear concrete around reinforcement steel. For columns or walls, use a 15 kg hammer to demolish concrete up to reinforcement steel than use a 7 kg hammer.
- .4 Follow these guidelines for the use of hydraulic hammers:
 - .1 200 J or 350 J hydraulic hammers may only be used for complete demolition of concrete farther than 300 mm from existing concrete to protect.
 - .2 60 J hydraulic hammers may be used in place of 30 kg hand-held pneumatic hammer as indicated in article 2.2.3.1.
- .5 Follow these guidelines for the use of shear type concrete cutters:
 - .1 Shear type concrete cutters may only be used for complete demolition of concrete farther than 300 mm from existing concrete to protect.

3. Execution

3.1 PROTECTION MESURES

- .1 Prevent movement, settlement or damage of adjacent structures, adjacent grades, properties, and parts of existing building to remain.
 - .1 Provide bracing, shoring and underpinning as required.
 - .2 Repair damage caused by demolition as directed by the Representative of the Ministry.
- .2 Support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify the Representative of the Ministry.
- .3 Prevent debris from blocking surface drainage system, mechanical and electrical systems which must remain in operation.

3.2 DEMOLITION PROCEDURES

- .1 Methodology, technics and equipment used for demolition are determined by the Contractor.
 - .1 Submit detailed procedure for structure demolition to Representative of the Ministry at least one week prior to beginning work.
 - .2 Follow the indications of article 2.2 to determine methodology, technics and equipment for demolition.

- .2 If the Representative of the Ministry or representatives from regulators consider that the methodology for demolition submitted by the Contractor endangers people, propriety or environment, they may require that the Contractor submit alternative methodology.
- .3 Intervention or comments from the Representative of the Ministry does not relieve the Contractor from his responsibilities. Inversely, the absence of intervention by the Representative of the Ministry does not signify approval of means or methods used by the Contractor.
- .4 Means of demolition used by the Contractor must allow quality control. The Contractor shall be able to control all phase of work, be able to predict the consequences of his actions to the structure including parts that are not being demolished. In particular, the Contractor shall not overload existing part of the structure with debris from demolition.
- .5 Steel structure erection and dismantling work shall be done in accordance with Quebec's *Safety Code for the Construction Industry*, article 3.24 *Steel structure erection or dismantling work*.

3.3 PREPARATION

- .1 Work in accordance with Section 01 35 29.06 – Health, Safety and Emergency Procedures.
- .2 Disconnect and re-route electrical and telephone service lines entering buildings to be demolished.
 - .1 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- .3 Disconnect and cap designated mechanical services.

3.4 SAFETY

- .1 The Contractor shall ensure safety of worksite at any time, including outside normal work hours.
- .2 Install, in accordance with laws, codes and regulations, fences, security shelters, safety guard, rails, lighting, alarm panels, etc., as required during execution of work to protect the public, the Ministry and his Representatives as well as users against material loss or damage, injuries, loss of life or any other safety threat that may occur due to neglect, carelessness or incompetence of the Contractor, subcontractors or their employees.
- .3 Where required, the Contractor shall erect protective panels to prevent debris from reaching installations and existing equipment.
- .4 Blasting operations are not permitted during demolition.

3.5 VIBRATION CONTROL

- .1 Limit ground vibrations to protect existing works and structures.
- .2 Near existing works or structures, peak particular ground speed shall not exceed 25 mm/s at existing works or structures.

3.6 SHORING, BRACING AND UNDERPINNING

- .1 The Contractor shall provide temporary work required to ensure shoring and retaining soil whenever required. The Contractor shall ensure the structural integrity of work including stability of concrete during work, under gravity as well as lateral loads.
- .2 Existing works to shore and procedure of shoring are under the sole responsibility of the Contractor and must be approved by the Representative of the Ministry. Shoring, bracing and underpinning drawings shall bear the seal and signature of a professional engineer, certified by the Ordre des Ingénieurs du Québec (OIQ).
- .3 Provide bracings, ladders, scaffoldings, chutes, etc. as required for shoring works.
- .4 Submit a letter signed by a professional engineer certified by the Ordre des Ingénieurs du Québec (OIQ), stating that the construction of shoring, bracing and underpinning was done in accordance with the plans submitted. The engineer attesting the conformity of temporary shoring must visit the site of work prior to the production of the letter and attach the report of his visit to the letter.
- .5 If the Contractor does not use temporary shoring, the Representative of the Ministry may request that the Contractor provides a letter signed by a professional engineer certified by the OIQ stating that temporary shoring is not required for a specific part of the work.

3.7 DEMOLITION

- .1 Execute demolition work as required to allow other work. Coordinate the location of existing and projected works, as required in planning temporary shoring.
- .2 Do not use demolition materials as fill for basement or open pits. Remove from basements and open pits concrete or masonry debris from demolition.
- .3 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
- .4 At end of each day's work, leave Work in safe and stable condition.

Protect interiors of parts not to be demolished from exterior elements at all times.
- .5 Demolish to minimize dusting. Keep materials wetted as directed by the Representative of the Ministry.
- .6 Remove structural framing.
- .7 If by lack of precaution, existing reinforcing steel to protect is damaged and cannot

be reused, the Contractor shall replace it properly and at its expense.

- .8 Only dispose of material specified by selected alternative disposal option as directed by the Representative of the Ministry or for own use.
 - .1 It is forbidden to dispose of this material to a landfill or incorporate them into a flow of waste for landfill.
 - .2 Additional disposal options may be provided by the Representative of the Ministry, prior to disposal.
- .9 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.
- .10 Do not execute demolition work during the following period of time:
 - .1 On week days, by night, between 15 h 30 and 8 h 00;
 - .2 On week-end, by day or night, between Friday 15 h 30 and Monday 8 h 00;
 - .3 On holidays, by day or night.
- .11 Shut off lighting except those required for security purposes at the end of each day.

3.8 STOCKPILING

- .1 Label stockpiles, indicating material type and quantity.

3.9 MATERIALS REMOVAL

- .1 Remove stockpiled material as directed by the Representative of the Ministry, when it interferes with operations of project construction.
- .2 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.
- .3 Transport material designated for alternate disposal using approved haulers, facilities and receiving organizations listed in Waste Reduction Workplan and in accordance with applicable regulations.
 - .1 Written authorization from the Representative of the Ministry is required to deviate from haulers, facilities or receiving organizations listed in Waste Reduction Workplan.
- .4 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
 - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
 - .2 Written authorization from the Representative of the Ministry is required to deviate from disposal facilities listed in Waste Reduction Workplan.

3.10 CLEANING

- .1 Area of Work and adjacents areas shall be cleaned to be returned to their state prior to beginning Work, to the satisfaction of the the Representative of the Ministry.
- .2 The location of demolished structure shall be cleaned and secured. Any element susceptible to cause harm, affect adversely public health or representing fire risk shall be evacuated from site.

END OF SECTION

