

1 General

1.1 **GENERAL REQUIREMENTS**

1.1.1 Conform to Sections of Division 1 as applicable.

1.2 **RELATED WORK**

1.2.1 Removal of furniture, fittings and equipment from building to be demolished: Not in Contract (NIC) unless otherwise noted.

1.2.2 Environmental protection: Section 01350, Environmental Protection Requirements.

1.2.3 Disconnection and sealing off sanitary services and water supply to building to be demolished: Division 15, Mechanical.

1.2.4 Disconnection and sealing off electrical services to building to be demolished: Division 16, Electrical.

15010 DEMOLITION AND REMOVAL:

Be responsible for demolition and removal of mechanical equipment services designated for removal on Drawings and as required by Work, unless otherwise specified under Section 02260, Demolition.

Mechanical work being removed under Section 02220, Demolition shall be carried out under direction of this Division. Do disconnecting and capping prior to authorizing removal.

16010 DEMOLITION AND REMOVAL:

Be responsible for demolition and removal of electrical equipment services scheduled for removal on Drawings and as required by Work, unless otherwise specified under Section 02260, Demolition.

Electrical work being removed under Section 02260, Demolition shall be carried out under direction of this Division. Do disconnecting and capping prior to authorizing removal.

1.2.5 Demolition and removal of existing mechanical installations and equipment: Division 15, Mechanical.

1.2.6 Demolition and removal of existing electrical installations and equipment: Division 16, Electrical.

1.3 REFERENCES

CSA S350-M80 - Code of Practice for Safety in Demolition of Structures
Gasoline Handling Act, 1980

1.4 DEFINITIONS

1.4.1 Hand Demolition: systematic demolition of structures by workers using hand-held tools.

1.4.2 Mechanical Demolition: systematic demolition of structures using powered equipment.

1.4.3 Systematic Demolition: methodical dismantling of structure piece by piece, usually carried out in reverse order of construction.

1.4.4 Rapid Progressive Failure: method of demolition where key elements of structure are removed causing rapid and complete collapse of whole or part of structure.

1.5 SUBMITTALS

1.5.1 Where required by authorities having jurisdiction, submit drawings, diagrams or details showing sequence of dismantling work and shoring of structures during demolition.

1.5.2 Drawings for structural elements shall bear signed professional seal of Structural Engineer licensed to practice in Manitoba.

1.6 QUALITY ASSURANCE

1.6.1 Regulatory Requirements:

1.6.1.1 Conform to The Occupational Health and Safety Act, and Regulation for Construction Projects.

1.6.1.2 Conform to MBC, especially Article 2.3.2.3 as applicable.

1.6.1.3 Conform to Fire Code, Regulation under the Fire Marshals Act especially Part 8.

1.6.2 **Qualifications:**

1.6.2.1 Employ for this work demolition company having substantial experience in this work satisfactory to Owner's Designee.

1.6.2.2 Demolition material required to be recycled shall be removed by skilled personnel having substantial experience in reinstallation of material being removed satisfactory to Owner's Designee. Instruct skilled crew in procedure of careful removal of items to be reused, refurbished and recycled.

1.6.2.3 Employ skilled personnel having substantial experience in removing, handling and storing heritage items.

1.6.3 **Mock Ups:**

1.6.3.1 Sample demolition: When and where required, remove materials indicated to assess conditions and to confirm removal methodology and accuracy of cut locations findings.

1.6.4 **Pre-Demolition Meeting:**

1.6.5 Prior to start of work, arrange for Site meeting of all parties associated with work of this Section. Presided by Owner's Designee, meeting shall include General Contractor, Demolition Subcontractor, Testing Company's Representative and Structural Design Engineer.

1.6.6 Meeting shall review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, methods to be used, sequence and quality control, project staffing, restrictions due to environmental protection requirements and other matters affecting demolition, to permit compliance with intent of this Section.

1.7 **PROJECT CONDITIONS**

1.7.1 **Existing Conditions:**

1.7.1.1 Maintain road access to buildings. Schedule noisy operations with considerations for surrounding residents. Do not schedule noisy work before 7:00 am or after 8:00 pm in close proximity to adjacent buildings.

1.7.2 **Maintaining Traffic:**

1.7.2.1 Do not close or obstruct streets, sidewalks, alleys, passageways without permits. Do not place or store materials in streets, alleys or passageways.

1.7.2.2 Conduct operations with minimum interference with roads, streets, driveways, alleys, passageways.

1.8 **SEQUENCE AND SCHEDULING**

1.8.1 Where practicable, remove or neutralize hazardous or toxic materials identified during survey before demolition begins.

1.8.2 Retain existing services, until new services to Site are functioning. Minimize interruption of services to building at time of transfer to new services and coordinate timing of interruption with Owner's Designee.

2 Products

2.1 **MATERIALS**

2.1.1 Except as indicated on Drawings, materials forming permanent part of structure being demolished shall become property of this Section. Remove from Site.

2.1.2 Remove contaminated and dangerous material from Site and dispose of in safe manner to minimize danger involved at Site or at anytime during disposal.

3 Execution

3.1 **PREPARATION**

3.1.1 **Preliminary Survey:**

3.1.1.1 Before commencing demolition operations, examine Site and when requested, provide engineering survey to determine type of construction, condition of structure and Site conditions. Assess strength and stability of damaged or deteriorated structures.

3.1.1.2 Assess potential effect of removal of any part or parts on the remainder of structure before such part(s) are removed.

- 3.1.1.3 Assess effects of demolition on adjacent properties and consider need for underpinning, shoring and/or bracing.
- 3.1.1.4 Investigate for following conditions:
- effects of soils, water, lateral pressures on retaining or foundations walls
 - presence of tanks, wells, other piping systems
 - presence of hazardous materials
- 3.1.1.5 Contact municipal authorities or utility companies for assistance in locating and marking services passing under, through, overhead or adjacent to structure to be demolished. Such services include:
- electrical power lines
 - gas mains
 - oil pipelines
 - communication cables
 - water mains
 - drainage piping (storm and sanitary)
 - steam distribution
- 3.1.1.6 After determining demolition methods, determine area of possible vibration. Carefully inspect beyond those adjacent areas. List potential damage areas and photograph each for record purposes before starting work.
- 3.1.1.7 Obtain permission from adjacent property owners regarding use of outriggers, swinging cranes and similar equipment.
- 3.1.2 **Protection:**
- 3.1.2.1 Provide, erect and maintain required hoarding, sidewalk sheds, catch platforms, lights and other protection around site before commencing work. Maintain such areas free of snow, ice, mud, water and debris. Lighting levels shall be equal to that prior to erection.
- 3.1.2.2 Provide flagmen where necessary or appropriate to provide effective and safe access to Site to vehicular traffic and protection to pedestrian traffic.
- 3.1.2.3 Ensure scaffolds, ladders, equipment and other such equipments are not accessible to public. Protect with adequate fencing or remove and dismantle at end of each day or when no longer required.

- 3.1.2.4 Do not interfere with use and activities of adjacent buildings. Maintain free and safe passage to and from buildings.
- 3.1.2.5 Protect existing adjacent work against damages which might occur from falling debris or other causes due to work of this Section.
- 3.1.2.6 Where necessary to seal fire exits of adjoining or adjacent buildings, provide other exits in compliance with applicable fire safety and building regulations.
- 3.1.2.7 Where demolition operations prevent normal access to adjacent properties, provide and maintain suitable alternative access.
- 3.1.2.8 If at any time safety of adjacent buildings appear to be endangered, cease operations and notify Owner's Designee; take precautions to support buildings; do not resume operations until permission is granted by Owner's Designee.
- 3.1.2.9 If Owner's Designee considers additional bracing and shoring necessary to safeguard and prevent such movement or settlement, install bracing or shoring upon Owner's Designee's orders. Should Contractor fail to comply promptly with such request, such bracing or shoring may be placed by Owner's Designee at Contractor's expense.
- 3.1.2.10 Take precautions to guard against movement, settlement or collapse of adjacent services, sidewalks, driveways, or trees. Be liable for such movement, settlement or collapse caused by failure to take necessary precautions. Repair promptly such damage when ordered.
- 3.1.2.11 Erect and maintain dustproof partitions as required to prevent spread of dust, fumes and smoke to other parts of building. Maintain fire exits from Site. On completion, remove partitions and make good surfaces to match adjacent surfaces of building.
- 3.1.1.6 Before starting demolition, ensure that required dust-tight partitions have been installed by Section 01500, Temporary Facilities and Controls where necessary.

3.1.2 **Existing Services:**

- 3.1.2.1 Provide and maintain temporary services required during demolition to satisfaction of authorities having jurisdiction, fire departments and utility companies.
- 3.1.2.2 Before commencing demolition, contact Electrical Department of local authority and tour Site with them. Disconnect and seal electrical power lines and communications cables entering buildings to be demolished. Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- 3.1.2.3 Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction. Natural gas supply lines shall be removed by Gas Company or by qualified tradesman in accordance with Gas Company instructions. Remove and dispose of other existing underground services and mechanical equipment.
- 3.1.2.4 Remove electrical equipment scheduled for removal on Drawings and as required by Work.
- 3.1.2.5 Remove sewer and water lines to extent indicated on Drawing and cap to prevent leakage.

3.2 **PERFORMANCE**

3.2.1 **General:**

- 3.2.1.1 Ensure demolition work is supervised by competent foreman at all times.
- 3.2.1.2 Demolition shall proceed safely in systematic manner from roof to grade, as specified herein, and as necessary to accommodate remedial work indicated. Work on each floor level shall be complete before commencing work on supporting structure and safety of its supports are impaired. Parts of building which would otherwise collapse prematurely shall be securely shored. Walls and piers shall not be undermined.
- 3.2.1.3 Materials and debris shall not be stacked in building to extent that overloading of any part of structure will occur.

- 3.2.1.4 At end of each day's work leave work in safe condition ensuring that no parts of structure are in danger of collapsing.
- 3.2.1.5 Until acceptance, maintain and preserve active utilities traversing premises.
- 3.2.1.6 Keep work wetted down to minimize dust.
- 3.2.1.7 Minimize noise. Avoid use of noisy machinery outside working hours.
- 3.2.1.8 Provide enclosed chutes for disposal of debris from heights more than 1 storey in accordance with CSA S350-M.
- 3.2.1.9 Provide protection around floor and/or roof openings.
- 3.2.1.10 Upon completion of demolition work, level and clear Site or prevent access to excavations by means of fences or hoardings.
- 3.2.1.11 Maintain safety of Site by shoring against collapse below-grade-structures and excavations resulting from demolition. Where required, provide structural supports for adjacent structures.
- 3.2.1.12 Protect from weather parts of adjoining structures not previously exposed.
- 3.2.2 **Demolition:**
 - 3.2.2.1 Demolish structure and remove materials from Site.
 - 3.2.2.2 Demolish and remove interior partitions, walls, ceilings, flooring down to concrete substrate, except those specified and/or indicated to remain.
 - 3.2.2.3 Separate attached structures by hand demolition prior to general demolition. Separation may be carried out floor by floor in advance of demolition at each level.
 - 3.2.2.4 Demolish masonry and concrete walls in small sections. Remove and lower structural members and other heavy objects with safe and suitable equipment.

- 3.2.2.5 Investigate nature and condition of suspended concrete slabs, condition and position of reinforcement. Follow Recommendations for Demolition of Structures, Appendix A of CSA S350-M. Consult professional engineer qualified to practice in Ontario and qualified with this type of construction for method and sequence of demolition if structure is of post-tensioned construction to avoid uncontrollable failure.
- 3.2.2.6 Remove all mechanical and electrical items indicated to be removed.
- 3.2.2.7 Clear basements and underfloor crawl spaces of plumbing and heating apparatus, piping, fixtures and fittings, electrical equipment and wiring and wood work.
- 3.2.3 **Methods:**
 - 3.2.3.1 Hand and mechanical demolition shall be acceptable methods for work of this Section. Verify with Owner's Designee whether proposed methods of demolition are acceptable.
 - 3.2.3.2 Following methods of demolition will not be permitted in work of this Contract:

3.3 DISPOSAL OF WASTE MATERIALS

- 3.3.1 Selling or burning of materials on Site is not permitted.
- 3.3.2 Conform to requirements of municipality's Works Department regarding disposal of waste materials.
 - 3.3.2.1 Materials prohibited from municipality waste management facilities shall be removed from Site and dispose of to recycling companies specializing in recyclable materials.
 - 3.3.2.2 Loads containing more than 10 per cent recyclable wood products such as pallets, off-cuts, wood chips and sawdust, excluding pressure treated wood, creosote contaminated wood and wood waste from demolition Site that is attached (i.e. with nails, adhesives, and similar fastening devices) to non-wood materials like shingles, gypsum board, flooring and laminates;
 - 3.3.2.3 Loads containing more than 50 per cent scrap metal;

- 3.3.2.4 Excavated material including contaminated excavated material, over and above Department's operating requirements and except for petroleum contaminated soil which can be recycled by Soil Recycling Company.
- 3.3.2.5 Above materials prohibited from waste management facilities shall be removed from Site and dispose of to recycling companies specializing in recyclable materials.

End of Section