

## SECTION 024116

### DEMOLITION

#### PART 1 - GENERAL

##### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections 31 and 32, apply to this Section.

##### 1.02 SUMMARY

- A. This Section includes the following:
  - 1. Demolition and removal of buildings and site improvements.
  - 2. Abandoning in place or removing below-grade construction.
  - 3. Disconnecting, capping or sealing, and abandoning in-place or removing site utilities.
  - 4. Salvaging items for reuse by Owner.
- B. Related Sections include the following:
  - 1. Division 2 Section "Summary" for use of the premises and phasing requirements.
  - 2. Division 2 Section "Construction Progress Documentation" for preconstruction photographs taken before building demolition.
  - 3. Division 2 Section "Temporary Facilities and Controls" for temporary construction, protection facilities, and environmental-protection measures for building demolition operations.
  - 4. Division 2 Section "Construction Waste Management and Disposal" for recycling and disposal of nonhazardous demolition wastes and for removal and storage of refrigerant.
  - 5. Division 2 Sections for demolishing or relocating site plumbing items.
  - 6. Division 2 Sections for demolishing or relocating site electrical items.
  - 7. Division 2 Section "Site Clearing" for site clearing and removal of above- and below-grade site improvements not part of building demolition
  - 8. Division 2 Section "Erosion and Sediment Control" for stabilization and control of discharges from the site.

##### 1.03 DEFINITIONS

- A. Demolish: Completely remove and legally dispose of off-site.
- B. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.
- C. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner. Include fasteners or brackets needed for reattachment elsewhere.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

##### 1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

##### 1.05 SUBMITTALS

- A. Qualification Data (when required by Owner or Authorities Having Jurisdiction):
  - 1. Demolition Firm
  - 2. Test Control Firm
  - 3. For Refrigerant Recovery Technician.
  - 4. Licensed Professional Providing Demolition Oversight.
- B. Proposed Protection Measures: Submit informational report, including drawings, that indicates the measures proposed for protecting individuals and property. The drawing shall outline proposed methods for dust control, noise control and maintaining the surrounding streets and

buildings in a clean condition for both demolition operations and during debris removal. Indicate proposed locations and construction of barriers.

1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain.
- C. Schedule of Demolition Activities: Contractor to submit for review and approval a detailed schedule for all proposed work to the Owner with the bid package. Submission shall include:
1. Detailed sequence of demolition work, with starting and ending dates for each activity.
  2. Step-by-step description of all aspects pertaining to the demolition and protection of existing structures, the surrounding community, labor forces, rubble material management and disposal
  3. Temporary interruption of utility services.
  4. Shutoff and capping or re-routing of utility services.
- D. Traffic Control Plan: Contractor shall submit Traffic Control Plan with bid package complying with Division 32 Section 321321 "Traffic Control"
- E. Utility Schedule:
1. Contractor to submit to Owner and all affected utility/service companies a proposed schedule of coordination for all necessary utility/service shut-offs, capping and continuation of utility services as required in the contract bid package.
  2. Contractor to provide Owner with written confirmation for all utility or service companies serving the site that service has been terminated prior to capping, abandoning or removal of any utility and prior to commencement of building demolition.
  3. Contractor shall accurately locate and mark on the contract drawings the location of all underground utility and services that have been capped and those that are to remain within the contract area.
- F. Permits:
1. Prior to submission of a bid package, the Contractor shall investigate all permit requirements and include any cost for these requirements in the bid. Prior to the commencement of work, the Contractor shall obtain all necessary permits and certificates associated with utility disconnections, storage tank removals and building demolition work from any and all Federal, State or regulatory authorities having jurisdiction. The Contractor shall incur all fees and other requirements associated with all permits and certificates. Copies of all permits and certificates obtained including drawing and permit preparation, procurements, revisions and filing fees shall be borne by the Contractor.
  2. All permits and certificates shall be obtained by the Contractor prior to applying for and obtaining general demolition permits. The following permits and certificates shall be obtained by the Contractor if applicable:
    - a. Plumbing permit for water shut-off
    - b. Water shut-off certificate (original)
    - c. Plumbing permit for sewer seal
    - d. Building and/or Fire Department permit for underground storage tank removal
    - e. Letters from Electric and Gas Utility companies and gas meter shut-offs
    - f. Letters from Cable TV companies for cable disconnections and removals
    - g. Certificate from Tax Office (taxes paid);
    - h. Letter to adjacent Owners of proposed demolition with proof of receipt
    - i. Exterminator Certificate
    - j. Board of Health approval
    - k. Soil Erosion and Sediment Control Permit
    - l. Asbestos Abatement Permit
    - m. Asbestos Abatement Completion
    - n. Demolition Contractor's License
    - o. Any other permit or certificate required to perform the demolition work
- G. Building Demolition Plans: Drawings indicating the following:
1. Locations of temporary protection
- H. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

- I. Pre-demolition Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by building demolition operations. Documentation to include condition of on-site and adjacent structures and features including but not limited to curbs, sidewalks, landscapes, pavements, utility structures at grade, light poles, telephone poles, fences, bollards, etc... Comply with Division 1 Section 013200 "Construction Progress Documentation" . Submit before the Work begins.
- J. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes. Contractor to provide written permission from property owner on whose property the demolition material is to be disposed. Copies of any agreements shall be furnished to the Owner prior to sending any materials from the demolition site.
- K. Hazardous Materials: Contractor to deliver manifest or disposal tickets to Owner and Owner's Engineer for each truck that exits and enters the project site. Manifests shall include:
  - 1. Date and time of departure from demolition site.
  - 2. Type of material removed from site and type of material brought to the site.
  - 3. Amount of material in tons.
  - 4. Truck ID number
  - 5. Final destination of excess material.
  - 6. Date and time of entry to the demolition material
  - 7. Date and time of entry to the demolition site.
  - 8. Amount of material
  - 9. Source of material brought on-site.
- L. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

#### **1.06 QUALITY ASSURANCE**

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Statement of Refrigerant Recovery: Statement shall be signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant present was recovered and recovery was performed according to EPA regulations. Include name, address and signature on statement along with the date refrigerant was recovered.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI A10.6 and NFPA 241.
- E. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in *Division 01 Section 013200 "Project Management and Coordination."* Review methods and procedures related to building demolition including, but not limited to, the following:
  - 1. Inspect and discuss condition of construction to be demolished.
  - 2. Review structural load limitations of existing structures.
  - 3. Review and finalize building demolition schedule and verify availability of demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review and finalize protection requirements.
  - 5. Review procedures for noise control and dust control.
  - 6. Review procedures for protection of adjacent buildings.
  - 7. Review items to be salvaged and returned to Owner.
- F. Progress Meetings: Once demolition work has begun Contractor shall schedule, administer and attend regularly scheduled meetings. Contractor shall include selected subcontractors as necessary to attend Progress Meetings. Contractor to schedule time and frequency of meetings at Owner's request to maintain optimum degree of communication between all parties involved.

#### **1.07 PROJECT CONDITIONS**

- A. Buildings to be demolished will be vacated and their use discontinued before start of the Work.
- B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so operations of occupied buildings will not be disrupted.

1. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
2. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings.
  - a. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from authorities having jurisdiction.
- C. Owner assumes no responsibility for buildings and structures to be demolished.
  1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- D. Removal and Relocation of Existing Utilities/Structures: The Contractor shall be responsible for removal and/or relocation of existing utilities/structures, whether shown or not shown on the drawings, at locations where conflicts occur with proposed improvements at no additional cost to the owner.
- E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work unless otherwise indicated in the contract documents.
  1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.
- F. On-site storage or sale of removed items or materials is not permitted.

#### **1.08 COORDINATION**

- A. Arrange demolition schedule so as not to interfere with Owner's on-site operations or operations of adjacent occupied buildings.

### **PART 2 - PRODUCTS**

- 2.01 The Contractor shall supply all materials as required for this work.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Review Project Record Documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- B. Inventory and record the condition of items to be removed and salvaged. Provide video of conditions that might be misconstrued as damage caused by salvage operations. Comply with *Division 01 Section 013200 "Construction Progress Documentation"*.
- C. Survey condition of existing building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations. Correlate existing conditions with requirements indicated on drawings to help determine extent of work.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Verify that all asbestos containing materials have been removed before proceeding with building demolition operations.
- F. Verify all sediment control measures are in place per the Phase I Erosion and Sediment Control Plan and Division 31 Section 311100 "Erosion and Sediment Control" (*forthcoming Division 31 Section 311100*) and the Stormwater Pollution Prevention Plan.

#### **3.02 PREPARATION**

- A. Refrigerant: Remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction before starting demolition.
- B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings and structures to be demolished.
  1. Arrange to shut off indicated utilities with utility companies.
  2. If removal, relocation, or abandonment of utility services will affect adjacent occupied buildings, then provide temporary utilities that bypass buildings and structures to be

- demolished and that maintain continuity of service to other buildings and structures as acceptable to Owner and authorities having jurisdiction.
3. Cut off pipe or conduit a minimum of **24 inches (610 mm)** below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing according to requirements of authorities having jurisdiction.
- C. Existing Utilities: Refer to Divisions 22 and 26 Sections for shutting off, disconnecting, removing, and sealing or capping utilities. Do not start demolition work until utility disconnecting and sealing have been completed and verified in writing.
  - D. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
    1. Strengthen or add new supports when required during progress of demolition.
  - E. Salvaged Items: Comply with the following:
    1. Clean salvaged items of dirt and demolition debris.
    2. Pack or crate items after cleaning. Identify contents of containers.
    3. When permitted by Owner items removed may be stored in protected storage location during demolition and returned in original locations after demolition operations are complete. Store items in a secure area until delivery to Owner.
    4. Transport items to storage area designated by Owner or as indicated on Drawings.
    5. Protect items from damage during transport and storage.

### **3.03 PROTECTION**

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Existing Utilities: Maintain utility services to remain and protect from damage during demolition operations.
  1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
  2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and authorities having jurisdiction.
    - a. Provide at least 72 hours' notice to occupants of affected buildings if shutdown of service is required during changeover.
- C. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Division 01 Section 015000 "Temporary Facilities and Controls"
  1. Protect adjacent buildings and facilities from damage due to demolition activities.
  2. Protect existing site improvements, appurtenances, and landscaping to remain.
  3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
  4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
  6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
  7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- D. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

### **3.04 DEMOLITION, GENERAL**

- A. General: Demolish indicated existing buildings and site improvements completely as specifically identified on the construction drawings. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Do not use cutting torches until work area is cleared of flammable materials. Maintain portable fire-suppression devices during flame-cutting operations.
  2. Maintain fire watch during and hours after flame cutting operations as required by authorities having jurisdiction.
  3. Maintain adequate ventilation when using cutting torches.
  4. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- B. Engineering Surveys: During demolition, perform surveys to detect hazards that may result from building demolition activities.
- C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
  2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

### **3.05 DEMOLITION BY MECHANICAL MEANS**

- A. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on the next lower level.
- B. Remove debris from elevated portions of the building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact and dust generation.
- C. Salvage: Items to be salvaged are indicated on Drawings.
- D. Below-Grade Construction: Abandon foundation walls and other below-grade construction. Cut below-grade construction flush with grade.
- E. Below-Grade Construction: Demolish foundation walls and other below-grade construction that are within footprint of new construction and extending **10 feet (3 m)** outside footprint indicated for new construction. Abandon below-grade construction outside this area.
1. Remove below-grade construction, including basements, foundation walls, and footings, to at least 24 inches (600 mm) below grade or as indicated on drawings or as required to eliminate conflict with new construction.
- F. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.
- G. Existing Utilities: Demolish existing utilities and below-grade utility structures that are within 10 feet (3 m) outside footprint indicated for new construction. Abandon utilities outside this area.
1. Fill abandoned utility structures with satisfactory soil materials or recycled pulverized concrete and as indicated on the drawings or directed by Owner and according to backfill requirements in Division 31 Section 312000 "Earth Moving"

### **3.06 DEMOLITION BY EXPLOSIVES**

- A. Explosives: Perform explosive demolition only as approved by Owner and according to governing regulations.

### **3.07 SITE RESTORATION**

- A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B. Below-Grade Areas: Completely fill below-grade areas and voids resulting from building demolition operations with satisfactory soil materials according to backfill requirements in Division 31 Section 312000 "Earth Moving"

- C. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

**3.08 REPAIRS**

- A. Promptly repair damage to adjacent buildings caused by demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- C. Restore exposed finishes of patched areas and extend restoration into adjacent construction in a manner that eliminates evidence of patching and refinishing.

**3.09 DISPOSAL OF DEMOLISHED MATERIALS**

- A. Remove demolition waste materials from Project site and safely dispose of all items in accordance with applicable EPA, State and local authorities having jurisdiction and all codes and ordinances. *(See Division 01 Section "Construction Waste Management and Disposal" for recycling and disposal of demolition waste.)*
- B. All recycling must be conducted in accordance with all currently applicable EPA, State and Local authorities having jurisdiction waste flow regulations. All recycling of demolition debris must be approved by Owner.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Do not burn demolished materials.

**3.10 CLEANING**

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

**END OF SECTION 024116**