

SECTION 024116 - DEMOLITION & REMOVAL

PART 1 - GENERAL

1.1 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
- B. AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)
 - 1. ASSE/SAFE A10.6 2006) Safety Requirements for Demolition Operations
- C. SPECIFIED ELSEWHERE:
 - 1. Section 024119 – Selective Demolition.
- D. The Contractor shall comply with the 2009 Virginia Statewide Fire Prevention Code and NFPA 241-2004. Contractor shall maintain a copy of these documents at the construction site.

1.2 PROJECT DESCRIPTION

- A. Demolition Plan - Prepare a Demolition Plan and submit proposed salvage and demolition and removal procedures for approval before work is started. Include in the plan: procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation, and of the sequence of operations. Refer to Section 013300 – Submittal Procedures for additional information.
- B. General Requirements - Do not begin demolition or deconstruction until authorization is received from the Owner. The work of this section is to be performed in a manner that maximizes salvage and recycling of materials. Remove rubbish and debris from the project site; do not allow accumulations outside the buildings. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from Owners property daily, unless otherwise directed. If permitted, store materials that cannot be removed daily in areas specified by the Owner.
- C. Salvage Requirements – Materials indicated to be salvaged may, at the contractor discretion, be recycled or disposed of in a proper and legal manner.

1.3 ITEMS TO REMAIN IN PLACE

- A. Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Owner. Repair or replace damaged items as approved by the Owner. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition or removal work.

- B. Existing Construction Limits and Protection - do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoring and bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove snow, dust, dirt, and debris from work areas daily.
- C. Trees - Protect trees within the project site which might be damaged during demolition, and which are indicated to be left in place, by a 6 foot high fence. Erect and secure fence a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Replace any tree designated to remain that is damaged during the work under this contract with like-kind or as approved by the Owner.
- D. Utility Service - Maintain existing utilities indicated to stay in service and protect against damage during demolition operations. Prior to start of work, utilities serving each area of alteration or removal will be shut off by the Utility Service Company or by the Owner, and disconnected and sealed by the Contractor.
- E. Facilities - Protect electrical and mechanical services and utilities to remain. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, must remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Owner. Ensure that no elements determined to be unstable are left unsupported and place and secure bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.4 BURNING

- A. The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.5 QUALITY ASSURANCE

- A. Submit timely notification of demolition to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the State's environmental protection agency - local air pollution control district/agency and the Owner in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. Comply with federal, state, and local hauling and disposal regulations. Conform to the safety requirements contained in ASSE/SAFE A10.6. Use of explosives will not be permitted.
- B. Dust and Debris Control - Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Sweep pavements as often as necessary to control the spread of dust and debris.

1.6 PROTECTION

- A. Traffic Control Signs - Where pedestrian and driver safety is endangered in the area of demolition work, use traffic barricades with flashing lights. Anchor barricades in a manner to

prevent displacement by wind. Notify the Owner prior to beginning such work. If work is performed in the VDOT right-of-way ensure the "Land Use Permit" is secured prior to starting work.

- B. Protection of Personnel - Before, during and after the demolition work continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the project site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.7 RELOCATIONS

- A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged items as approved by the Owner.

1.8 EXISTING CONDITIONS

- A. Before beginning any demolition work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions showing the condition of structures and other facilities adjacent to areas of alteration or removal. Photographs will be acceptable as a record of existing conditions. It is the Contractor's responsibility to verify and document all required utility outages which will be required during the course of work, and to note these outages on the record document. Submit survey results.

1.9 SUBMITTALS

- A. Qualification Data: For qualified refrigerant recovery technician.
- B. Proposed Protection Measures: Submit informational report, including Drawings, that indicates the measures proposed for protecting individuals and property for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
 - 1. Adjacent Buildings: Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings.
- C. Schedule of Building Demolition Activities: Indicate the following:
 - 1. Detailed sequence of demolition work, with starting and ending dates for each activity.
 - 2. Temporary interruption of utility services.
 - 3. Shutoff and capping or re-routing of utility services.
- D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- E. Pre-demolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by demolition operations. Submit before the Work begins.
- F. Records:

1. Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes. Retained and provided copies of all receipts to Owner or Environmental Consultant.

- G. 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.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. Comply with excavating, backfilling, and compacting procedures for soils used as backfill material to fill basements, voids, depressions or excavations resulting from demolition or deconstruction of structures. See Section 312000 – Earthwork.

PART 3 - EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

- A. Inspect and evaluate existing structures onsite for reuse. Existing construction scheduled to be removed for reuse shall be disassembled. Dismantled and removed materials are to be separated, set aside, and prepared as specified, and stored or delivered to a collection point for reuse, remanufacture, recycling, or other disposal, as specified. Materials shall be designated for reuse onsite whenever possible.
- B. Structures
1. Remove existing structures indicated to be removed to one (1) foot below grade of foundation. Break up basement slabs, remove sidewalks, curbs, gutters and light pole bases as indicated.
 2. Demolish structures in a systematic manner from the top of the structure to the ground. Complete demolition work above each tier or floor before the supporting members on the lower level are disturbed. Demolish concrete and masonry walls in small sections. Remove structural framing members and lower to ground by means of derricks, platforms hoists, or other suitable methods.
 3. Locate demolition equipment throughout the structure and remove materials so as to not impose excessive loads to supporting walls, floors, or framing.
- C. Utilities and Related Equipment
1. General Requirements - Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by the Owner. Do not begin demolition work until all utility disconnections have been made. Shut off and cap utilities for future use, as indicated.

2. Disconnecting Existing Utilities - Remove existing utilities as indicated and terminate in a manner conforming to the recognized code covering the specific utility and method approved by the Utility Service Provider. When utility lines are encountered but are not indicated on the drawings, notify the Owner and Utility Service Provider prior to further work in that area. Remove meters and related equipment and deliver to the Utility Service Provider.
- D. Chain Link Fencing - Remove chain link fencing, gates and other related items scheduled for removal and transport from project site. Remove gates as whole units. Cut chain link fabric to 25 foot lengths and store/transport in rolls.
- E. Paving and Slabs - Remove concrete and asphaltic concrete paving and slabs including aggregate base as indicated to a depth of 6-inches below existing adjacent grade. Provide neat sawcuts at limits of pavement removal as indicated. Pavement and slabs designated to be recycled and utilized in this project shall be moved, ground and stored as directed by the Drawings or these Contract Documents. Pavement and slabs not to be used in this project shall be removed from the project site at Contractor's expense.
- F. Structural Steel - Dismantle structural steel at field connections and in a manner that will prevent bending or damage. Salvage for recycle structural steel, steel joists, girders, angles, plates, columns and shapes. Flame-cutting torches are permitted when other methods of dismantling are not practical. Transport steel joists and girders as whole units and not dismantled. Transport structural steel shapes to a recycling facility.
- G. Miscellaneous Metal - Where possible, salvage shop-fabricated items such as access doors and frames, steel gratings, metal ladders, wire mesh partitions, metal railings, metal windows and similar items as whole units. Salvage light-gage and cold-formed metal framing, such as steel studs, steel trusses, metal gutters, roofing and siding, metal toilet partitions, toilet accessories and similar items. Scrap metal shall become the Contractor's property. Recycle scrap metal as part of demolition operations. Provide separate containers or storage areas to collect scrap metal and transport to recycling facility, in accordance with the Waste Management Plan.
- H. Carpentry - Salvage for recycle lumber, millwork items, and finished boards. Chip or shred and recycle salvaged wood unfit for reuse, except stained, painted, or treated wood. Salvage windows, doors, frames, and cabinets, and similar items as whole units, complete with trim and accessories. Do not remove hardware attached to units, except for door closers. Salvage hardware attached to units for reuse. Brace the open end of door frames to prevent damage.
- I. Air Conditioning Equipment - Remove air conditioning, refrigeration, and other equipment containing refrigerants without releasing chlorofluorocarbon refrigerants to the atmosphere in accordance with the Clean Air Act Amendment of 1990. Recover all refrigerants prior to removing air conditioning, refrigeration, and other equipment containing refrigerants and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS)."
- J. Cylinders and Canisters - Remove all fire suppression system cylinders and canisters and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS)."
- K. Mechanical Equipment and Fixtures

1. Disconnect mechanical hardware at the nearest connection to existing services to remain, unless otherwise noted. Disconnect mechanical equipment and fixtures at fittings. Remove service valves attached to the unit. Salvage each item of equipment and fixtures as a whole unit; listed, indexed, tagged, and stored. Salvage each unit with its normal operating auxiliary equipment. Where designated, transport salvaged equipment and fixtures, including motors and machines, to a designated storage area as directed by the Owner. Do not remove equipment until approved. Do not offer low-efficiency equipment for reuse; provide to recycling service for disassembly and recycling of parts.
 2. Preparation for Storage - Remove water, dirt, dust, and foreign matter from units; tanks, piping and fixtures shall be drained; interiors, if previously used to store flammable, explosive, or other dangerous liquids, shall be steam cleaned. Seal openings with caps, plates, or plugs. Secure motors attached by flexible connections to the unit. Change lubricating systems with the proper oil or grease.
 3. Piping - Disconnect piping at unions, flanges and valves, and fittings as required to reduce the pipe into straight lengths for practical storage. Store salvaged piping according to size and type. If the piping that remains can become pressurized due to upstream valve failure, end caps, blind flanges, or other types of plugs or fittings with a pressure gage and bleed valve shall be attached to the open end of the pipe to ensure positive leak control. Carefully dismantle piping that previously contained gas, gasoline, oil, or other dangerous fluids, with precautions taken to prevent injury to persons and property. Store piping outdoors until all fumes and residues are removed. Box prefabricated supports, hangers, plates, valves, and specialty items according to size and type. Wrap sprinkler heads individually in plastic bags before boxing. Classify piping not designated for salvage, or not reusable, as scrap metal.
 4. Ducts - Classify removed duct work as scrap metal.
 5. Fixtures, Motors and Machines - Remove and salvage fixtures, motors and machines associated with plumbing, heating, air conditioning, refrigeration, and other mechanical system installations. Salvage, box and store auxiliary units and accessories with the main motor and machines. Tag salvaged items for identification, storage, and protection from damage. Classify broken, damaged, or otherwise unserviceable units and not caused to be broken, damaged, or otherwise unserviceable as debris to be disposed of by the Contractor. Salvage and crush porcelain plumbing fixtures unsuitable for reuse.
- L. Electrical Equipment and Fixtures
1. Salvage motors, motor controllers, and operating and control equipment that are attached to the driven equipment. Salvage wiring systems and components. Box loose items and tag for identification. Disconnect primary, secondary, control, communication, and signal circuits at the point of attachment to their distribution system.
 2. Fixtures - Remove and salvage electrical fixtures. Salvage unprotected glassware from the fixture and salvage separately. Salvage incandescent, mercury-vapor, and fluorescent lamps and fluorescent ballasts manufactured prior to 1978, boxed and tagged for identification, and protected from breakage.
 3. Electrical Devices - Remove and salvage switches, switchgear, transformers, conductors including wire and nonmetallic sheathed and flexible armored cable, regulators, meters,

instruments, plates, circuit breakers, panelboards, outlet boxes, and similar items. Box and tag these items for identification according to type and size.

4. Wiring Ducts or Troughs - Remove and salvage wiring ducts or troughs. Dismantle plug-in ducts and wiring troughs into unit lengths. Remove plug-in or disconnecting devices from the busway and store separately.
 5. Conduit and Miscellaneous Items - Salvage conduit except where embedded in concrete or masonry. Consider corroded, bent, or damaged conduit as scrap metal. Sort straight and undamaged lengths of conduit according to size and type. Classify supports, knobs, tubes, cleats, and straps as debris to be removed and disposed.
- M. Elevators and Hoists - Remove elevators, hoists, and similar conveying equipment and salvage as whole units, to the most practical extent. Remove and prepare items for salvage without damage to any of the various parts. Salvage and store rails for structural steel with the equipment as an integral part of the unit.

3.2 CONCURRENT EARTH-MOVING OPERATIONS

- A. Do not begin excavation, filling, and other earth-moving operations that are sequential to demolition work in areas occupied by structures to be demolished until all demolition in the area has been completed and debris removed. Fill holes, open basements and other hazardous openings.
- B. Remove all materials resulting from the demolition work from the site in such a manner as to avoid creating a nuisance. Dispose of all materials from the site on a daily basis to locations determined by the Contractor, at no additional cost to the Owner, and in accordance with all laws and regulations. Take possession of all salvageable material and equipment as property of the Contractor and promptly remove from the site.
- C. If contaminated soils are encountered during demolition and removal of fuel oil storage tanks it shall be carefully excavated and segregated from other soils and material and disposed of in accordance with applicable regulations.

3.3 DISPOSITION OF MATERIAL

- A. Title to Materials - Except for salvaged items specified in related Sections, and for materials or equipment scheduled for salvage, all materials and equipment removed and not reused or salvaged, shall become the property of the Contractor and shall be removed from property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Owner of the Contractor's demolition, and removal procedures, and authorization by the Owner to begin demolition. The Owner will not be responsible for the condition or loss of, or damage to, such property after contract award. Showing for sale or selling materials and equipment on site is prohibited.
- B. Reuse of Materials and Equipment - Remove and store materials and equipment listed in the Demolition Plan indicated to be reused or relocated to prevent damage, and reinstall as the work progresses.
- C. Salvaged Materials and Equipment - Remove materials and equipment that are listed in the Demolition Plan indicated to be removed by the Contractor and that are to remain the property

of the Owner, and deliver to a storage site as directed within 25 miles of the work site.

1. Salvage items and material to the maximum extent possible.
2. Store all materials salvaged for the Contractor as approved by the Owner and remove from Owner's property before completion of the contract. On site sales of salvaged material is prohibited.
3. Remove salvaged items to remain the property of the Owner in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage must be repaired or replaced to match existing items. Properly identify the contents of containers. Deliver salvaged items reserved as property of the Owner to the areas designated.

3.4 DISPOSAL OF OZONE DEPLETING SUBSTANCE (ODS)

- A. Class I and Class II ODS are defined in Section, 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting AHRI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling. Recovered ODS shall be removed from Owner's property and disposed of in accordance with 40 CFR 82. Products, equipment and appliances containing ODS in a sealed, self-contained system (e.g. residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82.
- B. Fire Suppression Containers - Deactivate fire suppression system cylinders and canisters with electrical charges or initiators prior to shipment. Also, safety caps must be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.

3.5 UNSALVAGEABLE AND NON-RECYCLABLE MATERIAL

Dispose of unsalvageable and non-recyclable combustible material off the site.

3.6 CLEANUP

- A. Remove debris and rubbish from basement and similar excavations. Remove and transport the debris in a manner that prevents spillage on streets or adjacent areas. Apply local regulations regarding hauling and disposal.

3.7 DISPOSAL OF REMOVED MATERIALS

- A. Regulation of Removed Materials - Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified in the Waste Management Plan. Storage of removed materials on the project site is prohibited.
- B. Burning on Property - Burning of materials removed from demolished structures will not be permitted on Owner's property.
- C. Removal from Owner's Property - Transport waste materials removed from demolished structures, except waste soil, from Owner's property for legal disposal. Dispose of waste soil as directed.

END OF SECTION 024116