

SECTION 02 41 00 DEMOLITION

PART 1 GENERAL

1.01 REFERENCES

- A. The following is a list of standards which may be referenced in this section:
1. Air-Conditioning, Heating, and Refrigeration Institute (AHRI): Guideline K, Containers for Recovered Non-flammable Fluorocarbon Refrigerants.
 2. American National Standards Institute (ANSI): A10.6, Safety Requirements for Demolition Operations.
 3. Arizona Administrative Code (AAC), Title 18 Environmental Quality.
 4. Arizona State Implementation Plan (SIP).
 5. Environmental Protection Agency (EPA), U.S. Code of Federal Regulations (CFR), Title 40:
 - a. Part 61—National Emission Standards for Hazardous Air Pollutants (NESHAP).
 - b. Part 82—Protection of Stratospheric Ozone.
 - c. Part 273—Standards for Universal Waste Management.
 6. Occupational Safety and Health Administration (OSHA), U.S. Code of Federal Regulations (CFR) Title 29 Part 1926—Occupational Safety and Health Regulations for Construction.
 7. The following is a list of plans and reports available to the Contractor that may be referenced for work in this section:
 - a. Hazardous Materials Investigation Report, Grand Canyon South Rim Wastewater Treatment Plant, CJ Seto, November 2023 (Attachment A).

1.02 DEFINITIONS

- A. ACM: Asbestos-containing material. Any material that contains greater than 1 percent asbestos.
- B. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building or structure or any part thereof. Demolition also includes removal of pipes, manholes tanks, conduit, and other underground facilities, whether as a separate activity or in conjunction with construction of new facilities. Unless otherwise noted on the Drawings, demolition also includes disposal of materials outside of the Park at an appropriate landfill or recycling facility.
- C. Modify: Provide all necessary material and labor to modify an existing item to the condition indicated or specified.

- D. Relocate: Remove, protect, clean and reinstall equipment, including electrical, instrumentation, and all ancillary components required to make the equipment fully functional, to the new location identified on the Drawings.
- E. Renovation: Altering a facility or one or more facility components in any way.
- F. Salvage/Salvageable: Contracting Officer will identify equipment or other items to be saved from destruction, damage, or waste; such property will be set aside per Contracting Officer's direction. Unless otherwise specified, title to items identified for demolition shall revert to Contractor.
- G. Universal Waste Lamp: In accordance with 40 CFR 273 and the AAC, Title 18, Chapter 8, the bulb or tube portion of an electric lighting device, examples of which include, but are not limited to, fluorescent, high-intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.
- H. Universal Waste Thermostat: A temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273 and the AAC Title 18, Chapter 8.

1.03 SUBMITTALS

- A. Action Submittals: Submit proposed Demolition Plan, in accordance with requirements specified herein, for approval before such Work is started.
- B. Informational Submittals:
 - 1. Submit copies of any notifications, authorizations and permits required to perform the Work.
 - 2. Submit a shipping receipt or bill of lading for all containers of ozone depleting substance (ODS) shipped.
 - 3. Submit a shipping receipt or bill of lading for all containers of ACM shipped.
 - 4. Submit a shipping receipt or bill of lading for all universal waste shipped.

1.04 REGULATORY AND SAFETY REQUIREMENTS

- A. When applicable, demolition Work shall be accomplished in strict accordance with 29 CFR 1926-Subpart T.
- B. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the Contract, Contractor's safety requirements shall conform to ANSI A10.6.

- C. Furnish timely notification of this demolition project to applicable federal, state, regional, and local authorities in accordance with 40 CFR 61-Subpart M.

1.05 DEMOLITION PLAN

- A. Include all structures in the Demolition Plan.
- B. Demolition Plan shall provide for safe conduct of the Work and shall include:
 - 1. Detailed description of methods and equipment to be used for each operation.
 - 2. The Contractor's planned sequence of operations, including coordination with other work in progress.
 - 3. Procedures for removal and disposition of materials specified to be salvaged.
 - 4. Identification of which activities will require shutdowns.
 - 5. Description of how existing facilities may be impacted and how the existing facilities will be kept functional while the demolition occurs.
 - 6. Disconnection schedule of utility services.
- C. Include statements affirming Contractor inspection of the existing roof deck, floors, walls, and framing members, and their suitability to perform as a safe working platform or, if inspection reveals a safety hazard to workers, state provisions for securing the safety of the workers throughout the performance of the Work.

1.06 SEQUENCING AND SCHEDULING

- A. The Work of this Specification shall not commence until Contractor's Demolition Plan has been approved by Contracting Officer.
- B. Contractor shall notify Contracting Officer 30 calendar days prior to demolition of a facility. In that time Contracting Officer will remove equipment, materials, or other items to be salvaged.
- C. Include the Work of this specification in the progress schedule, as specified in Section 01 32 16, Construction Schedule.
- D. Constraints on areas in which the Work is to be accomplished are specified in Section 01 31 00, Project Management and Coordination.

1.07 USE OF EXPLOSIVES

- A. Use of explosives is not allowed for demolition.

1.08 ENVIRONMENTAL PROTECTION

- A. Contractor shall comply with all permits issued for the Project.
- B. Contractor will comply with all applicable federal, state, regional, and local environmental protection regulations including the following (as applicable):
 - 1. Arizona SIP.
 - 2. AAC, Title 18, Chapter 9 – Department of Environmental Quality - Water Pollution Control.
 - 3. AAC Title 18, Chapter 2 Air Pollution Control.
 - 4. AAC Title 18, Chapter 13 Solid Waste Management.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 WASTE MANAGEMENT

- A. Contractor shall comply with requirements in Section 01 74 19, Construction Waste Management and Disposal.

3.02 VERIFICATION OF CONDITIONS

- A. Before beginning work, Contractor shall verify existing conditions.
 - 1. Verification of existing conditions shall include potholing to locate utilities to perform the Work.
- B. Hazardous materials testing performed at the existing South Rim Wastewater Treatment Plan buildings is documented in report “Hazardous Materials Investigation Report, Grand Canyon South Rim Wastewater Treatment Plan, November 2023”; CJ Seto Support Services, LLC (CJ Seto). The CJ Seto report is attached.
- C. Discrepancies and Questions: Immediately notify Contracting Office. Do not proceed with Work in areas of discrepancy or question until fully resolved.

3.03 EXISTING FACILITIES TO BE DEMOLISHED OR RENOVATED

- A. Facilities: Refer to Section 01 11 00, Summary of Work, and the Drawings for specific demolition requirements.
 - 1. Complete cleanout of remaining wastewater, sludges and any remaining process fluids from existing treatment facilities and basins prior to demolition.
 - 2. Demolish decommissioned facilities to 3 feet below finished grade, or as specified on the Drawings.

3. Where new facility will be placed over top of decommissioned facility, demolish structure at least 18 inches below bottom of new footing.

B. Utilities and Related Equipment:

1. Notify Contracting Officer or appropriate utilities to turn off affected services at least 48 hours before starting demolition activities.
2. Remove existing utilities as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by Contracting Officer.
3. When utility lines are encountered that are not indicated on the Drawings, notify Contracting Officer prior to further work in that area.

C. Concrete:

1. Core drill corners of new opening to avoid overcutting adjacent reinforcing in existing concrete to remain. Saw concrete along straight lines to a depth of not less than 2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished Work, and the remaining concrete is sound.
2. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete. Repair exposed rebar ends and embeds as shown on the Drawings.
3. Where new concrete adjoins existing concrete, thoroughly clean and mechanically roughen existing concrete surfaces to roughness profile of 3/16 inch. Rebar and small embeds at existing concrete may be required to be left to engage new concrete. Saturate surface with water for 24 hours prior to placing new concrete. The new Work shall tie into the existing construction as shown on the Drawings.
4. At submerged locations not to receive new concrete, paint exposed rebar or metal embed ends with System No. 18a at potable water surfaces per Section 09 90 00, Painting and Coating.

D. Patching:

1. Where removals leave holes and damaged surfaces exposed in the finished Work, patch and repair to match adjacent finished surfaces as to texture and finish.
2. Where new Work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new Work.
3. Patching shall be as specified and indicated, and shall include:
 - a. Fill holes and depressions caused by previous physical damage or left as a result of removals in existing masonry, concrete, wood,

wallboard, walls with an approved patching material, applied in accordance with the manufacturer's printed instructions.

E. Air-Conditioning Equipment:

1. Recover all refrigerants prior to removing air-conditioning equipment and dispose of as specified in Paragraph Ozone Depleting Substances (ODS).
2. Contractor will be responsible for disposal of Class I and Class II ODS following applicable state and federal rules and regulations.

F. Cylinders and Canisters: Remove all fire suppression system cylinders and canisters and dispose as specified in Paragraph Ozone Depleting Substances (ODS).

G. Door Locksets: Remove all locksets from all doors indicated to be removed and turn over to Contracting Officer immediately after their removal.

H. Electrical:

1. Cut off concealed or embedded conduit, boxes, or other materials a minimum of 3/4 inch below final finished surface.
2. When removing designated equipment, conduit and wiring may require rework to maintain service to other equipment.
3. Rework existing circuits, or provide temporary circuits as necessary during renovation to maintain service to existing lighting and equipment not scheduled to be renovated. Existing equipment and circuiting shown are based upon limited field surveys. Verify existing conditions, make all necessary adjustments, and record the Work on the Record Drawings. This shall include, but is not limited to, swapping and other adjustments to branch circuits and relocation of branch circuit breakers within panelboards as required to accomplish the finished work.
4. Reuse of existing luminaires, devices, conduits, boxes, or equipment will be permitted only where specifically indicated.
5. Raceways and cabling not scheduled for reuse.
6. Inaccessibly Concealed: Cut off and abandon in place.
7. Exposed or Concealed Above Accessible Ceilings: Remove.
8. Raceways and Cabling Scheduled for Future Use: Cap/seal and tag.
9. Relocating Equipment: Extend existing wiring or run new wiring from the source.
10. Where the existing raceway is concealed, the outlet box shall be cleaned, and a blank cover plate installed.
11. Where the concealed raceway is uncovered remove raceway (or extended to new location if appropriate).
12. Provide new typewritten panelboard circuit directory cards.

- I. Universal Waste Lamps and Thermostats: Manage, contain, package, and label in strict accordance with 40 CFR 273 and AAC Title 18, Chapter 8.

3.04 PROTECTION

A. Dust and Debris Control:

1. If working in occupied building, prevent the spread of fugitive dust and debris to occupied portions of the building and avoid the creation of a nuisance 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.
2. Comply with Arizona SIP for cumulative records of all air pollution strategies, state statutes, state rules, and local ordinance, and AAC Title 18, Chapter 2.

B. Traffic Control Signs: Where pedestrian and driver safety is endangered in the area of removal Work, use traffic barricades with flashing lights.

C. Existing Work:

1. Survey the Site and examine the Drawings and Specifications to determine the extent of the Work before beginning any demolition or renovation.
2. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain the property of Contracting Officer; any Contractor-damaged items shall be repaired or replaced as directed by Contracting Officer.
3. Provide temporary weather protection during interval between removal of existing exterior surfaces and installation of new to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
4. Ensure that structural elements are not overloaded as a result of or during performance of the Work. Responsibility for additional structural elements or increasing the strength of existing structural elements as may be required as a result of any Work performed under this Contract shall be that of the Contractor. Repairs, reinforcement, or structural replacement must have Contracting Officer approval.
5. Do not overload pavements to remain.

D. Weather Protection: For portions of the building scheduled to remain, protect building interior and materials and equipment from weather at all times. Where removal of existing roofing is necessary to accomplish the Work, have materials and workmen ready to provide adequate and temporary covering of exposed areas so as to ensure effectiveness and to prevent loss.

E. Trees: Protect trees within the Site that might be damaged during demolition and are indicated to be left in place, by a 6-foot-high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the Work shall be replaced in kind, as approved by the Contracting Officer.

F. Facilities:

1. Protect electrical and mechanical services and utilities. 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.
2. Floors, roofs, walls, columns, pilasters, and other structural elements that are designed and constructed to stand without lateral support or shoring, and are determined by Contractor to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Contracting Officer.
3. Protect all facility elements not scheduled for demolition.
4. Provide interior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities.

G. Protection of Personnel:

1. During demolition, continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site.
2. Provide temporary barricades and other forms of protection to protect Contracting Officer's personnel and the general public from injury due to demolition Work.
3. Provide protective measures as required to provide free and safe passage of Contracting Officer's personnel and the general public to occupied portions of the structure.

3.05 BURNING

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

3.06 RELOCATIONS

A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Clean all items to be relocated prior to reinstallation, to the satisfaction of Contracting Officer. Repair items to be

relocated which are damaged or replace damaged items with new undamaged items as approved by Contracting Officer.

3.07 BACKFILL

- A. Do not use demolition debris as backfill material.
- B. Fill excavations, open basements and other hazardous openings to existing ground level or foundation level of new construction in accordance with Section 31 23 23, Fill and Backfill.

3.08 TITLE TO MATERIALS

- A. All salvaged equipment and materials will remain the property of Contracting Officer.
- B. With the exception of the items removed by the Contracting Officer prior to demolition as required in Article Sequencing and Scheduling, all items designated to be removed shall become the property of Contractor.
- C. Title to equipment and materials resulting from demolition is vested in the Contractor upon approval by Contracting Officer of Contractor's Demolition Plan, and the resulting authorization by Contracting Officer to begin demolition.

3.09 DISPOSITION OF MATERIAL

- A. Do not remove equipment and materials without approval of Contractor's Demolition Plan by Contracting Officer.
- B. Salvage equipment and material to the maximum extent possible.
- C. All salvaged equipment and material will be managed by the Contractor and will be removed from the Project Site.
- D. Remove salvaged items in a manner to prevent damage, and pack or crate to protect the items from damage while in storage or during shipment. Properly identify containers as to contents.
- E. Contracting Officer will not be responsible for the condition or loss of, or damage to, property scheduled to become Contractor's property after Contracting Officer's authorization to begin demolition. Materials and equipment shall not be viewed by prospective purchasers or sold on the Site.
- F. Store salvaged items as approved by Contracting Officer and remove them from Contracting Officer's property before completion of the Contract. Materials and equipment shall not be either viewed by prospective purchasers or sold on the Site.

- G. For vegetation and soil management, refer to Section 01 35 00, Environmental Protection and Special Controls.

3.10 REUSE OF MATERIALS AND EQUIPMENT

- A. Remove and store materials and equipment listed in Article Title to Materials to be reused or relocated to prevent damage, and reinstall as the Work progresses.
- B. Properly store and maintain equipment and materials in same condition as when removed.
- C. Store equipment and material designated to be reused in a location designated by Contracting Officer.
- D. Equipment and material designated to be reused shall be cleaned, serviced and checked for proper operability before being put back into service.
- E. Contracting Officer will determine condition of equipment and materials prior to removal.

3.11 SPECIALIZED SALVAGE

- A. Ozone Depleting Substances (ODS):
 - 1. 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.
 - 2. Dispose of all Class I and Class II ODS refrigerants in accordance with the Clean Air Act Amendment of 1990.
 - 3. 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: Fire suppression system cylinders and canisters with electrical charges or initiators shall be deactivated prior to shipment. Also, safety caps shall be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.

3.12 UNSALVAGEABLE MATERIAL

- A. Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed offsite and in compliance with all local and State regulations.

- B. Combustible material shall be disposed of off the Site.
- C. Universal Waste Lamps and Thermostats: Dispose of in strict accordance with 40 CFR 273 and AAC Title 18, Chapter 8.

3.13 CLEANUP

- A. Debris and rubbish shall be removed from basement and similar excavations. Debris and rubbish shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

3.14 SUPPLEMENT

- A. The supplement listed below, following “End of Section,” is a part of this specification:
 - 1. Hazardous Materials Investigation Report.

END OF SECTION

