

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
  - 1. Recycling nonhazardous demolition construction waste.
  - 2. Disposing of nonhazardous demolition construction waste.
- B. Construction waste management and recycling is required to meet LEED New Construction BD+C LEED v4 requirements.

1.3 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction 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.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for commencement of the Work.

1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Use Form CWM-7 for construction waste and Form CWM-8 for demolition waste. Include the following information:

1. Material category.
  2. Generation point of waste.
  3. Total quantity of waste in tons.
  4. Quantity of waste salvaged, both estimated and actual in tons.
  5. Quantity of waste recycled, both estimated and actual in tons.
  6. Total quantity of waste recovered (salvaged plus recycled) in tons.
  7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- D. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. LEED Submittal: Submit documentation to USGBC, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met. Respond to questions and requests from USGBC regarding construction waste management and disposal until the USGBC has made its determination on the project's LEED certification application. Document correspondence with USGBC as informational submittals.
- F. Qualification Data: For refrigerant recovery technician.
- 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.
- H. Refrigerant Recovery: Comply with requirements in Section 024116 "Structure Demolition" for refrigerant recovery submittals.
- I. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- J. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Use Form CWM-1 for construction waste and Form CWM-2 for demolition waste. Include estimated quantities and assumptions for estimates.
- K. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Use Form CWM-3 for construction waste and Form CWM-4 for demolition waste. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work in compliance with Section 024116 "Structure Demolition."
  2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
  3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.

4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

1. Demolition Waste:
  - a. Asphalt paving.
  - b. Concrete.
  - c. Concrete reinforcing steel.
  - d. Brick.
  - e. Concrete masonry units.
  - f. Wood studs.
  - g. Wood joists.
  - h. Plywood and oriented strand board.
  - i. Wood paneling.
  - j. Wood trim.
  - k. Structural and miscellaneous steel.
  - l. Rough hardware.
  - m. Roofing.
  - n. Insulation.
  - o. Doors and frames.
  - p. Door hardware.
  - q. Windows.
  - r. Glazing.
  - s. Metal studs.
  - t. Gypsum board.
  - u. Acoustical tile and panels.
  - v. Carpet.
  - w. Carpet pad.
  - x. Demountable partitions.
  - y. Equipment.
  - z. Cabinets.
  - aa. Plumbing fixtures.
  - bb. Piping.
  - cc. Supports and hangers.
  - dd. Valves.
  - ee. Sprinklers.
  - ff. Mechanical equipment.
  - gg. Refrigerants.
  - hh. Electrical conduit.
  - ii. Copper wiring.
  - jj. Lighting fixtures.

- kk. Lamps.
- ll. Ballasts.
- mm. Electrical devices.
- nn. Switchgear and panelboards.
- oo. Transformers.
- 2. Construction Waste:
  - a. Masonry and CMU.
  - b. Lumber.
  - c. Wood sheet materials.
  - d. Wood trim.
  - e. Metals.
  - f. Roofing.
  - g. Insulation.
  - h. Carpet and pad.
  - i. Gypsum board.
  - j. Piping.
  - k. Electrical conduit.
  - l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
    - 1) Paper.
    - 2) Cardboard.
    - 3) Boxes.
    - 4) Plastic sheet and film.
    - 5) Polystyrene packaging.
    - 6) Wood crates.
    - 7) Wood pallets.
    - 8) Plastic pails.
  - m. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:
    - 1) Paper.
    - 2) Aluminum cans.
    - 3) Glass containers.

## PART 3 - EXECUTION

### 3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
  - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
  - 1. Distribute waste management plan to everyone concerned within three of submittal return.

2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
  - D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
    1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
    2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.
  - E. Waste Management in Historic Zones or Areas: Transportation equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by [12 inches] <Insert dimension> or more.
- 3.2 RECYCLING DEMOLITION CONSTRUCTION WASTE, GENERAL
  - A. General: Recycle paper and beverage containers used by on-site workers.
  - B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner.
  - C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
  - D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.
    1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      - a. Inspect containers and bins for contamination and remove contaminated materials if found.
    2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
    3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
    4. Store components off the ground and protect from the weather.
    5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.
- 3.3 RECYCLING DEMOLITION WASTE
  - A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch size.
    1. Crush asphaltic concrete paving and screen to comply with requirements in Section 312000 "Earth Moving" for use as general fill.
  - B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.
  - C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
    1. Pulverize concrete to maximum 1-1/2-inch size.
    2. Crush concrete and screen to comply with requirements in Section 312000 "Earth Moving" for use as satisfactory soil for fill or subbase.
  - D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
    1. Pulverize masonry to maximum 3/4-inch size.

- a. Crush masonry and screen to comply with requirements in Section 312000 "Earth Moving" for use as general fill
    - b. Crush masonry and screen to comply with requirements in Section 329300 "Plants" for use as mineral mulch.
  - 2. Clean and stack undamaged, whole masonry units on wood pallets.
  - E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
  - F. Metals: Separate metals by type.
    - 1. Structural Steel: Stack members according to size, type of member, and length.
    - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
  - G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
  - H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
  - I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
  - J. Metal Suspension System: Separate metal members, including trim and other metals from acoustical panels and tile, and sort with other metals.
  - K. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
    - 1. Store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.
  - L. Carpet Tile: Remove debris, trash, and adhesive.
    - 1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.
  - M. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.
  - N. Conduit: Reduce conduit to straight lengths and store by material and size.
  - O. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.
- 3.4 RECYCLING CONSTRUCTION WASTE
- A. Packaging:
    - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
    - 2. Polystyrene Packaging: Separate and bag materials.
    - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
    - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
  - B. Wood Materials:
    - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
    - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
      - a. Comply with requirements in Section 329300 "Plants" for use of clean sawdust as organic mulch.
  - C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
    - a. Comply with requirements in Section 329300 "Plants" for use of clean ground gypsum board as inorganic soil amendment.
  - D. Paint: Seal containers and store by type.
- 3.5 DISPOSAL OF WASTE
- A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
    1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
    2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.
  - C. Burning: Do not burn waste materials.
  - D. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- 3.6 ATTACHMENTS
- A. Form CWM-1 for construction waste identification.
  - B. Form CWM-2 for demolition waste identification.
  - C. Form CWM-3 for construction waste reduction work plan.
  - D. Form CWM-4 for demolition waste reduction work plan.
  - E. Form CWM-5 for cost/revenue analysis of construction waste reduction work plan.
  - F. Form CWM-6 for cost/revenue analysis of demolition waste reduction work plan.
  - G. Form CWM-7 for construction waste reduction progress report.
  - H. Form CWM-8 for demolition waste reduction progress report.

END OF SECTION