

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General [and Supplementary] Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
 - 1. Recycling nonhazardous demolition and construction waste.
 - 2. Disposing of nonhazardous construction waste.
- B. Related Requirements:
 - 1. Division 1 Section "Sustainable Design Requirements".

1.3 DEFINITIONS

- A. Alternative Daily Cover (ADC): Material other than earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging. Generally, these materials must be processed so they do not allow gaps in the exposed landfill face. Does not contribute to diversion.
- B. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging. Does not include demolition waste.
- C. Co-Mingled: Several types of construction waste that are combined in a single container.
- D. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- E. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- F. Land-Clearing Debris: Materials that are natural (e.g.: rock, soil, stone, vegetation).
- G. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- H. Source Separated: Materials that are separated on site by category.
- I. Waste Stream: Where the waste goes at end of current application. Typically a single material does into a single waste stream and is either source separated onsite or at a recycling facility.

1.4 QUALITY ASSURANCE

- A. The work of this section shall be performed by a company which specializes in the type of construction waste management & disposal – LEED V BD+C work required for this Project, with a minimum of

- [5] years of documented successful experience and shall be performed by skilled workmen thoroughly experienced in the necessary crafts.
1. [Work shall be performed in compliance with Owner's insurance underwriters' requirements]
[and UL approvals and testing for materials, assemblies and procedures.]
 - B. Manufacturer shall specialize in manufacturing the type of construction waste management & disposal – LEED V BD+C specified in this section, with a minimum of [5] years of documented successful experience, and have the facilities capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty.
 - C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
 - D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination". Review methods and procedures related to waste management including, but not limited to, the following:
 1. Review and discuss waste management plan including responsibilities of waste management coordinator.
 2. Review requirements for documenting quantities of each type of waste and its disposition.
 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 5. Review waste management requirements for each trade.
 - E. Manufacturer's identification tags or marks are not acceptable on surfaces which will remain exposed to view after installation.
 1. Evidence of "patching" after removal of tags or marks is not acceptable.
- 1.5 PERFORMANCE REQUIREMENTS
- A. General: Achieve end-of-Project rates for salvage/recycling of 75 percent by weight of total non-hazardous solid waste generated by the Work. Exclude excavated soil and land-clearing debris from calculations.
 1. 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. Wood waste converted to bio-fuel is acceptable form of diversion.
 2. Additionally, divert a total of 5 or more material waste streams identified in the Waste Management Plan. As a best practice, each material waste stream should be at least 5% by weight or volume of the total diverted materials. Itemized haul tickets from a recycler or sorting facility or multiple collection bins onsite are the primary ways to comply with this requirement.
 3. Waste streams are typically single materials such as wood, gypsum/drywall, metal, etc. however it is possible for a single material to be used in two waste streams. For instance, wood waste could go to a recycler to be reused as manufactured wood, and to a local charity to be used on a building project or resold.
 4. Excavated soil and land clearing debris (trees, stumps, rocks, soils, and associated vegetation) must be reused or recycled.

5. Facilitate recycling and salvage of materials which may include the following:
 - a. Demolition Waste:
 - 1) Asphalt paving.
 - 2) Concrete.
 - 3) Concrete reinforcing steel.
 - 4) Brick.
 - 5) Concrete masonry units.
 - 6) Wood studs.
 - 7) Wood joists.
 - 8) Plywood and oriented strand board.
 - 9) Wood paneling.
 - 10) Wood trim.
 - 11) Structural and miscellaneous steel.
 - 12) Rough hardware.
 - 13) Roofing.
 - 14) Insulation.
 - 15) Doors and frames.
 - 16) Door hardware.
 - 17) Windows.
 - 18) Glazing.
 - 19) Metal studs.
 - 20) Gypsum board.
 - 21) Acoustical tile and panels.
 - 22) Carpet.
 - 23) Carpet pad.
 - 24) Demountable partitions.
 - 25) Equipment.
 - 26) Cabinets.
 - 27) Plumbing fixtures.
 - 28) Piping.
 - 29) Supports and hangers.
 - 30) Valves.
 - 31) Sprinklers.
 - 32) Mechanical equipment.
 - 33) Refrigerants.
 - 34) Electrical conduit.
 - 35) Copper wiring.
 - 36) Lighting fixtures.
 - 37) Lamps.
 - 38) Ballasts.
 - 39) Electrical devices.
 - 40) Switchgear and panelboards.
 - 41) Transformers.
 - b. Construction Waste:
 - 1) Masonry and CMU.
 - 2) Lumber.
 - 3) Wood sheet materials.
 - 4) Wood trim.
 - 5) Metals.
 - 6) Roofing.

- 7) Insulation.
- 8) Carpet and pad.
- 9) Gypsum board.
- 10) Piping.
- 11) Electrical conduit.
- 12) Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - a) Paper.
 - b) Cardboard.
 - c) Boxes.
 - d) Plastic sheet and film.
 - e) Polystyrene packaging.
 - f) Wood crates.
 - g) Plastic pails.

1.6 ACTION SUBMITTALS

- A. Submit the following according to Conditions of the Construction Contract and Division 1 Specification Sections.
- B. Waste Management Plan: Submit preliminary plan within 30 days of date established for the Notice to Proceed. A final plan shall be submitted within 14 days of completion of work.

1.7 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
 1. Load Tag Date.
 2. Material category.
 3. Waste Contractor.
 4. Total construction waste (not including demolition) in tons.
 5. Quantity of waste salvaged in tons.
 6. Quantity of waste recycled in tons.
 7. Quantity of waste landfilled in tons.
 8. Total quantity of waste recovered (salvaged plus recycled) in tons.
 9. 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. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- E. 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.

- F. 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.
 - G. LEEDv4 Submittal: LEED Form for Prerequisite MRp2 and Credit MRc5, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and diverted waste stream descriptions.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Comply with General Conditions and Division 1 Section “Product Requirements”.
- 1.9 WARRANTY
- A. Comply with [General Conditions] [and Division 1 Section “Product Requirements”].
- 1.10 WASTE MANAGEMENT PLAN
- A. General:
 - 1. Develop a waste management plan according to requirements in this Section.
 - 2. Plan shall establish waste diversion goals by identifying 5 materials (structural and non-structural) targeted for diversion.
 - 3. Estimate each material percentage of the overall project waste and the methods for which these materials will be diverted.
 - 4. Identify waste reduction work plan including how materials will be recycled (either comingled or separated onsite), how the recycling facility will process the materials, and how materials will be taken from the site to the recycling facility. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
 - B. Distinguish between demolition and construction waste.
 - 1. Alternative daily cover (ADC) is considered waste (landfilled) but must be included in the plan.
 - 2. Hazardous materials should be excluded in the calculations but safe disposal should be addressed.
 - 3. Discuss other waste diversion options such as donation, deconstructed material to reuse markets, reuse of deconstructed materials and take back program through manufacturers- each counted as a single waste stream.
 - C. Include details as to how waste management plan will be communicated to subcontractors during onsite meetings and how recycling collection bins will be labeled.

PART 2 - PRODUCTS

2.1 UNAUTHORIZED MATERIALS

- A. Materials and products required for work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the Owner.

2.2 ACCEPTABLE MANUFACTURERS

- A. Products of the manufacturers specified in this section establish the minimum functional, aesthetic and quality standards required for work of this section.
- B. Substitutions: Comply with [General Conditions] [Division 1 Section “Product Requirements”] using form in Division 1 Section “Substitution Request Form”.

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 Division 1 Section "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.
- 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 3 days 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, recycled, reused, donated, and sold.
 - 2. Comply with Division 1 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Receivers and Processors: Include the diversion facility (address and contact information) for the location where construction and demolition waste will be taken.
- C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall **[accrue to Owner] [accrue to Contractor] [be shared equally by Owner and Contractor]**.
- D. 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.
- E. 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, reclamation, or landfill 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.

3.3 RECYCLING DEMOLITION WASTE

- A. Asphalt Paving: Grind asphalt to maximum **[1-1/2-inch] [4-inch]** size.
 1. Crush asphaltic concrete paving and screen to comply with requirements in Division 31 Section "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] [4-inch]** size.
 2. Crush concrete and screen to comply with requirements in Division 31 Section "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] [1-inch] [1-1/2-inch] [4-inch]** size.
 - a. Crush masonry and screen to comply with requirements in Division 31 Section "Earth Moving" for use as **[general fill] [satisfactory soil for fill or subbase]**.
 - b. Crush masonry and screen to comply with requirements in Division 32 Section "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 and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 1. Store clean, dry carpet and pad 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 type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- N. Conduit: Reduce conduit to straight lengths and store by type and size.

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 Division 32 Section "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 Division 32 Section "Plants" for use of clean ground gypsum board as inorganic soil amendment.

3.5 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, 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. Burning: Do not burn waste materials.
- C. 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.
- D. Disposal: Remove waste materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION