

## SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 00 and Division 01 Specifications Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for the following:
  - 1. Recycling non-hazardous demolition and construction waste.
  - 2. Disposing of nonhazardous demolition and construction waste.

## 1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. 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.
- 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. Hazardous: Exhibiting the characteristics of hazardous substances, i.e. ignitibility, corrosivity, toxicity or reactivity.
- G. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- H. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

- I. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- J. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- K. Reuse: To reuse a construction waste material in some manner on the project site.
- L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- N. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- O. Trash: Any product or material unable to be reused, returned, recycled or salvaged.
- P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.

#### 1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes the Property of Contractor.

#### 1.5 PERFORMANCE REQUIREMENTS

- A. General: Prime contractors shall work together to develop Waste Management Plan that results in end-of-Project rates for salvage/recycling of 75% percent or more by volume (yds) in a Minimum of FIVE (5) Material/Waste Streams, of total waste generated by the Work. All work must comply with the requirements of LEED V4/V4.1.
- B. Owner requires that this project generate the least amount of trash and waste possible.
- C. Contractor shall develop, submit for Approval, and follow a Comprehensive Construction and Demolition Waste Management Plan within Thirty (30) Days of date established for Commencement of Work, and prior to ANY onsite demolition or construction, designed to implement these requirements. A contracted off-site waste hauler/recycler may provide the Waste

Management Plan in lieu of contractor if one is to be contracted for the project. Plan must be compliant with the requirements of LEED V4/V4.1.

- D. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination or other factors.
- E. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- F. Salvage/Recycle Requirements: Owner's goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible including the following materials:
  - 1. Land clearing debris.
  - 2. Clean dimensional wood & all pallet wood
  - 3. Plywood, OSB & particleboard.
  - 4. Concrete
  - 5. Brick
  - 6. Concrete masonry units.
  - 7. Asphalt paving
  - 8. Cardboard, paper, packing
  - 9. Roofing materials
  - 10. Metals – including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
  - 11. Gypsum wall board (unpainted) & plaster
  - 12. Paints
  - 13. Glass
  - 14. Plastics
  - 15. Carpet and pad remnants
  - 16. Insulation
  - 17. Electrical conduit
  - 18. Aluminum and plastic beverage containers
  - 19. Packaging: Regardless of salvage/recycle goal indicated 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
- G. LEED Certification for this project is dependent on diversion of 75% percent or more by volume (yds), of potential landfill trash/waste by recycling and/or salvage with a minimum of FIVE (5) Material Streams.
- H. Contractor shall submit CWM Tracking Forms (end of section) at all payouts for any self hauled wastes not placed in the contracted off-site sorting

companies' dumpsters; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure (yards) on all reports.

- I. Methods of trash/waste disposal that are not acceptable are:
  - 1. Burning on the project site.
  - 2. Burying on the project site.
  - 3. Dumping or burying on other property, public or private.
  - 4. Other illegal dumping or burying.
- J. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, State and local requirements, pertaining to legal disposal of all construction and demolition waste materials.
- K. Provided off-site sorting companies dumpsters will be covered nightly and on weekends during snowy months to adequately protect materials from being ruined from entering the recycling stream. Frozen and waterlogged loads cannot be adequately sorted therefore the loads will count against the overall projects CWM calculations. Therefore, at a minimum during the winter months the dumpsters will be tarped/lidded or located under covered storage.

#### 1.6 SUBMITTALS

- A. LEED Submittals: Submit Waste Management Plan (self generated or provided by contracted off-site sorter, if a combination of hauling methods will be performed the Construction Waste Management Plan must reflect and outline this process) and Construction Waste Management Tracking Forms (end of this section).
- B. Construction Waste Management Plan: Submit a Construction Waste Management Plan within Thrity days (30) of date established for commencement of the Work.
- C. Construction Waste Management Plan: Include the following information:
  - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
  - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s) and the projected cost of disposing all project trash/waste in the landfill(s).
  - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse or salvage.
    - a. List each material proposed to be salvaged or reused or recycled.
  - 4. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage and packaging.

5. Transportation: Identify the destination and means of transportation of materials to be recycled.
  - a. On-Site: Materials will be site-separated by each contractor and self-hauled to designated centers. ---\*\**The on-site sorting method is not approved for this project. Only off-site sorting will be approved*\*\*---
  - b. Off-Site: Mixed materials will be collected by a waste hauler that will sort recyclables at their facility. However, On-Site Separation of construction waste from non-construction waste (food/organic/non-construction refuse) is mandatory. Provide on-site a standard trashcan/recycling bin to prevent mixing of non-construction waste. For example - lunch waste from contractors must go in separate trashcan/recycling bins – NOT combined with construction waste. All other standard construction waste will go into single bin that will be sorted off-site by waste hauler. Preliminary OnSite separation of large quantities of individual Material Streams is encouraged and shall be discussed with contracted Waste/Recycle Hauler.
- D. CWM Tracking Forms (end of section): Submit this form only for wastes being hauled independently of the contracted off-site sorting companies dumpsters, at specified intervals with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
  1. Submit updated Tracking Forms with each Application for Progress Payment; failure to submit Forms will delay payment.
  2. Construction Waste Management Tracking Form (end of this section): Submit three copies of the form which will include ticket #'s, container sizes, non-recycled and recycled yardage, Load percentage recycled and notes regarding each load. This will provide a method to track current rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work to date by each contractor or subcontractor.
  3. Landfill disposal: Include the following information:
    - a. Identification of material.
    - b. Amount in cubic yards of trash/waste material from the project disposed of in landfills.
    - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
    - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
  4. Incinerator Disposal: Include the following information:
    - a. Identification of material.
    - b. Amount in cubic yards of trash/waste material from the project delivered to incinerators.
    - c. State the identity of incinerators, total amount of fees paid to incinerator, and total disposal cost.
    - d. Include manifests, weight tickets, receipts and invoices as evidence of quantity and cost.
  5. Recycled Materials: Include the following information for each:

- a. Amount in cubic yards, date removed from the project site and receiving party.
    - b. Transportation cost, amount paid or received for the material and the net total cost or savings of salvage or recycling each material.
    - c. Include manifests, weight tickets, receipts and invoices as evidence of quantity and cost.
    - d. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
  6. Material Reused on Project: Include the following information for each:
    - a. Identification of material and how it was used in the project.
    - b. Amount in cubic yards.
    - c. Include weight tickets as evidence of quantity.
  7. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.
- E. Total Waste 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. Use ALL previous and any new CWM Tracking Forms combined with all Contracted Off-Site Recycle/Waste Hauler Reports to calculate and provide an accurate total of all waste. Contracted off-site sorting company can provide this documentation in a final closeout submittal upon request.
- F. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- G. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt. Provide copies of receipts.
- H. Narrative: For each type of waste diverted from landfills provide a narrative of how it is to be used or diverted.
- I. 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. Provide copies of all documentation.
- J. 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.
- K. LEED Submittal: LEED submittal template for Credit MR 5 completed by Architect/LEED Consultant shall be based on information provided 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.

## 1.7 QUALITY ASSURANCE

- A. Waste Management Conference: Conduct conference at Project site with owner representative, architect and representatives of all prime contractors. 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 each contractor and 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.
- B. Off Site Sorting Service Suppliers: Companies wishing to supply Off Site Sorting services of construction waste shall have experience in offsite sorting of waste and providing documentation for at least 5 previous LEED projects. Recommended haulers are provided in 3.2, B, 1 of this section.

## 1.8 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification and waste reduction work plan. Indicate quantities by volume (cubic yards).
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Total Waste: All waste generated by each contractor (whether or not it is recycled), if not disposed of in provided off-site sorters containers are to be documented and included in all reports and submitted on the provided CWM Tracking Forms (end of this section). The total waste generated by the project must be calculated. No matter to whom the benefit accrues, ALL waste removed from the site must be documented.
- D. Forms: Prepare Construction Waste Management Plan outlining planned procedures and processes for removal of waste, off-site sorting company contracted, and requirements for submission of CWM Tracking Forms (end of section) for any wastes hauled independently of the contracted off-site sorting companies provided dumpsters.

## PART 2 - PRODUCTS

### 2.1 SORTING METHOD

- A. Off site sorting is the only approved method of waste management for this project.
- B. Where a contractor is diverting waste independent of the off-site recycling container provided, it is the responsibility of that contractor to provide a Waste Management Plan and progress reports and maintain a minimum 75% construction waste recycling value.
- C. Construction waste management items which may be recycled independent of the off-site sorting containers, although not favored or encouraged, include:
  - 1. Sheet metal
  - 2. Metal framing materials
  - 3. Electrical wiring
  - 4. Crushed concrete or concrete masonry units
  - 5. Asphalt
  - 6. Wood
  - 7. Land clearing debris (not included in CWM calculator)
  - 8. Brick
  - 9. Other materials as approved in writing by Construction Manager

### 2.2 RECYCLABLE WASTE

- A. The following products shall be recycled to the greatest extent possible. Construction Waste Recycling shall be 75% percent by volume or greater with a minimum of FIVE (5) or more Waste Streams.
  - 1. Clean dimensional wood, palette wood
  - 2. Plywood, OSB, and particleboard
  - 3. Concrete
  - 4. Brick
  - 5. Concrete Masonry Units (CMU)
  - 6. Asphaltic Concrete
  - 7. Cardboard, paper, packaging
  - 8. Roofing materials
  - 9. Metals
  - 10. Gypsum Wallboard (unpainted) & plaster
  - 11. Paint
  - 12. Glass
  - 13. Plastics
  - 14. Carpet and pad remnants
  - 15. Beverage containers
  - 16. Insulation
  - 17. Electrical conduit



## PART 3 - EXECUTION

## 3.1 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by Owner. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
  - 1. Distribute waste management plan to everyone concerned within three 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.
- C. 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.
- D. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- E. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner and Architect.
- F. Instruction: Provide on-site instruction of appropriate separation, handling and recycling, salvage, reuse and return methods to be used by all parties at the appropriate stages of the project.
- G. Meetings: Discuss trash/waste management goals, status and issues at project meetings.
- H. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return and trash disposal locations for use by all contractors and installers.
  - 1. At a minimum provide:

- a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking, ground masonry/asphalt for fill, etc... (See 3.1/K for more information)
    - b. For OFF-SITE Sorting - Separate dumpsters for at a minimum, construction waste and non-construction waste. You may choose to provide containers for each category of recyclable.
    - c. Recycling bins at worker lunch area required for both ON-Site and OFF-Site sorting options. Lunch wastes are not to be placed in the contracted off-site sorting companies provided dumpsters.
  2. Provide containers as required.
  3. Provide temporary enclosures around piles of separated materials to be recycled if applicable.
  4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
  5. Locate enclosures out of the way of construction traffic.
  6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
  7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
  8. Keep recycling trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- I. Hazardous Wastes: Separate, store and dispose of hazardous wastes according to applicable regulations found in other sections in the specifications.
1. All quantities of wastes designated as hazardous are to be quantified and submitted for appropriate tracking. Hazardous wastes are not included in the projects overall CWM goals and will not negatively impact overall percentages, however, they must be tracked and quantified in cubic yards and submitted to LEED Consultant and Architect.
- J. Recycling: Separate, store, protect and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- K. Reuse of Materials On-Site: Set aside, sort and protect separated products in preparation for reuse on-site. For ALL materials reused on-site provide an accurate estimate of the total yardage reused on company letterhead and provide a short description/narrative of what the material was used for (i.e. wood blocking, fill, etc...). Also provide a dated photo to give an accurate depiction of the quantity claimed. Also provide an estimate by the Construction Manager of the materials \$ value if purchased new. This information shall be submitted on the Material Use Confirmation Form found in the division 1 section 018113 "Sustainable Design Requirements".

### 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: Must have experience with a minimum of 5 documentable LEED projects. List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:
  - 1. Mixed Waste:
    - a. Pete and Pete Container Service, 4830 Warner Rd, Cleveland, OH 44125, 216-441-4422
    - b. Rosby Resource Recovery, 54 East Schaaf Road, Brooklyn Hts., OH 44131, 216-661-6102
    - c. Kurtz Bros., Inc., 5603 Canal Road Valley View, OH 44125, 216-641-7000
    - d. For mixed waste services ensure all supplier requirements are met to avoid contamination of loads.
  - 2. Asphalt, Concrete & site clearing debris:
    - a. Asphalt, Concrete and site clearing debris may be separately recycled if documentation is provided showing that at least 75% percent by volume will be diverted from the landfill. All Quantities removed from the project site are to be tracked and submitted for Overall Project Tracking. If self hauling or using a separate Demo Hauler, submit all quantities of waste in Cubic Yards, removed from the project site using the Form at End of Section.
- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris.
  - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include a 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 off Owner's property and transport to recycling receiver or processor or if utilizing an off-site sorting service contact contracted waste hauler to maintain regular pickups.

END OF SECTION 017419

***TO BE SUBMITTED WITH EACH PAY OUT APPLICATION***

**Contractor/Subcontractor:**

**Scope of Work Narrative:** \_\_\_\_\_

**Contractor/Subcontractor Signature of Agreement:**

[illegible]

**Total Yards of ALL Containers (B): \_\_\_\_\_ :Total ALL Recycled Yards (A)**

**Total Recycled Construction Waste = (Total ALL Recycled Yards (A) / Total Yards of ALL Containers (B)):** **%**(must equal required)