

SECTION 01 74 19
CONSTRUCTION AND VEGETATIVE MATERIAL WASTE
MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Section includes administrative and procedural requirements for the following:
 - a. Salvaging nonhazardous demolition and construction waste.
 - b. Recycling nonhazardous demolition and construction waste.
 - c. Recycling of organic material putrescible or vegetative.
 - d. Disposing of nonhazardous demolition and construction waste.

1.2 RELATED SECTIONS

- A. Section 02 41 13 - Selective Site Demolition: For disposition of waste resulting from partial demolition of site improvements, and for disposition of hazardous waste.
- B. Section 02 41 16 - Structure Demolition: For disposition of waste resulting from demolition of buildings and structures, and for disposition of hazardous waste.

1.3 REFERENCES

- A. Construction Permits and Land Uses Joint Regulation, Puerto Rico Planning Board, January 2, 2021.
- B. Law for the Reduction and Recycling of Solid Wastes (“Ley para la Reducción y Reciclaje de los Desperdicios Sólidos”), Law No. 411, October 8, 2000, amending Law No. 70 of September 18, 1992.
- C. Regulation Number 6825 “Reglamento para la Reducción, Reutilización, y el Reciclaje de los Desperdicios Sólidos en Puerto Rico) of June 15, 2044
- D. Amendment to Regulation Number 6825 (Regulation Number 7940 of November 2, 2010).

1.4 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 sanitary 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. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.
- G. Vegetative Material: Residues coming in part or portion of trees, leaves, garden wastes, bushes, grass, herbs and crops.

1.5 PERFORMANCE REQUIREMENTS

- A. Disposal of Solid Waste: The Contractor must comply with *Law for the Reduction and Recycling of Solid Wastes* (“*Ley para la Reducción y Recycle de los Desperdicios Sólidos*”), Law No. 411, October 8, 2000, amending Law No. 70 of September 18, 1992.

Article 6, Section A. Separation at Source

All industries, factories, shops and any other institution that employs more than 10 persons, whether full time or part time will have to implement a Recycling Plan (“Todas las industrias, fábricas, tiendas, comercios y cualquier otro tipo de institución que emplee más de diez personas, ya sean a tiempo completo o a tiempo parcial tendrán que implantar un Plan de Reciclaje.”)

- *The Contractor will have to comply with the Recycling Plan (“Plan de Reducción, Reutilización y Reciclaje para Proyectos de Construcción” – “Solid Waste Authority”).*
- B. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction, demolition and vegetative waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
 - a. Demolition Waste:
 - i. Concrete.
 - ii. Concrete reinforcing steel.
 - iii. Concrete masonry units.
 - iv. Wood studs.
 - v. Plywood and oriented strand board.
 - vi. Wood paneling.
 - vii. Wood trim.
 - viii. Structural and miscellaneous steel.
 - ix. Rough hardware.
 - x. Roofing.
 - xi. Insulation.
 - xii. Doors and frames.
 - xiii. Door hardware.
 - xiv. Windows.
 - xv. Glazing.
 - xvi. Metal studs.
 - xvii. Gypsum board.

- xviii. Acoustical tile and panels.
- xix. Carpet.
- xx. Carpet pad
- xxi. Demountable partitions.
- xxii. Equipment.
- xxiii. Cabinets.
- xxiv. Plumbing fixtures.
- xxv. Piping.
- xxvi. Supports and hangers.
- xxvii. Valves.
- xxviii. Sprinklers.
- xxix. Mechanical equipment.
- xxx. Refrigerants.
- xxxi. Electrical conduit.
- xxxii. Copper wiring.
- xxxiii. Lighting fixtures.
- xxxiv. Lamps.
- xxxv. Ballasts.
- xxxvi. Electrical devices.
- xxxvii. Switchgear and panelboards.
- xxxviii. Transformers.

- b. Vegetative Wastes:
 - i. Residues coming in part or portion of:
 - 1. Trees.
 - 2. Leaves.
 - 3. Garden wastes.
 - 4. Bushes.
 - 5. Grass.
 - 6. Herbs.
 - 7. Crops.

1.6 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for the Notice to Proceed.
- B. Waste Management Plan must be in accordance with Solid Wastes Reduction and Recycling Law including but not limited to the following:
 - a. Analysis of estimated job-site waste to be generated, including types and quantities of compostable, recyclable, and salvageable materials.
 - b. Description of means and methods to achieve diversion requirement for compostable, recyclable, and salvageable materials, including those that may be donated to charitable organizations.
 - c. Identification of recycling contractors and haulers proposed for use in the project and locations accepting construction waste materials or entities providing related services.

- C. Construction Waste Recycling Plan and approval certification from the Solid Wastes Management Authority (SWMA).
- D. Construction Wastes Recycling Plan must be in accordance with SWMA regulations including but not limited to: SWMA Construction Wastes Recycling Plan Questionnaire.
- E. Site Plan with the location of all recycling facilities.
- F. Descriptive Memorandum with a detailed description of all the recycling activities.
- G. List of recycling contractors to be utilized.
- H. List of waste sanitary landfill or recycling facility.
- I. Letter of Commitment
- J. Quarterly Reports must be submitted to the SWMA.

1.7 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:
 - a. Waste Management Form for each delivery of waste diverted or sent to the landfill.
 - b. Material category.
 - c. Generation points of waste.
 - d. Total quantity of waste in tons.
 - e. Quantity of waste salvaged, both estimated and actual in tons.
 - f. Quantity of waste recycled, both estimated and actual in tons.
 - g. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - h. 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. Sanitary landfill Disposal Records: Indicate receipt and acceptance of waste by landfills facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- G. Qualification Data: For waste management coordinator and refrigerant recovery technician.
- H. 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.
- I. For concrete and masonry expected to be recycled, Contractor must submit a detailed testing description specifying tests to be performed to certify material is free of contaminants, such as asbestos containing materials, lead based paint, and metals, among others. Include the name of the tests, laboratory certifications, sampling technique.

1.8 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm or individual, with a record of successful waste management coordination of projects with similar requirements, as waste management coordinator.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- 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 Section 01 31 00 Administrative Requirements. Review methods and procedures related to waste management including, but not limited to, the following:
- a. Review and discuss waste management plan including responsibilities of waste management coordinator.
 - b. Review requirements for documenting quantities of each type of waste and its disposition.
 - c. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - d. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - e. Review waste management requirements for each trade.

1.9 WASTE MANAGEMENT PLAN

- A. General: Develop a Waste Management Plan according to Solid Wastes Reduction and Recycling Law and requirements in this Section. Plan must consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition, construction, and vegetative material waste. Indicate quantities by weight or volume but use same units of measure throughout waste management plan. Use Waste Management Form for each delivery of waste diverted or sent to the landfill, refer to **Attachment A**. Waste Management Plan must consider project area restrictions and/or limitations during document preparation.
- B. 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.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled (including metals, wood, and concrete), or disposed of in sanitary 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.
- a. 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.
 - b. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - c. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - d. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - e. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each sanitary landfill and incinerator facility. All materials that cannot be recycled must be disposed adequately.
 - f. 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

DEMOLITION WORKS DELIVERY ROOMS SECOND FLOOR
HOSPITAL UNIVERSITARIO DR. RAMÓN RUIZ ARNAU
PUERTO RICO DEPARTMENT OF HEALTH
017419-6

Not Used.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan, as applicable. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - a. Comply with operation, termination, and removal requirements in Section 01 50 00 - Temporary Facilities and Controls.
 - b. Fill and keep record of each Waste Management Form used for each delivery of waste diverted or sent to the landfill.
- 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.
 - a. Distribute waste management plan to everyone concerned within three days of submittal return.
 - b. 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.
 - a. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - b. Comply with Section 01 50 00 - Temporary Facilities and Controls for controlling dust and dirt, environmental protection, and noise control.
- E. Waste Management in Historic Zones or Areas: Hauling equipment and other materials must be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, by 12 inches or more.
- F. Records: Maintain onsite logs for each load of materials removed from site:
 - a. Sanitary landfill Log: Include type of material, load (by weight or volume), recycling/hauling service, date accepted by landfill, and facility fee.
 - b. Waste Diversion: Include type of material, load (by weight or volume), recycling/hauling service, date accepted by recycling service, or non-profit receiver and facility fee.
 - c. Where comingling occurs prior to collection, track the amount of construction waste diverted from sanitary landfill based on the weight or volume of the removed co-mingled waste and provide the documentation of percentages of recycled material from the sorting facility.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
 - a. Clean salvaged items.
 - b. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - c. Store items in a secure area until installation.
 - d. Protect items from damage during transport and storage.
 - e. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site. Items must be removed from the project site prior to sale or donation.
- C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
 - a. Clean salvaged items.
 - b. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
 - c. Store items in a secure area until delivery to Owner.
 - d. Transport items to Owner's storage area on-site.
 - e. Protect items from damage during transport and storage.
- D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.
- E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- F. Plumbing Fixtures: Separate by type and size.
- G. Lighting Fixtures: Separate lamps by type and protect from breakage.
- H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers, as deemed possible.
- B. Recycling Receivers and Processors: Contractor will inquire and obtain a list of available recycling receivers and processors Refer to Attachment K: “Listado de Centros de Acopio e Instalaciones de Reciclaje – ADS (Autoridad de Desperdicios Sólidos – Puerto Rico)”.
- C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to 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.
 - a. 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.
 - b. Inspect containers and bins for contamination and remove contaminated materials if found.
 - c. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - d. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - e. Store components off the ground and protect from the weather.
 - f. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE CONTAMINANTS FREE

- A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 - a. Pulverize concrete to maximum 4-inch size.
 - b. Crush concrete and screen for use as satisfactory soil for fill or subbase only if testing evidence is performed and provided certifying material is free of contaminants, such as asbestos containing materials, lead based paint, and metals, among others. Detailed testing description must be submitted in advance to Owner's Authorized Representative review and evaluation.
- B. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 - a. Pulverize masonry to maximum 1-inch size. a. Crush masonry and screen for use as general fill in Earthwork only if testing evidence is performed and provided certifying material is free of contaminants, such as asbestos containing materials, lead based paint, and metals, among others. Detailed testing description must be submitted in advance to Owner's Authorized Representative review and evaluation.
 - b. Clean and stack undamaged, whole masonry units on wood pallets.
- C. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- D. Metals: Separate metals by type.
 - a. Structural Steel: Stack members according to size, type of member, and length.
 - b. Remove and dispose of bolts, nuts, washers, and other rough hardware
- E. 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.

- F. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- G. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.
- H. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - a. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- I. Carpet Tile: Remove debris, trash, and adhesive.
 - a. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- J. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- K. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING VEGETATIVE MATERIAL

- A. Materials will be managed in accordance with

3.6 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - b. Polystyrene Packaging: Separate and bag materials.
 - c. 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.
 - d. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Wood Materials:
 - a. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - b. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

3.7 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 sanitary landfill acceptable to authorities having jurisdiction.

- a. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - b. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and
- B. Burning: Do not burn waste materials.
- C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

3.8 ATTACHMENTS

- A. **Attachment A:** Waste Management Form

END OF SECTION

ATTACHMENT A
Waste Management Form

(FORM MUST BE FILLED EACH TIME WASTES ARE DIVERTED OR SEND TO A SANITARY LANDFILL)

Minimum products that shall be recycled, reused or salvaged may include but are not limited to: concrete, concrete reinforcing steel, concrete masonry, wood studs, plywood and oriented strand board, wood paneling, wood trim, structural and miscellaneous steel, rough hardware, roofing, insulation, doors and frames, door hardware, windows, glazing, metal studs, gypsum board, acoustical tile and panels, carpet, carpet pad, demountable partitions, equipment, cabinets, plumbing fixtures, piping, supports and hangers, valves, sprinklers, mechanical equipment, refrigerants, electrical conduit, copper wiring, lighting fixtures, lamps, ballasts, electrical devices, switchgear and panelboards, and transformers, among others.

Date	Type of Waste	Diversion Method or Name of Sanitary Landfill		Diverted Materials (Tons)	Landfilled Materials (Tons)
		Method of Diversion (Recycler, Charitable Organization, Reuse Center, Nonprofit Organization or use on Other Building)	Sanitary Landfill (Add Name)		

(1)Total Wastes Diverted (Tons)	
(2)Total Waste Sent to a sanitary landfill (Tons)	
(3)Total Quantity of Waste (Tons) (3)=(1) + (2)	
(4)Percent of Waste Diverted (4)= ((1)/(3))*100	

Vendor or Material Receiver Company Name: _____.

Vendor or Material Receiver Representative's Name (please print): _____.

Vendor or Material Receiver Representative's Signature: _____.